

Cite as: Wei, T., Sadikova, A. N., Barnard-Brak, L., Wang, E. W., & Sodikov, D. (2015). Exploring graduate students' attitudes towards team research and their scholarly productivity: A survey guided by the theory of planned behavior. *International Journal of Doctoral Studies*, 10, 1-17. Retrieved from <http://ijds.org/Volume10/IJDSv10p001-017Wei0558.pdf>

Exploring Graduate Students' Attitudes towards Team Research and Their Scholarly Productivity: A Survey Guided by the Theory of Planned Behavior

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Abstract

This study explores the attitudinal and motivational factors underlying graduate students' attitudes towards team research. Guided by the Theory of Planned Behavior, we hypothesize that attitude, subjective norm, and perceived behavioral control are three major determinants of graduate students' intentions to conduct team research. An instrument was developed to measure the influences of these factors on students' intentions and relevant scholarly productivity. A total of 281 graduate students from a large, comprehensive university in the southwest United States participated in the survey. Descriptive statistics reveal that around two-thirds of graduate students have no co-authored manuscripts submitted for publication since they started graduate school. Factor analyses validated the factor structure of the instrument, and the results of Structural Equation Modeling show that (a) graduate students' attitudes towards team research have a positive correlation with their attitudes towards individual research; (b) attitude towards

team research, subjective norm, and perceived behavioral control, along with students' discipline/major areas and classification, account for 58% of the variance in the intention to conduct team research; and (c) subjective norm appears to be the most influential factor in the model, followed by attitude; while perceived behavioral control is not of much importance. These findings provide implications for academic

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Editor: Michael Jones

Submitted: February 5, 2014; Revised: December 5, 2014; Accepted: December 6, 2014

departments and programs to promote graduate students' team research. Specifically, creating a climate for collaborative research in academic programs/disciplines/universities may work jointly with enhancing students' appraisals of such collaborations.

Keywords: graduate student, team research, scholarly productivity, the theory of planned behavior, attitude, subjective norm, perceived behavioral control, intention

Introduction

Graduate students' scholarly productivity is critical to their future careers. Graduate education is considered to "put a great emphasis on research skills and research-based decision making that is beyond the capabilities of most undergraduate students" (Moore, Tatum, & Sebetan 2011, p. 67); Posselt and Black (2012) also noted that the mission of postgraduate education is the training of the next generation of researchers. Therefore, expectations are placed upon graduate students with regard to their scholarly productivity. For example, many leading academic departments have required their graduate students to publish at least one or two research articles in scholarly journals as part of their graduation requirements (Lei & Chuang, 2009). Although universities may have different requirements for master's and doctoral students, Bourke and Holbrook (2013) indicated that their research theses are not evaluated using qualitatively different criteria, though doctoral students in general receive higher quality grading. Based on a U.S. sample consisting of both master's and doctoral students, Barrick, Easterly, and Rieger (2011) also found that the largest portion of these graduate students indicate their career goals to be in research and development. A graduate student, whether pursuing a master's or doctorate degree, gets immersed in a research-oriented environment upon entering graduate school.

Naturally, these research-oriented environments differ in the level of collaboration. Collaboration is defined as "the coming together of diverse interests and people to achieve a common purpose via interactions, information sharing, and coordination of activities" (Jassawala & Sashittal, 1998, p. 239). In a graduate school setting, new incoming students tend to be more technology advanced than the existing faculty, and the existing faculty and graduate student population is more diverse in terms of needs, expectations, backgrounds, and levels of commitment and interests. The acquisition of knowledge and skills is thereby an important function of collaboration, and graduate students may benefit from participating in team research. As Fox (1991) described research as a highly social and political process of communication, interaction, and exchange, graduate students may better fulfill their ambitions through participating in team research. With the involvement of graduate students, research teams are beneficial in terms of research output as well as students' personal developments. An example was given by Hilvers (2012) about the research teams at the Loyola University's Centre for Urban Research and Learning, which had completed 150 research projects since 1996. Most of these teams included community partners, faculty, graduate and undergraduate students, and staff. Graduate students were the ones who served as engines of these teams and faculty and community partners were there only when needed. Graduate students processed daily work, mentored undergraduate team members, contacted professors and community partners as needed, and worked closely with the staff of the Centre. Considering the cost of having professors and community partners do all research work and how little time they had, the Centre encouraged all parties to engage graduate students in research. Team research experiences provided a great opportunity for graduate students to learn by practice. Such practices are described by Hilvers (2012) as "throwing graduate students into the 'deep end' of research as a way of teaching them to swim" (p. 22).

Every discipline has its own context and approach to graduate student preparation (Becher, 1984; B. R. Clark, 1987). Particularly, each program has its specific way of conducting research, keeping balance between teaching and research, and the level of collaboration among scholars. While a professor of history or English tends to conduct research alone, a professor of medicine or engi-

neering is more likely to work with a group of colleagues or graduate students (Austin, 2002). Further, some graduate programs and students themselves build their graduate curricula based on societal expectations. For instance, while a doctoral student of chemistry will likely have a better chance to get a job if he or she has laboratory experiences of team research, a doctoral student of education will likely be more marketable if he or she has experience in teaching college level classes as well as first-author publications. Hence, research on collaborative research must take into account the disciplinary effects for addressing their focal questions.

Theoretical Framework

Our review of the literature revealed several issues in the field of team/collaborative research. First of all, the data of many studies were derived from personal reflections (e.g., Blumer, Green, & Palmanteer, 2007; Bryan, Negretti, Christensen, & Stokes, 2002; Lee & Mitchell, 2011), thus being qualitative in nature. We consider quantitative investigations to be necessary to supplement the existing knowledge body. Next, the early studies have mostly focused on the scholarly productivity of university faculty (e.g., Blackburn, Behymer, & Hall, 1978; Bland & Ruffin, 1992; Bland & Schmitz, 1986), and there are few investigations focusing on graduate students as a particular population. Even though the past two decades have witnessed the emergence of research on the collaborative research among undergraduate and graduate students, the bulk of the research attempts to identify team or environmental characteristics for productive, successful research teams. These characteristics include team organization and operation (e.g., Hulse-Killacky & Robison, 2005; Lee & Mitchell, 2011; Li, Zhu, & Wang, 2010; Turner, 2006; Waldron, Shattuck, Zimbrick, Finter, & Edwards, 2007), member characteristics (e.g., Blumer et al., 2007; Wan Mohamed, Omar, Ahmad, & Juned, 2012), and process of bonding (e.g., Bryan et al., 2002). Arguably, these studies all assume the active roles of graduate students in team research while leaving out the graduate population who hover, still debating over the costs and benefits of team research. Hence, there appears to be a gap in research with regard to graduate students' decisions on whether or not to participate in research teams, specifically, whether they perceive team research as positive and beneficial experience in their academic lives.

While several theoretical perspectives are available for the present study, Bandura's (1977, 1986) social cognitive theory provides a most pertinent basis for our investigations. Based on our literature review, an individual researcher is influenced by both environmental and personal characteristics (Blackburn et al., 1978; Bland & Ruffin, 1992; Cameron & Blackburn, 1981). For example, Bland and Ruffin (1992) identified several characteristics of a productive research team such as distinctive culture, positive group climate, and concentration on recruitment and selection; in the meantime, a team member should also possess personal characteristics such as personal motivation, research training, early scholarly habits, socialization to academic values, network of productive colleagues, and resources (Bland & Schmitz, 1986; S. M. Clark & Corcoran, 1985). As such, the interplay between the environmental and personal factors is critical in understanding researchers' development through collaborative research. The social cognitive theory depicts people as self-organizing and proactive rather than merely reactive to social environmental or inner forces (Zimmerman & Schunk, 2003). In addition to personal and environmental determinants, behaviors are also included in Bandura's (1977) triadic reciprocal causation model. As Bandura (1986) stated, "what people think, believe, and feel affects how they behave" (p. 25). Taken into the current context, graduate students' attitudes towards team research may affect how they organize personal and environmental resources to perform research activities. Graduate students' attitudes, appraisals, and other motivational factors are therefore worth researchers' attention.

Guided by the theory of planned behavior (TPB; Ajzen, 1988, 1991), the present study aimed to examine the attitudinal and motivational factors underlying graduate students' perception of team

research and to explore how these factors may predict their decisions and behaviors. Closely related to the social cognitive framework, the theory of planned behavior (TPB) was derived from the expectancy-value theory (Ajzen & Fishbein, 1980; Atkinson, 1964), which was designed to account for the incentive motivation people use to guide their actions for acquiring corresponding outcomes of their behaviors. Essentially, the expectancy-value theory postulates that the strength of motivation is governed jointly by the expectation that particular actions will produce specified outcomes, and the perceived value of those outcomes (Bandura, 1997). The TPB took one step beyond the expectancy-value theory by adding a new component: perceived behavioral control. According to Ajzen (1991), the view of perceived behavioral control is most compatible with Bandura's (1977, 1982) concept of perceived *self-efficacy*. Self-efficacy is a key component in Bandura's (1997) social cognitive theory, which refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. As Ajzen (1991) stated, the expectancy-value theory formulations were found to be only partly successful for predicting behaviors, and adding perceived behavioral control into the model helps predict behaviors with much higher accuracy.

Intention is a central factor in the TPB, which can be construed as the indication of how much effort individuals are planning to exert in order to perform the behavior (Ajzen, 1991). The higher the intention, the better chances of the behavior being performed are. In other words, intention is the immediate antecedent of the behavior. In the TPB, the three determinants of intention are named *attitude towards the behavior*, *subjective norm*, and *perceived behavioral control* (Ajzen, 1988, 1991). Attitude towards the behavior refers to an individual's evaluation or appraisal of the behavior; subjective norm refers to the perceived social pressure to perform or not to perform the behavior; and perceived behavioral control refers to the perceived level of difficulty of performing the behavior.

To date, the TPB has been widely used in social psychology to associate the way a person thinks with the resulting behaviors. Armitage and Conner (2001) meta-analyzed 185 TPB studies and found that the TPB accounted for 27% of the variance in behavior and 39% of the variance in intention. Similarly, Cooke and Sheeran (2004) meta-analyzed 44 TPB studies and reported that attitude, subjective norm, and perceived behavioral control accounted for 39 to 42% of the variance in intention, while intention and perceived behavioral control predicted between 28 to 34% of the variance in behavior. In the area of team/collaborative research, Li et al. (2010) adopted the TPB to explore the influencing factors of the intention to share tacit knowledge in the university research team. Their findings, however, are primarily concerned about one specific aspect of team research (i.e., share of tacit knowledge), thus bearing little relevance to the present study.

The present study was conducted to address the following research questions:

1. What is the relationship between graduate students' attitudes towards individual research and their attitudes towards team research?
2. Does the theory of planned behavior (TPB) provide a viable formulation to account for graduate students' intentions and behaviors to produce research?
3. How do the predictors of the TPB (i.e., attitude, subjective norm, and perceived behavioral control) relate with each other and contribute to the outcome variables (i.e., intention and behaviors)?

We hypothesized, based on the literature, that (a) attitude towards individual research negatively correlates with attitude towards team research, (b) the TPB provides a viable model to account for graduate students' intention to produce research through teamwork, and (c) attitude towards team research, subjective norm, and perceived behavioral control are three indispensable determinants

of intention, and further, intention and perceived behavioral control significantly predict behaviors (Ajzen, 1991).

Method

Participants

A total of 281 participants from a large, comprehensive south-western university in the United States responded to our survey. The participants were gathered through either email notice or face-to-face recruitment to form a convenience sample. A large proportion (37.7%, $n = 106$) of our sample reported being international students and 34.2% ($n = 96$) reported that they spoke English as a non-primary language. Among the participants, 50.2% ($n = 141$) reported being master's students, 47.0% ($n = 132$) being doctoral students, 0.8% ($n = 2$) being "Others", and 2.1% ($n = 6$) with classification data missing. The average age was 30.2 years old ($SD = 10.2$). Approximately 52.7% ($n = 148$) of the participants were male, 44.8% ($n = 126$) were female, and 2.5% ($n = 7$) with gender information missing. In terms of ethnicity, 50.2% ($n = 141$) reported being White, followed by 25.3% ($n = 71$) Asian, 9.3% ($n = 26$) Hispanic, 5.3% ($n = 15$) African American, 6.0% ($n = 17$) "Others," and 3.9% ($n = 11$) with ethnicity information missing. Participants came from primarily two disciplines: engineering (41.6%, $n = 117$) and education (38.8%, $n = 109$). Other disciplines represented in this study were human sciences (5.3%), architecture (3.9%), agricultural sciences (2.1%), arts and sciences (1.4%), visual and performing arts (1.1%), and business administration (0.7%). Approximately 5.0% ($n = 14$) of the participants did not have or endorse a major area.

Measures

A survey questionnaire was developed to collect academic/demographic information and measures of the TPB. The first section included questions regarding degree being pursued, major field, age, gender, ethnicity, international student status, and English proficiency. The second section included the TPB items designed to evaluate individuals' attitudes towards individual research, attitudes towards team research, subjective norms, perceived behavioral control, and intentions to produce research through teamwork. Finally, Behavior was indexed by the number of co-authored manuscripts the participant had submitted since he started graduate school.

The TPB items were developed based on Fishbein and Ajzen's (2010) suggestions on the construction of a TPB questionnaire. The behavior of interest was identified as publishing performance, specifically, the engagement in literature review, data collection, and manuscript preparation. Next, about 10 items were created for each TPB factor, and a content expert was recruited to assess the face validity and provide suggestions on wording changes. Finally, the items were piloted and a number of them were dropped because of limited relevance. As a result, 45 TPB items were retained. Participants were asked to rate each item on a 7-point bipolar adjective scale (e.g., 1-*strongly disagree* to 7-*strongly agree*, 1-*worthless* to 7-*valuable*, 1-*very unimportant* to 7-*very important*).

Procedure

The data for this study were collected using both an online survey platform (SelectSurvey.NET) and scannable paper and pencil forms with identical question items. To balance the proportions of social science and applied science students, the target population mainly involved graduate students majoring in education or engineering. An email invitation with the link to the online survey was sent to graduate students, and questionnaires were also handed to graduate students in a face-to-face classroom setting. Participation in this study was completely anonymous and vol-

untary. Approximately 49.8% ($n = 140$) of the participants responded to the online survey and 50.2% ($n = 141$) filled out our paper and pencil forms.

Results

Descriptive Statistics

All 281 participants reported having submitted a mean of 1.05 co-authored manuscripts for publication since they started graduate school ($SD = 5.21$). In terms of breakdown according to demographic background, males reported a mean of 0.82 ($SD = 1.66$) while females reported a mean of 1.39 ($SD = 7.67$); domestic students reported a mean of 1.14 ($SD = 6.57$) while international students reported a mean of 0.99 ($SD = 1.78$); master's students' reported a mean of 0.49 ($SD = 1.40$) while doctoral students reported a mean of 1.76 ($SD = 7.55$). Nonetheless, these results must be interpreted with caution because the data were positively skewed at $p < .01$ (Field, 2009) with only a few participants ($n = 12$, 4.3%) having over five co-authored submissions, as well as a majority of participants ($n = 180$, 64.1%) having no submission at all. A less biased statistic was thus the median, which was 0 among all participants.

Factor Analysis

Prior to factor analysis, the data were screened for multicollinearity and multivariate outliers in SPSS v19. Bivariate correlation coefficients were computed among the 45 TPB items and there was no evidence of multicollinearity ($r > .80$). Cook's distances were then computed and there were no significant multivariate outliers (Cook's distance > 1) (Cook & Weisberg, 1982).

Exploratory factor analysis (EFA) is typically used earlier in the process of instrument development to determine the appropriate number of common factors (Brown, 2006). A principal axis factoring analysis (EFA) with promax rotation was conducted on the 45 items. Promax rotation allows for factors to be correlated (Field, 2009), and the assumption was made that the factors in the TPB model were related. To determine the number of factors, we examined both the eigenvalues (Kaiser, 1960) and the scree plot for points of inflection (Field, 2009). The initial analysis yielded 11 factors with eigenvalues greater than 1. However, consistent with what was indicated by the inflection point, only six factors had eigenvalues greater than 1 after rotation. Using Gorsuch's (1997) criteria to count only the number of factors with three or more salient loadings (i.e., $|\lambda| > .40$), we dropped the sixth factor with one salient factor loading. In addition, we dropped items that had salient loadings on more than one factor. A 5-factor simple structure was achieved as a result. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, $KMO = .80$, which is between "good" and "great" according to Hutcheson and Sofroniou's (1999) criteria. All five factors in combination explained 51.30% of the variance. Table 1 shows the factor loadings after rotation and the internal consistency reliabilities (Cronbach's α) of each factor. Except for Attitude towards Individual Research ($\alpha = .90$), the other four factors were in line with the theory of planned behavior (TPB): Attitude towards Team Research ($\alpha = .89$), Subjective Norm ($\alpha = .77$), Perceived Behavioral Control ($\alpha = .76$), and Intention to Produce Research through Teamwork ($\alpha = .82$). In addition, Table 1 also presents the descriptive statistics which illustrate the shape of the distribution of each factor. All five factors appear to be negatively skewed, meaning that respondents tend to endorse the higher-order options of the items; but only the skewness of Attitude towards Team Research and Subjective Norm is statistically significant (Field, 2009). Nevertheless, the two factors still demonstrated sufficient disparity in their distributions as revealed by the histograms and boxplots. This solution used 32 (71%) of the original 45 items.

Table 1. Factor Loadings for Exploratory Factor Analysis with Promax Rotation

Items	Rotated Factor Loadings				
	Attitude (Individual)	Attitude (Team)	Subjective Norm (Team)	Control (Team)	Intention (Team)
AI1 Collecting data by myself is [worthless--valuable].	.82	-.07	.01	.21	-.01
AI2 Writing literature review by myself is [worthless--valuable].	.81	-.01	.08	-.02	-.07
AI3 Working by myself on a manuscript is [worthless--valuable].	.78	.10	-.20	.03	.11
AI4 Working by myself on a manuscript [teaches nothing--teaches more than class].	.75	-.05	-.03	-.12	.10
AI5 Writing literature review by myself [teaches nothing--teaches more than class].	.72	-.07	.12	-.21	.05
AI6 Collecting data by myself is [harmful--beneficial].	.68	.00	-.06	.01	-.10
AI7 Collecting data by myself [teaches nothing--teaches more than class].	.60	.00	-.08	.19	.14
AI8 Working by myself on a manuscript is [harmful--beneficial].	.60	.09	-.12	-.15	-.01
AT1 Collaborating on the literature review is [harmful--beneficial].	-.14	.89	-.36	.00	.13
AT2 Collaborating on the literature review [teaches nothing--teaches more than class].	-.01	.87	-.22	-.15	.14
AT3 Collaborating on the literature review is [worthless--valuable].	-.05	.83	-.21	.06	.10
AT4 Collaborating with others on a manuscript [teaches nothing--teaches more than class].	.01	.63	.30	-.16	-.17
AT5 Collaborating with others on a manuscript is [harmful--beneficial].	.09	.55	.24	.02	.01
AT6 Collecting data with a research team is [harmful--beneficial]	-.03	.45	.14	.17	-.02
AT7 Collecting data with a research team is [worthless--valuable].	.16	.43	.26	.14	-.12
AT8 Collaborating with others on a manuscript is [worthless--valuable].	.12	.43	.38	.12	-.18
AT9 Collecting data with a research team [teaches nothing--teaches more than class].	.10	.43	.28	.15	-.14
S1 In my field, people usually conduct research in teams.	-.07	-.15	.79	-.12	.06
S2 Compared with a single-authored manuscript, it is easier to get a co-authored manuscript published.	-.06	.13	.60	-.20	.09
S3 My future employers will want me to have good, productive research team experience.	-.07	-.04	.59	.04	.34
S4 In my field, it is believed that research team experience increases productivity.	-.10	.05	.56	.08	.19

S5 At the research conferences I attended (or plan on attending), the bulk of the work presented comes from teams.	.01	-.13	.50	-.08	.08
C1 It will be difficult to apply my ideas into the research when I work with a team. ^a	.01	-.08	-.04	.85	.10
C2 I feel that working in a team will understate my own efforts. ^a	.17	-.01	-.22	.82	.04
C3 It is hard for me to keep motivated when working with a research team. ^a	-.02	.02	-.02	.63	-.09
C4 I am most productive when I work by myself. ^a	-.27	-.03	.09	.51	-.04
C5 Having complete control of the final product works best for me. ^a	-.13	.12	-.16	.50	-.01
I1 I intend to submit a research manuscript for publication before graduation.	.03	-.01	.10	-.08	.66
I2 In the coming year, with a professor's help, I will collect data for a research project other than the one for my thesis/dissertation.	.05	.04	.24	.11	.66
I3 I plan to submit manuscripts for publication before my graduation.	.09	.01	-.08	-.07	.66
I4 Authoring a peer reviewed publication before getting my degree is important.	-.07	.09	.35	.00	.63
I5 In the coming year, my research team will collect data for a research project other than the one for my thesis/dissertation.	.06	.00	.23	.09	.62
Eigenvalues	5.95	5.13	3.06	1.24	1.04
% of variance	18.6	16.03	9.55	3.88	3.23
Cronbach's α	.90	.89	.77	.76	.82
<i>Matn</i> ^b	0.02	0.10	0.11	0.07	0.14
Skewness (<i>SE</i>)	-0.28 (.18)	-0.71 (.18)	-0.48 (.18)	-0.32 (.18)	-0.31 (.18)

Note. Factor loadings > .40 are in boldface.

^aThe items were reverse coded.

^bDescriptive statistics of standardized factor scores (*z*).

A confirmatory factor analysis (CFA) was then conducted based on the five-factor EFA solution with 32 items using *Mplus* v7 (Muthén & Muthén, 2012). According to Brown (2006), CFA is used in later phases of instrument development after the underlying structure has been established on prior empirical (EFA) grounds. The acceptable model fit for CFA was defined by Hu and Bentler's (1999) combinational rules: (a) Comparative Fit Index (CFI) or Tucker-Lewis Index (TLI) > 0.95 and Standardized Root Mean Square Residual (SRMR) < .09, or (b) Root Mean Square Error of Approximation (RMSEA) < .05 and SRMR < .06. Because *Mplus* provides Weighted Root Mean Square Residual (WRMR) instead of SRMR when the robust weighted least squares estimator (WLSMV) is activated, the cutoff value of WRMR < 1.0 (Yu, 2002) was also consulted. The initial CFA model did not indicate a good fit to the data, $\chi^2(424) = 1220.52$, $p < .0001$, CFI = .780, TLI = .759, RMSEA = .085, 90% CI [.080, .091]. We consulted modification indices (MIs) (Sörbom, 1989) and identified the main source of poor-fitting to be corrected errors (Brown, 2006). For example, the correlated errors between Items AT1 and AT2 (see Table 1) produced the largest $\Delta\chi^2 = 48.97$, and the correlated errors between Items AT1 and AT3 produced the second largest $\Delta\chi^2 = 37.77$. Given the very similar wording of these items, we deleted items with lower factor loadings to minimize the influence of correlated errors without impairing much of the measurement validity. As a result, Items AI1, AI4, AI5, AI6, AT1, AT2, AT9, S3, S4, C4, I1, I3, and I4 (see Table 1) were removed, resulting in an acceptable measurement model: $\chi^2(125) = 186.49$, $p = .0003$, CFI = .957, TLI = .947, RMSEA = .044, 90% CI [.030, .056], SRMR = .053. This final measurement model retained 18 (40%) of the original 45 items. Using Gorsuch's (1983) criteria for validity coefficients ($\geq .80$), factor determinacy scores indicate that all four factors are well measured: Attitude towards Individual Research (three items) = .99, Attitude towards Team Research (six items) = .94, Subjective Norm (three items) = .85, Perceived Behavioral Control (four items) = .89, and Intention (two items) = .92.

Correlations

Zero-order correlations were computed among the five factors based on the 18-item measurement model. As shown in Table 2, graduate students' attitudes towards individual research positively correlated with both their attitudes towards team research ($r = .17$, $p = .02$) and their intentions to produce research ($r = .23$, $p < .01$). Their attitudes towards team research, as expected, also positively correlated with other TPB factors: Subjective Norm ($r = .38$, $p < .001$), Perceived Behavioral Control ($r = .54$, $p < .001$), and Intention ($r = .29$, $p < .001$). However, Perceived Behavioral Control only significantly correlated with Attitude towards Team Research ($r = .54$, $p < .001$), but not with other factors.

Table 2. Zero-order Correlations among Five Factors in the Measurement Model

	1	2	3	4	5
1. Attitude towards Individual Research	--				
2. Attitude towards Team Research	.17*	--			
3. Subjective Norm	-.13	.38***	--		
4. Perceived Behavioral Control	-.13	.54***	.13	--	
5. Intention	.23**	.29***	.41***	.03	--

* $p < .05$. ** $p < .01$. *** $p < .001$.

The TPB Model

Our last step was to fit the TPB model (Ajzen, 1991) to the data using structural equation modeling (SEM) in *Mplus* v7 (Muthén & Muthén, 2012). Because Attitude towards Individual Re-

search only bears relevance to individual research but not team research, we excluded it while retained the other four factors in the model, with both Intention and Behavior (i.e., number of co-authored manuscripts) being the outcome factors. Due to a lack of variance and the severe skewness of Behavior, we recoded Behavior into a dichotomous variable where 0 indicates no co-authored manuscripts at all, and 1 indicates having at least one co-authored submission. As such, the regression to Behavior is modeled as a probit regression. In addition, two covariates were also included in the model: classification and discipline. To account for the disparity between master's and doctoral students with regard to their research intensity, classification was dummy coded as master's = 0 and doctoral = 1, whereas discipline was coded as education = -1, engineering = 1, others = 0 in order to contrast education and engineering for the disciplinary effects.

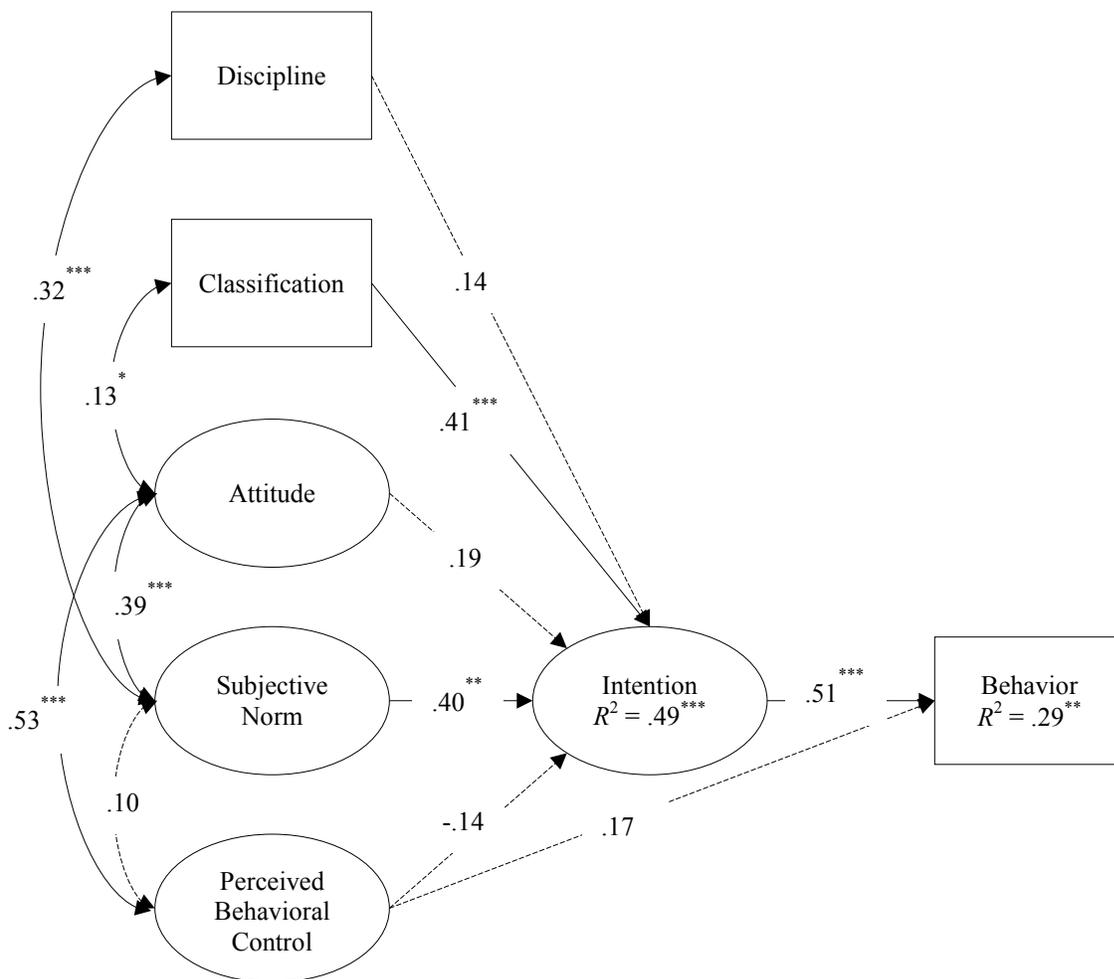


Figure 1. Final TPB model with estimated regression coefficients.

Note. Dashed lines denote hypothesized relations that are non-significant (“ns”).
 $*$ $p < .05$. $**$ $p < .01$. $***$ $p < .001$.

Figure 1 presents the final model with regression parameters. This final model fit the data well: $\chi^2(126) = 187.73, p = .0003, CFI = 0.91, RMSEA = .042, 90\% CI [.029, .054], WRMR = 0.81$. The correlations of the two covariates with the TPB factors are worth noting: discipline only significantly correlated with Subjective Norm ($r = .32, p < .001$), but not other factors, while classification only correlated with Attitude toward Team Research ($r = .13, p = .03$). In other words, graduate students of engineering majors rated Subjective Norm items significantly higher than students of education majors, but the two disciplines do not differ significantly in Attitude or Per-

ceived Behavioral Control. On the other hand, doctoral students tend to have more positive attitudes than master's students towards team research, but master's and doctoral students do not differ in Subjective Norm and Perceived Behavioral Control. In addition, classification ($\beta = .41, p < .001$) appears to have a significant impact on Intention, while discipline ($\beta = .14, p = .14$) does not. Finally, the model explains 49% of the variance in Intention ($p < .001$) and 29% of the variance in Behavior ($p = .001$). While Intention is shown to be a significant predictor of Behavior ($\beta = .51, p < .001$), Perceived Behavioral Control is not ($\beta = .18, p = .07$).

Discussion

Our quantitative investigations of graduate students' attitudes towards team research yield meaningful results that are worth discussing. First and foremost, the descriptive statistics do not indicate high scholarly productivity among graduate students in terms of collaborative research. Particularly, the data are severely skewed with around two-thirds of students having no co-authored manuscripts during their graduate study. Considering the general turnaround for publishing an academic article, a median of 0 manuscript suggests that a large proportion of graduate students may not have any co-authored publication by the time they graduate. Such low scholarly productivity is barely investigated in the literature, but research on graduate students' development may shed some light on it. Whitley, Oddi, and Terrell (1998) found that factors that influence publication efforts of graduate students include academic requirements, faculty involvement and support, and the ability to self-select the research topic. Other findings echoed Whitley et al. (1998) that graduate students' scholarly productivity may be explained by both program- and personal-level characteristics. For example, Cuthbert and Spark's (2008) Australia-based observation indicates that there is a lack of graduate publication programs, which is partly due to "a lack of clarity in universities about what the outcomes of graduate research education should be" (p. 78); while an early study by Hogan (1986) indicated that both the quality of entering students and the faculty publishing performance are positively correlated with students' publishing performance. Evans (2009) noted that developing a research culture and developing researchers are two inter-related components of developing institutional research capacity. Because this interrelation may be interpreted statistically that individual researchers are nested within their academic institutions, future studies may consider using multilevel models to account for graduate students' scholarly output.

With respect to the theory of planned behavior (TPB), the findings of structural equation modeling partly support our hypotheses. First, in contrast to our hypothesis, graduate students' attitudes towards individual research and team research have a direct, rather than inverse, relationship. This indicates that graduate students may appreciate the values of individual research and team research simultaneously, and that they will not likely shy away from research teams in favor of conducting research individually. In fact, the zero-order correlation between Attitude toward Individual Research and Intention is also significantly positive, indicating that graduate students are more likely to join research teams when they have positive appraisals of individual research. Second, the final TPB model accounts for 49% of the variance in Intention, which appears to be of a higher predictive accuracy than what has been reported (39-42%); (see Armitage & Conner, 2001; Cooke & Sheeran, 2004). However, we must note the significant contributions of the covariates, given that removing these covariates would have reduced the R^2 to 26%. These findings highlight the disparity between master's and doctoral students in terms of their research intensity, as well as a disciplinary effect in determining graduate students' research intentions. Master's students, while perceiving similar levels of pressure to do team research as their doctoral counterparts, demonstrate significantly lower intentions to do so. In terms of the disciplinary effect, we found it to be evident only in Subjective Norm. This finding is not surprising given that each discipline may have its unique norms in conducting research. As compared with students of education, engineering students appear to perceive higher social pressure to join research teams, proba-

bly due to that they are more used to the scene of large-scale collaborative research (Austin, 2002). On the other hand, students' appraisals and intentions about team research do not seem to differ according to their disciplines. Third, the role of Perceived Behavioral Control in the model is well worth some discussion: while Perceived Behavioral Control positively correlates with Attitude towards Team Research in the model ($r = .53, p < .001$), none of its relationships with Subjective norm, Intention, or Behavior is significant. In other words, graduate students who have positive evaluations about team research will also perceive it easier to do research with teams (i.e., they will be more confident in their capabilities of conducting team research); however, those who perceive higher levels of social pressure to join research teams (e.g., "In my field, people usually conduct research in teams") will not likely be more confident about their capabilities to collaborate with others on research. Fourth, attitude and perceived social pressure do not appear to be equally substantial in predicting Intention. This seems to that students' decisions on how they conduct research are mainly influenced by the norms in their academic programs, rather than their appraisals of collaborative research or the evaluations of their own capabilities. Although Ajzen (1991) argued that adding Perceived Behavioral Control enhances predictive accuracy of the TPB, this does not seem to be the case with team research.

We provide two alternative explanations for the inverse relationship of Perceived Behavioral Control and Intention ($\beta = -.14, p = .26$). First, there may be a suppression effect (Cohen, Cohen, West, & Aiken, 2003) which strengthens the relationship between Perceived Behavioral Control and Intention. We need to note that such a strengthened association is statistically noticeable yet conceptually meaningless (Feng & Wilson, 2007). The second explanation is of a conceptual perspective: low levels of confidence in conducting team research (low Perceived Behavioral Control) may also indicate lack of confidence in general research activities. Many coping models indicate that individuals' perception of stressful situations may influence their coping responses (e.g., support seeking, avoidance; Olf, Langeland, & Gersons, 2005; Renner, Spivak, Kwon, & Schwarzer, 2007; Yeh, Arora, & Wu, 2006). Hence, it may be that graduate students with lower levels of confidence are more likely to find ways such as joining research teams to compensate for their weaknesses. This may also explain why Perceived Behavioral Control is of little contribution in the final TPB model.

Conclusion

Our findings provide implications for graduate programs that are determined to promote graduate students' research. Previous studies have demonstrated the benefits of collaborative research (Hilvers, 2012; Ordóñez-Matamoros, Cozzens, & Garcia, 2010), and graduate programs may work hard to encourage team research. The TPB postulates that, in addition to acknowledging the value of a certain task and expecting positive outcomes of it, one also needs to be confident in his capabilities to successfully perform the task. This does not hold in our analysis because graduate students' intentions to join research teams are not affected by their levels of confidence. This may be good news to program chairs or other decision-makers that perceived difficulties or struggles (e.g., authorship issues, conflicts of ideas) will not likely thwart students' intentions to join research teams. Rather, it is of much importance to create a climate of collaborative research as well as to enhance graduate students' appraisals of such collaborations. In fact, these two may have a reciprocal relationship given their moderate positive correlation. When more research teams are built in the department, particularly when the teams start to produce research, graduate students will likely show higher intentions to join the teams despite that they may not be motivated to start a research project individually. Faculty members need to supervise the teams to bring expertise to novice researchers, and the presence of faculty members also contributes to departmental climate for collaboration (Hilvers, 2012). In order to promote team research among graduate students, it may be particularly helpful to build research team exemplars with effective faculty support.

Several limitations must be noted about this study. First, the TPB instrument has not been used in previous studies, which naturally leads to concerns of its external validity. The internal consistency reliabilities of some factors are barely acceptable, which has possibly impaired the predictive accuracy of the model. The instrument needs further revisions before being utilized for future studies. The score distributions tend to be negatively skewed for most items, indicating that the item thresholds may be too low. We consider a Rasch model (de Ayala, 2009) particularly helpful in identifying this potential issue. Second, given the breakdown of disciplines (primarily education and engineering), our sample may be homogeneous in terms of how they define and conduct research. Although early studies in a particular area may benefit from a homogenous sample for better control of confounding variables, the generalizability of our findings may be limited. Future studies need to include other disciplines such as history, English, and other STEM disciplines which may largely expand our understandings of graduate students' team research. Finally, number of co-authored manuscripts may not be the most accurate measure of behaviors when behavior is defined as the manifest, observable response in a given situation in Ajzen's (1991) model. Because the present study is not longitudinal by nature, we were unable to capture changes in behaviors after we measure participants' intentions, nor could we conduct a qualitative follow-up study to further explore the mechanisms underlying our findings. We collected exiting numbers of publications based on Ajzen's (1991) suggestion that single behavioral observations can be aggregated across times to produce a more broadly representative measure, though a follow-up study to measure their publications in next few years is desirable. Future studies may consider longitudinal designs to overcome this limitation. Furthermore, number of co-authored submissions, though being a relatively objective measure, does not capture other indicators of publishing performance such as workload, individual contribution, order of authorship, or quality of the publication. Some of these indicators may be quantified while others may not be, mixed-methods approaches may also be appropriate for future investigations in this area. Specifically, an explanatory sequential mixed-methods design where quantitative data collection and analysis is followed by qualitative inquiries and interpretations (Creswell & Plano-Clark, 2011) may be particularly meaningful for explaining the theoretical questions reflected in the current study.

Acknowledgement

This research was supported by a grant from the College of Education, Texas Tech University.

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Biographies



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Cite as: Stenstrom, D. M., Curtis, M., & Iyer, R. (2015). The relationship between school/department rankings, student achievements, and student experiences: The case of psychology. *International Journal of Doctoral Studies*, 10, 19-37. Retrieved from <http://ijds.org/Volume10/IJDSv10p019-037Stenstrom0547.pdf>

The Relationship between School/Department Rankings, Student Achievements, and Student Experiences: The Case of Psychology

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Abstract

What predicts academic success during graduate school? What are the experiences of graduate students in terms of happiness, stress level, relationships in the program, and feelings of autonomy/competence? Responses from 3,311 graduate students from all psychological disciplines in the US and Canada were collected to answer questions involving (1) the relationship between student-level variables and department/school rankings (US News & World Report, Carnegie Foundation, National Research Council), (2) the determinants of important student-level variables such as number of publications, posters, and life satisfaction, and (3) examining the variables year-by-year in the program to explain changes over time at different points in the graduate career. Results reveal the degree to which certain aspects of higher ranked departments/schools impact student achievements such as number of publications and teaching experience. The results also reveal a unique year-by-year progression including a consistent decrease of happiness for every year in graduate school. While the findings were collected in psychology, the answers to these questions may resonate with graduate students across disciplines that are experiencing similar forces that characterize the graduate school experience. The results can also inform current conversations about the direction of higher education and the value of the graduate school experience.

Keywords: department rankings, students, publications, happiness, life satisfaction

Introduction

What predicts academic success during graduate school? How does the average student evaluate

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his or her graduate school experience?

The current research started while the authors were in graduate school studying social psychology and wondered about the relative experiences of other graduate students. Through conducting a national survey of psychology graduate students, we sought to quantify aspects of the graduate school experience. We hoped to understand what predicted professional success as well as what pre-

Editor: Holly Sawyer

Submitted: January 17, 2014; Revised: December 14, 2014; Accepted: December 20, 2014

dicted the subjective experience of life in graduate school as students navigate the program year-by-year.

To address these two main focuses (objective academic benchmarks and subjective experience of graduate school), the current paper reports on a survey of 3,311 graduate students from all psychological disciplines that addresses different aspects of individual accomplishments and experiences while in graduate school at each year in the graduate program. To fully understand the influences of these variables, we integrated our survey with the newly released preeminent assessment of department-level rankings from the National Research Council (Assessment of Research Doctoral Programs, n.d.) as well as school-level rankings systems from the Carnegie Classification of Institutions of Higher Education (Carnegie 2005 Edition, n.d.) and the U.S. News and World Report rankings (US News & World Report, 2012). Through integrating all three levels (i.e., student-level variables from our national survey, department-level rankings compiled from faculty variables, and school-level rankings), it is possible to examine previously unaddressed associations and predictors of each level. For example, what is the relationship between individual achievements like publications/posters and psychological needs [autonomy, relationships, competency] (Deci & Ryan, 2000)? Is graduate school meeting the psychological needs of students at different years in the program? What predicts happiness or competence in graduate school? Are students at more prestigious departments or colleges happier and more productive?

More precisely, the current research addresses our two main focuses (objective accomplishments and subjective experiences) by investigating (1) how department/school rankings are associated with these student variables, (2) what predicts these student variables, and (3) examining the student variables year-by-year in the program to explain changes over time and allow the reader to identify comparative benchmarks at different points in the graduate career. There are many potential consumers of these results. First, the answers presented will hopefully help other graduate students understand the factors that broadly affect graduate students achievements and experiences. Second, the data is valuable to institutional and national policy makers in formulating and administering policy for graduate education. Finally, the data allows departments and schools to quantify the effect of rankings, which are a focus of many institutions, in terms of objective student accomplishments and subjective student experiences while in graduate school.

Method

Participants

Participants were 4,162 graduate students (3,311 PhD and 851 MA) in psychology programs in the United States and Canada. The current research focuses on the 3,311 PhD students because the newly released department-level ranking system is restricted to assessment of doctoral programs. The majority of participants were younger than 30 years old ($M = 28.42$, $Mdn = 27.00$, $SD = 5.41$) and female (910 males and 2,387 females). Data was collected between May-June 2007 at the same time that the National Research Council (NRC) department-level ranking system was compiled, and after years of processing the data the NRC ranking system was eventually released to the public in 2011 (National Research Council, 2011). In the original dataset of 4162 respondents, an additional 32 did not indicate program type (MA, PhD) so we opted for a conservative approach of removing them from data analysis since we could not confirm they were PhD students. The data was collected at the end of the academic year in May-June, but an additional 41 completed the survey outside that time frame, trickling in until March of the following year. In order to avoid potential confounds of a few respondents answering the same survey questions months later after they had more time to accumulate achievements (e.g., publications), those respondents were not included in the analysis. Participants were recruited via an email sent to the contact person of each psychology graduate department listed in the APA book "Graduate Study

in Psychology” (American Psychological Association, 2007) and sent directly to the email addresses of graduate students listed on the department websites of programs listed in the same book. The email to the contact person requested that they forward the survey link to all graduate students within their department.

Materials and Procedure

Participants completed a 35-question survey that began with measuring the type of program (masters, PhD), their current year in the program, and area of specialization. Unless otherwise specified below, the response format was on a 0 to 15+ scale. The next set of questions assessed achievements during graduate school: (1) *Publications*: Four questions assessed scholarship according to the total number of publications (published and in press), number of first author publications, second author publications, and third+ author publications; (2) *Publication-related questions*: Two more questions were used to fully understand the role of publications within the field by assessing how many publications were peer reviewed and how many were “in submission”; (3) *Research Activity*: Three questions assessed ongoing research activity according to how many manuscripts in preparation (i.e., not yet submitted for peer review), how many ongoing research projects for which the respondent would be first author, and how many ongoing projects for which the respondent would be second author or more; (4) *Conferences*: Two questions assessed conference related activity of how many conferences attended and how many poster presentations listed on the CV; (5) *Teaching-related Experience*: Two questions assessed teaching-related experience regarding the number of time as a Teaching Assistant and how many times the respondent was the primary instructor.

The next set of questions assessed the perceptions and experiences during graduate school: (1) *Life/Graduate School Satisfaction*: Three questions assessed overall satisfaction with their graduate school and life in general. Responses were on a 7-point scale. The first question was “If you consider your life overall, how satisfied would you say you are nowadays?” with end points of “very unsatisfied” to “very satisfied”. The second question was “How unhappy/happy are you with being in graduate school?” with endpoints of “unhappy” and “happy”. The third question was “How would you rate your overall stress level from being in graduate school?” with endpoints “no stress” and “stress”; (2) *Psychological Need Satisfaction*: Three questions assessed the three basic psychological needs within self-determination theory – relatedness, autonomy, and competency (Deci & Ryan, 2000). Responses were on a 7-point scale from 1 (*disagree*) to 7 (*agree*). The questions were “I have good relationships with the people in my program”, “I am free to make decisions about my work in my program.”, and “I feel competent when doing work in my program.”; (3) *Recommend Graduate School*: A single question asked participants “Would you recommend psychology graduate school to others who are thinking of going to graduate school?” using a 7-point scale from 1 (not at all) to 7 (very much).

The subsequent set of questions assessed graduation plans: (1) *Time to Graduation*: Two questions assessed time to degree completion: “How many total years do you expect it will take you to graduate?”, and “Are you going to graduate at the time you expected to graduate when you started the program?”; (2) *Post-graduate Plans*: Three questions assessed their plans after graduate school: “Do you intend to try and get a job in academia?”, and “Does your advisor expect you to try to get a job in academia” The option choices included (a) no, (b) yes, at PhD granting school with primary focus on research, (c) yes, at PhD granting school which has less focus on research, (d) yes, at Masters granting school, (e) yes, at Liberal arts school, (f) yes, at 2-year school (e.g., Community College), and (g) don’t know. An additional question assessed future employment: “What do you think your chances are of obtaining employment in the type of job you want after graduating from your program?” on 7-point from “very low” to “very high”.

The final set of questions assessed demographics and school-name: (1) *Demographics*: Four questions assessed age, gender, ethnicity, and level of debt. The question about debt asked, “Are you in debt due to graduate school?” with increments of five thousand, starting at \$0 debt, and moving up to \$51K+ of debt; (2) *Name of University*: Finally, participants were asked the name of their university/school which allowed matching of participant responses with the data from the ranking system datasets.

Another set of questions in the survey asked about employment (i.e., have you successfully obtained employment, how many jobs have you applied for within academia and outside of academia). Those questions are not contained in the current analysis as they were reported in another publication (Stenstrom, Curtis, & Iyer, 2013) about how rankings and individual accomplishments predict different types of employment after the PhD program. The two questions in the current paper about intentions for academic employment were dichotomized in Table 1 (at end of paper) since the original seven categories do not permit correlational analysis with the continuous ranking systems. It is also important to point out that the scale range for some questions was 0 to 15+ so it creates an artificial ceiling for responding. Although this has the effect of reducing the effect of outliers when looking at the mean levels in some analysis, it does provide less data than having a completely continuous scale. In terms of the data collection, the current study did not explicitly assess whether the respondents were post-docs, for example, so it is possible some post-docs responded affirmatively to the question asking whether they were in a PhD program and were thus included in the analysis. It is important to point out that all self-report data is susceptible to inaccurate self-reporting or misunderstanding of the questions.

Department-level and School-level Ranking Systems

The National Research Council’s (NRC) Data-Based Assessment of Research-Doctorate Program is a department-level dataset that produced both overall rankings (R-rankings) and dimensional rankings of three specific attributes of departmental characteristics (Research Activity, Student Support and Outcomes, and Diversity). The NRC was formed in 1916 as a research arm of the United States National Academies and is charged with conducting the assessment of doctoral programs in the United States every 10 years (History of National Academies, n.d; National Academies Press, n.d.). Data was collected in Fall 2006 and Spring 2007. After checking the data with the institutions through Fall 2007 data collection concluded Spring 2008. The report states that all data are for the 2005-2006 academic year (Ostriker, Holland, Kuh, & Voytuk, 2011). The revised dataset used in the current paper was released to the public on April 2011 (National Research Council, 2011). The ranking system ranged from 1 to 225, with a lower number representing a better ranked school.

The NRC collected data on individual items of department/faculty attributes (e.g., average number of faculty publications) that were composited into the three dimensional rankings (Research Productivity, Student Support, Diversity), and the dimensional rankings formed part of the basis for the overall weighted rankings. The NRC reported the 5th and 95th Percentile for all the rankings to avoid directly providing a single ranking for a department. Given that there is an immensely high correlation between the 5th and 95th percentile scores within each ranking (r_s ranging between .90 to .98, $ps < .001$), future data analysis for brevity sake will only include the 5th Percentile scores. The NRC reported two overall rankings – R rankings and S ranking. Given the immensely high correlation between the R-rankings and S-rankings ($r_s > .96$, $ps < .001$) and given that those two rankings include the same variables but only provide different weights to the variables, future data analysis for brevity sake will only include the R-Rankings. R-Rankings were chosen over S-Rankings because the former are based upon faculty within the field rating a sample of actual psychology programs. Detailed information about how each ranking was col-

lected and processed can be found on the NRC website (Assessment of Research Doctoral Programs, n.d.).

The school-level datasets also contained a ranking system where a lower number represents a better ranked school. The Carnegie Classification of Institutions of Higher Education data (Carnegie) contains the revised classification based upon an updated ranking system in which PhD graduate programs are placed into “Very High Research Activity”, “High Research Activity”, and “Research Universities”. The Carnegie Foundation compiles their dataset by ranking every degree-granting college and university in the United States (Carnegie Foundation, n.d.). The data was collected in 2003 and 2004 (Carnegie 2005 Edition, n.d.). The other school-level dataset, the U.S. News and World Report (US News) data was collected from that organizations website in 2012 (US News & World Report, 2012). The U.S. News and World reports’ school-level rankings are perhaps the most prominent numerical indicators of school reputation and are often cited by university administrators (Ehrenberg, 2002).

The ranking systems (department-level and school-level) were integrated with our national survey of graduate students by matching school name and program-relevant information provided by the respondents in all four datasets. The matching employed a conservative approach of checking for multiple schools by the same name and only matching when no ambiguity existed, such as in cases where multiple schools with similar abbreviations exist (e.g., U of C is not enough information to determine the exact school) or where school-types in the Carnegie data did not match with the information provided by the respondents (e.g., Carnegie data listed the school as not PhD granting). Given that the NRC data provided departmental data at the level of individual programs, we also matched at the departmental level for the NRC data according to the question in our survey about the respondent’s area (e.g., social, clinical, developmental). To take a conservative approach, we matched for each respondent only if the NRC listing was unambiguous. For example, the NRC data is not a complete list of each program within each department and the respondents sometimes provided incomplete school names (e.g., U of C), so we checked for multiple schools by the same name, multiple areas overlapping within a department (e.g., the respondent indicated a developmental area but the department had developmental focus in multiple programs), multiple psychology departments within the school, and multiple campuses within the university each with a psychology department. Our goal was to avoid noise in the data to produce more accurate findings.

Results and Discussion

The purpose of the paper is to investigate two sets of variables from our national survey: academic accomplishments and subjective experiences while in graduate school. The findings are organized around (1) examining the relationship between those two sets of student variables and the rankings (department-level, school-level), (2) identifying the determinants of those two sets of outcome variables using multiple regression, and (3) examining the outcome variables year-by-year in the program to explain changes over time at different points in the graduate career.

Student Variables and the Department/School Rankings

Ranking and accomplishments

Do higher ranked departments/schools have more accomplished students? The answer is yes, but only to a small degree. Table 1 (at end of paper) reports the associations between department rankings, school rankings, and the variables from our graduate student survey. The rankings are associated with more total publications from students, higher number of in-preparation and ongoing projects, more posters, and almost every benchmark of academic success, but the association falls only within Cohen’s benchmarks for medium to small effects (Cohen, 1988). Surprisingly,

the relationship is *positive* for teaching experience as the primary instructor of a course. As department rankings improve (so lower number since rankings are 1 to 225) the number of times as the primary instructor also goes lower ($r = .15$).

Given the large sample sizes (i.e., 1,767 for NRC variables, 2,372 for Carnegie data, 2324 for US News data) it is not surprising so many relationships are significant in Table 1. What is notable is the lack of significance for the Diversity dimension. The generally nonexistent relationship between the Diversity dimension and the research variables (publications, publication-related questions, research activity) may imply a very positive outcome that research productivity is not associated with inequality when it comes to Diversity. The fact that the Student Support dimension is significant implies that providing student support does in fact help with research accomplishments. Later analysis will identify the predictive power of each dimension and tease apart which particular aspects of department and faculty characteristics impact student scholarship and experiences.

Rankings and subjective experiences

Do higher ranked departments/schools have more satisfied students? Table 1 shows that of all the experience-related variables, the only consistent relationship is with happiness with graduate school and autonomy. Higher ranked departments are not associated with more life satisfaction, or having good relationships with people in the program, or feeling competent. In other words, the average student at a better ranked program has more publications (as the previous analysis revealed) and higher feelings of autonomy and happiness with graduate school, but not feelings of competence, relatedness, or overall life satisfaction.

Gender effects

As seen in Table 1, there is a weak but significant relationship between gender and certain dimensional rankings. For the overall ranking systems (R-Ranking, Carnegie, US News), however, there are weak and non-significant associations with gender. To more fully understand the role of gender we conducted a correlation analysis between gender and the other items in our survey and found a generally weak gender effect for every achievement-related question (except for third author+ publications and number of conferences). For example, females had significantly less total publications ($r = -.08, p < .001$), posters ($r = -.03, p = .08$), teaching assistantships ($r = -.05, p < .01$), and number of times as the primary instructor of a course ($r = -.05, p < .01$). The results become stronger when examining first-author benchmarks, such as fewer first author publications ($r = -.13, p < .001$) and fewer ongoing projects at first author ($r = -.13, p < .001$). Similarly, all the life satisfaction and psychological needs satisfaction items showed significant effects. Females reported feeling less happiness with graduate school ($r = -.06, p < .001$), overall life satisfaction ($r = -.04, p = .02$), autonomy ($r = -.08, p < .001$), and competence ($r = -.10, p < .001$), while at the same time feeling more stress ($r = .16, p < .001$) and more positive relationships with people in the program ($r = .06, p < .01$). At the same time, males and females felt similarly about recommending graduate school ($r = .02, p = .32$) and their perceptions of obtaining their preferred employment ($r = -.02, p = .42$).

Identifying the Determinants of the Student Variables

Number of publications

Given the emphasis within the research community on number of publications, what predicts having more of them? Although each ranking system separately was associated with total number of publications in the prior analysis, after controlling for each other it is only the department rankings that matters ($\beta = -.15, p < .001$ for NRC R-ranking), with school rankings having no effect (β

= .01, $p = .83$ for US News; $\beta = -.02$, $p = .61$ for Carnegie) with overall Adjusted R^2 of .02 ($F(3, 1745) = 13.58$, $p < .001$). An undergraduate student currently in the midst of deciding which graduate program to attend who desires publications while in the program may want to consider that a department with a good reputation within an otherwise not-well ranked school may be more beneficial than attending a school solely with a reputable name.

To more fully understand the predictors of publications, multivariate regression analysis is reported in Table 2 (at end of paper) using three blocks of predictors: student achievements, rankings, and student experience variables (satisfaction/needs). For the student achievement variables we included the most relevant student accomplishments possible (e.g., first-author publications could not be included since it formed partial basis for total-publications). For the ranking variables we included all three rankings systems but used the dimensional ranks of the NRC data instead of the overall R-Rankings since the dimensional rankings (Research Activity, Student Support, Diversity) form the basis for compositing the overall R-ranking and thus tap the same underlying constructs, while at the same time the three dimensions also provide more detailed information about the potential predictive power of each of three separate aspects of department attributes. We conducted the analysis through hierarchical regression to identify if each block provided any additional value while also competing each against each other to identify each unique predictive effect. Given the large number of variables in Table 2, only the significant effects are provided to help the reader parse the breadth of the data. As seen in Table 2, only particular aspects of the department and faculty-level characteristics impact total number of publications, including a surprising association of *less* happiness for more total publications.

Although at first blush these results may seem counterintuitive, comparing to the regression analysis for “number of times as primary instructor” reveals a picture of the graduate student lifestyle. First, the significant NRC dimensions are positively associated with teaching experience but negatively associated with publications, indicating that total publications is associated with better ranked programs but more teaching experience is associated with worse ranked programs. Second, in terms of the Research Productivity dimension, a follow-up regression analysis using the four individual attributes of that dimension found that a lower “percent of faculty grants” was associated with a lower number of student publications but higher number of times as a primary instructor. The Research Productivity dimension composed four individual items. Total publications was related to average number of publications per allocated faculty member ($\beta = .10$, $p < .001$) and percent of faculty with grants ($\beta = .09$, $p < .001$), but not related to average citations per publication or awards per allocated faculty member, with overall Adjusted R^2 of .03 ($F(4, 1792) = 13.76$, $p < .001$). Being the primary instructor was related to all attributes ($\beta = .07$, $p = .02$ for publications; $\beta = -.12$, $p < .001$ for citations; $\beta = -.11$, $p < .001$ for grants) except for awards ($\beta = -.01$, $p = .82$ for awards), with overall Adjusted R^2 of .03 ($F(4, 1766) = 13.21$, $p < .001$). Lack of support may force some students to seek outside financial employment. If so, how do the time restraints of teaching courses impact productivity. The answer is not at all.

As seen in Table 2 there is a modest association between being a primary instructor and publication-related accomplishments, such as in-submission, in-preparation, and posters; although that may be explained by the underlying mechanism of a hardworking and committed student. Third, both research productive (total publications) and teaching productive (number of times as primary instructor) students report having less happiness with the program. Why are they less happy with the program if they have more publications and other benchmarks of academic success? Interestingly, only the teaching productive are associated with more overall life satisfaction. They also experience less positive relationships with people in the program. The students who are teaching may experience greater overall life satisfaction but the cost may be fewer connections to people in the department.

Predicting rankings

The ranking systems were compiled from the departmental and faculty characteristics. Can student achievements or student satisfaction variables predict a high ranked program? As seen in the first few columns of Table 2, neither the block of student achievement variables nor the block of satisfaction variables explained much variance of the ranking systems (Adjusted R^2 of .06, and .00). Although one would have hoped that a highly ranked department is dependent upon student achievements and experiences, there was not much predictive power of the student variables. That said, some variables did emerge as predictors, notably publications and autonomy for the department-level (NRC) ranking system. Strangely, there were a few *positive* predictors, such as number of times as primary instructor and competency, indicating that better ranked departments fared worse on those variables. However, to be fair, the items composing the NRC rankings are not necessarily intended to capture the student-level experience. It would be helpful for the field (and for students) if there was a ranking system based upon the variables they desire in a program such as research productivity, teaching productivity, and positive student experiences.

Predicting student experiences and satisfaction variables

Previously we analyzed what predicts student achievements, such as total number of publications, but what is associated with whether they actually like graduate school or feel competent? The answers may have utility not only for prospective and current students but also for administrators and faculty interested in retention and program improvement. As a concise summary of the data for the six satisfaction variables, the results from Table 2 reveal that achievements and rankings are contributing little to the quality of the students' experiences.

As an example, publications are predicting more competence but not overall life satisfaction, stress, relationships, or autonomy. Even more striking is how few significant relationships emerge for the ranking systems. A better ranked department or school has little to no bearing on the students' experiences at that department/school. This is surprising given that the variables used to compose the NRC dimensional ranks, for example, are variables that would be expected to impact student happiness and stress, such as percent of faculty with grants, number of publications per faculty, and percent of first year students with full financial support (see Assessment of Research Doctoral Programs (n.d.), which provides detailed information on the NRC website about how each individual item composing the dimensional rankings was collected and processed).

What is associated with happiness and stress during graduate school? In terms of stress, the answer is not publications, posters, teaching experience, or any of the other achievement questions. Instead, stress is associated with less competency and autonomy. In other words, it is not the objective benchmarks of success that are associated with stress, but the perception of academic expertise. Similarly, the strongest predictors of happiness with graduate school are the other satisfaction variables, not rankings or academic accomplishments.

The same finding emerges for recommending a graduate school. The strongest predictor of recommending a graduate school was happiness and the satisfaction variables related to the three psychological needs (relationships, autonomy, competency). The implication is that from the student's perspective, recommending their program to another is based upon the day-to-day aspects of good relationships, autonomy, and feelings of competence, not the reputation of the program or their own achievements such as publications and posters.

The strongest predictor of employment chances was also a set of satisfaction variables. To provide context for this finding, Table 1 revealed an interesting result that department rankings were *positively* associated with employment chances, indicating that worse ranked programs are associated with perceiving a greater chance of preferred employment. Table 2 now shows that feeling happy and competent is associated more strongly with employment chances than having actual

publications. That may be denial, especially given the way hiring committees evaluate applicants based upon publications rather than their perceptions of themselves.

Mediational models and publications

Although the number of publications is not directly influencing many of the variables in Table 2, it does predict competency, and competency is strongly associated with the other variables, thus suggesting a mediational model. Using the Sobel test macro by Preacher and Hayes (2004), we tested that mediational model of publications influencing the other variables through competency. For example, although total publications was not significant in Table 2 for recommending graduate school, it does influence recommending graduate school through feelings of competency (Publications → Competency → Recommend Graduate School) with a significant Sobel test of mediation ($z = 9.28, p < .001$). The same model also occurred for expected chances of employment (Publications → Competency → Employment Chances), $z = 9.06, p < .001$. Using the other satisfaction variables as the mediators (autonomy, life satisfaction, happiness, stress) produces similarly significant results ($ps < .001$; but n.s. for “good relationships”). In other words, it appears the satisfaction variables could be the process by which total number of publications influences perceptions of employment and recommending graduate school.

Examining the Student Variables Year-by-Year

Average student accomplishments

What are the average student accomplishments across the graduate school experience? Table 3 (at end of paper) provides data about how the typical graduate student performs at each year in the program. Part of the purpose for conducting the current research was the authors' curiosity in how they compared to their similarly situated peers. Given the wealth of data it's not possible to statistically present every possible combination of analyses, and different readers may be particularly interested in different variables and yearly comparisons, so the inclusion of the specific information in the tables allows the reader to calculate their preferred pairwise comparison. D. B. Wilson, (2011) provides a free online spreadsheet for calculating comparisons (significance and effect size) between any two data points by using the summary statistics provided in the tables. A few important results are worth highlighting.

For example, number of publications rises to a peak at year 6 and then tappers off in year 7 and 8. Line graphs are provided instead of bar graphs since they allow the reader to see progression over time, which is the intended purpose behind analyzing data according to year in the program. As seen in Figure 1, there is an inverted U-shape that peaks at year 6 for total publications and first author publications. Why? It is possible that students with greater productivity procure employment in year 6, resulting in students left in the program with less productivity. Or, maybe students with low productivity remain in the program for more years to attain their expected level of accomplishments. Do the remaining students ever reach that preferred level of increased productivity? As a whole, they do not. Figure 1 shows a steady decline. However, given that variation within each year increases year-by-year, there is reason to believe that some advanced graduate students do increase productivity. Finally, given the leading emphasis on publications within the field, the mean, median, and mode levels were calculated for the total number of publications in Table 3, since the mean is the average level of publications, the median is resistant to an outlier number of publications, and the mode represents the true majority of people for sake of comparison. Notice that zero publications is the mode for many of the years.

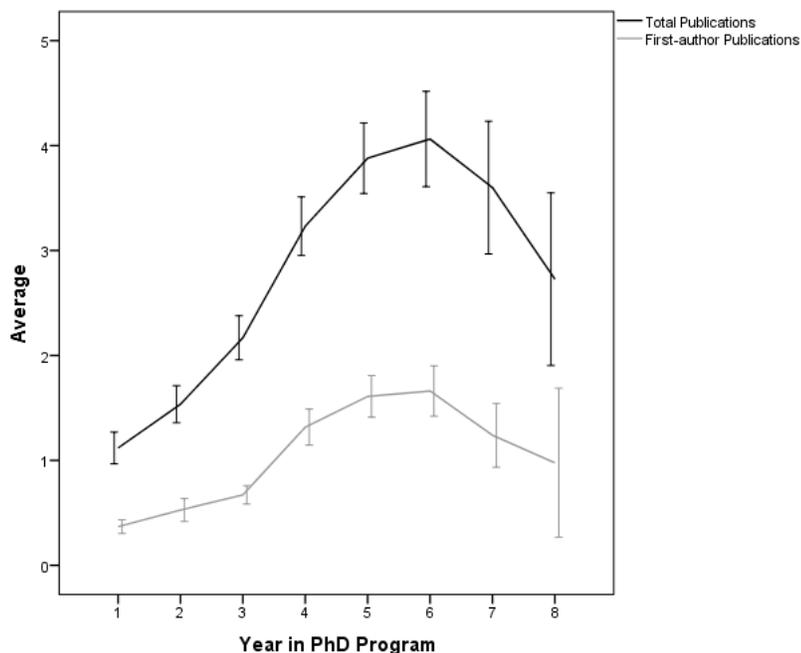


Figure 1: Line graphs with 95% confidence intervals for “Total Publications” and “First Author Publications”

Stress in graduate school

Does stress in graduate school increase or decrease over time? The answer is neither. The stress is constant. As you can see from Figure 2, which shows year-by-year progression, PhD students are stressed at the same level throughout their graduate career. There is more variation in the stress level as the number of the years in the program increases, and yet the average stress level of first year students is equivalent to the stress level of advanced graduate students. Does this imply that graduate school is uniformly stressful from day one, or that graduate students learn to adjust but the burdens placed upon them by graduate school is ever increasing? The second notable finding from Figure 2 is that overall life satisfaction is also relatively uniform as students progress through their program. Is being in graduate school, irrespective of the year in the program, contributing toward a general sense of accomplishment and satisfaction? If so, that accomplishment and satisfaction is not paralleling a sense of happiness with the program. The third finding from Figure 2 is that although all three variables start at the identical place at the beginning of the program, happiness decreases year-by-year for every year in the program. PhD students start their graduate careers in the top part of the 7-point scale, and then they gradually become unhappier with graduate school, ending their graduate career in the bottom part of the 7-point scale. The biggest plunge in happiness occurs after year 6 which may suggest the same underlying cause for the inverted U-shape found for publications. Are PhD programs destroying people’s happiness?

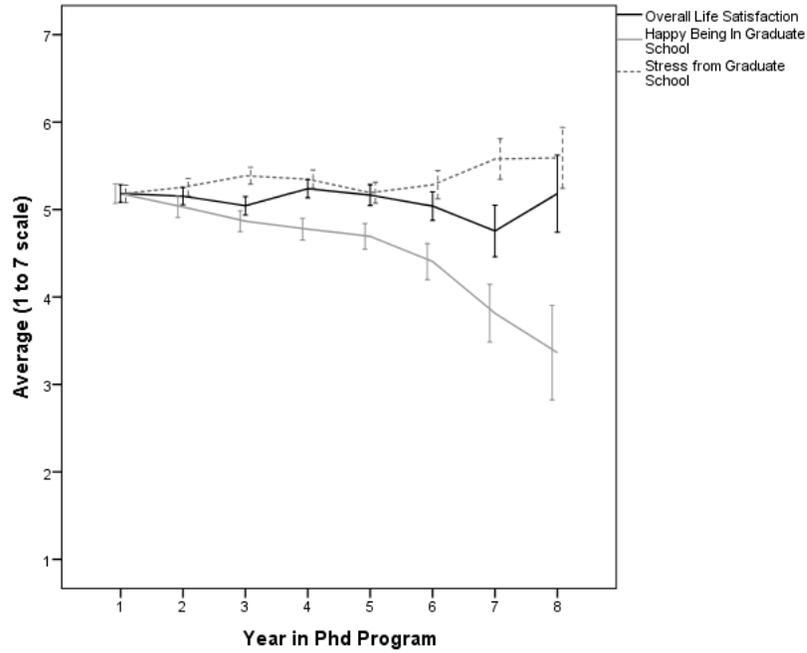


Figure 2: Line graphs with 95% confidence intervals for “Overall Life Satisfaction”, “Happiness Being in Graduate School”, and “Stress from Graduate School”

Student needs

How does graduate school meet student needs? Figure 3 tells an interesting story about how PhD

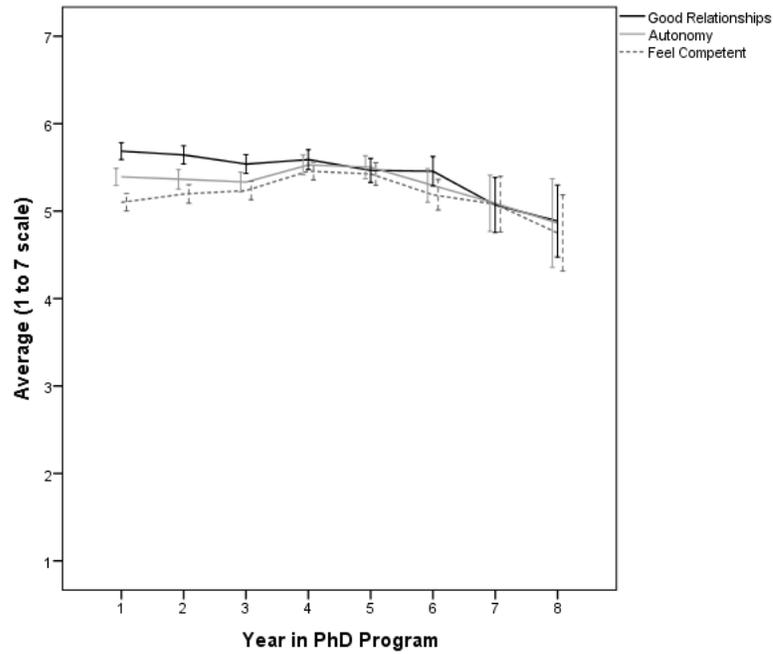


Figure 3: Line graphs with 95% confidence intervals for “Good Relationships”, “Autonomy”, and “Feel Competent”

students experience their graduate careers. The first notable finding is that all three basic needs within self-determination theory begin at different levels as the start of the graduate career in which having good relationships with people in the program exceeds the level of autonomy, which then exceeds the feelings of competency. Second, although the three variables start at different levels at the beginning of the career, they all synch together in the middle of the career around year 4 and remain joined until graduation from the program. It appears having good relationships with people in the program steadily decreases year-by-year. At the same time, competency and autonomy follow somewhat similarly to the inverted U-shape found for research-related benchmarks. A clear positive aspect of the data, however, is that all three remain on average in the top half of the 7-point scale for the entire graduate school experience. That said, it is somewhat disheartening to learn that people report having less and less positive relationships with people in the program every year that passes.

Recommending the program

Do PhD students recommend their program? The answer is less and less over time. As seen in Figure 4, there is a constant decline every year. Notice the trend for “recommending the program” does not match the trends reported earlier for the questions about accomplishments such as publications, projects, and posters.

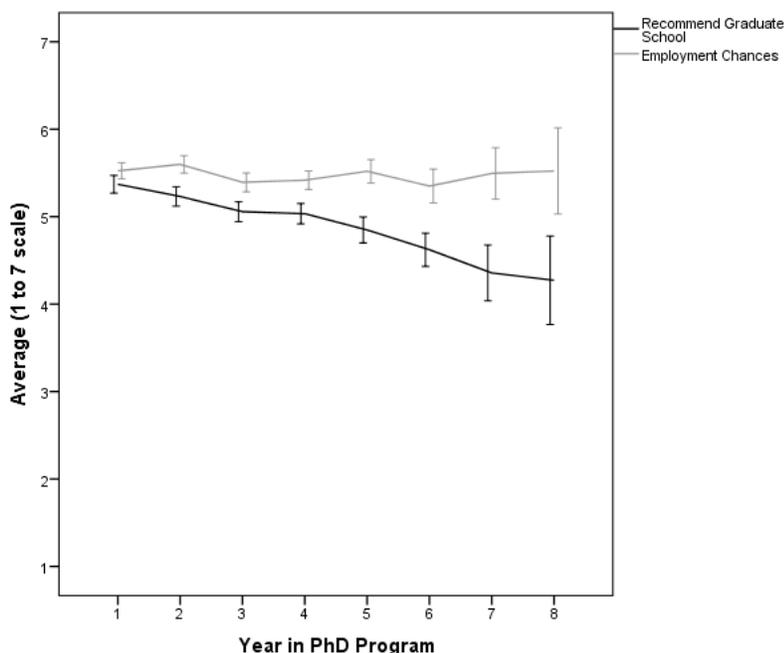


Figure 4: Line graphs with 95% confidence intervals for “Recommend Graduate School” and “Employment Chances”

Chances of employment

What do students feel are their chances of employment? A final finding worth noting from the dataset is the relatively uniform perception at every year in the program that the type of job PhD students want will become a reality. As seen from Figure 4, first year students are no more, or no less likely, than students in later years of the program to believe their ideal job will be obtained. Although the variation is larger as graduation nears in later years of the program, the average PhD

student has a constant perception of obtaining the ideal employment. Since that question specifically asks respondents about employment in the “type of job you want” after graduating, irrespective of the type of job, all graduate students are feeling strongly about obtaining the preferred employment even though their individual accomplishments vary. In other words, even though the student achievements and experiences vary greatly year-by-year (e.g., for publications, posters, teaching assistantships, number of times as primary instructors, happiness with the program, relationships with the people in the program, feelings of autonomy, and feelings of competence), the belief in obtaining employment persists. Plus, not only is the belief constant, but it is constantly high. On a 7-point scale, the trends presented in Figure 4 show that the belief is near the top of the scale.

Conclusions

The findings highlighted in this paper are some of the possible relationships that a reader might be interested in, given the breadth of the data, focusing on two central variables: academic achievement and the subjective student experience. We invite the reader to examine variables that are explored in Table 1-3 but were not highlighted here such as other publication-related questions, research activity, conferences, time to graduation, and post-graduate plans. We chose to highlight the two variables of most interest to prospective and current students during their graduate career, while at the same time focusing the analysis on explaining the associations and determinants of those two sets of variables. It is hoped that this unique integration of datasets can provide empirical insight into forces that may be at work in the lives of students throughout psychology to help current and prospective students, administrators, and faculty supervisors better understand the graduate school experience in order to create needed improvements for student retention and success at the graduate level.

For example, the life of a PhD psychology graduate student is marked by a unique combination of three broad trends in the data: (1) a strong inverted U-shaped relationship for publications, with a similar but weaker relationship for feelings of competency autonomy, (2) relatively flat but high levels of stress, life satisfaction, and employment chances, and (3) generally diminishing levels of happiness with graduate school, recommending graduate school, and having good relationships with people in the program. It appears that students do better to a peak (e.g., publications, competency, autonomy) but feel worse (e.g., lower happiness, less recommending the program, lower perceptions of good relationships with people in the program). And yet, overall life satisfaction is constant (and high). At the same time, the regression analysis revealed the individual determinants of both the objective achievement variables and the subjective experience variables, with interestingly only a weak and generally nonexistent relationship between the two. The relationship between department rankings and the student variables, on the other hand, depended upon the type of ranking, with the most consistent relationships for the Research Activity and Diversity dimensions, but less so for the Student Support dimensions. However, the nature of those relationships varied in valence depending upon the type of student-level outcome variable, with both positive and negative relationships to department/school rankings.

Limitations and Implications for Future Research

As shown by the complex interrelationships amongst the department-level and student-level variables it may be important for the field to re-evaluate the PhD educational experience in a way that fosters the type of achievements and student experiences that are central to graduate students. Ideally, mechanisms should be developed at the program level that takes into account each unique predictor of these outcome variables (Research Activity, Diversity, Student Support, publications, teaching experience, autonomy, competency, etc.) to promote training improvements organized around year-by-year progress and growth. Moreover, given that the student-level variables had no

predictive power for the ranking systems, developing a new ranking system of departments based upon the variables important to students would be a useful benefit to the PhD application process. A valuable endeavor may also entail an annual or decadal survey of these variables to identify the multifaceted nature of the graduate school experience across the history of the field.

The current research was conducted on psychology graduate students. The forces that work on the “average” student within or across disciplines may differ from the forces that may characterize any one individual graduate student’s experience. Still, from our anecdotal experience with graduate students in other fields, similar forces work across disciplines. Indeed, the experience of “doing better, but feeling worse” is not limited to psychology or even to graduate school, but may be a symptom of any environment where ever higher levels of achievement are demanded (e.g. see Barry Schwartz’s *The Paradox of Choice*). Similarly, the faculty and staff who are responsible for the development of graduate students across disciplines likely have similar questions about the effect of school reputation, department reputation, and department policies, with respect to student achievement and experience. The current research can by no means definitively answer these questions across all disciplines, but, as some of the first quantitative work in this area, it can inform current conversations about the direction of higher education and the value of the graduate school experience.

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Table 1: Rankings and Survey Items

	Department-level				School-Level	
	Overall	Three Dimensional Rankings		Carnegie	USNews	
	R-Ranks	Research Activity	Student Support	Updated System	2012 Rankings	
Publications	Total Publications	-0.15***	-0.17***	-0.08***	-0.14***	-0.13***
	First Author	-0.15***	-0.17***	-0.10***	-0.12***	-0.12***
	Second Author	-0.09***	-0.11***	-0.04	-0.12***	-0.09***
	Third+ Author	-0.09***	-0.10***	-0.04	-0.06**	-0.06**
Publication-related questions	How many Peer-Reviewed	-0.14***	-0.16***	-0.06*	-0.12***	-0.10***
	How many "In Submission"	-0.11***	-0.11***	-0.06**	-0.11***	-0.10***
	Manuscripts "In Preparation"	-0.12***	-0.13***	-0.07**	-0.14***	-0.13***
Research Activity	Ongoing Projects First Author	-0.15***	-0.16***	-0.10***	-0.17***	-0.17***
	Ongoing Projects Second+	.00	.01	-0.02	-0.06**	-0.03
Conferences	Conferences	-0.10***	-0.11***	-0.04	-0.11***	-0.08***
	Posters	-0.06*	-0.06*	-0.05*	-0.08***	-0.03
Teaching-related Experience	Teaching Assistantships	-0.06*	-0.06*	-0.08***	-0.13***	-0.12***
	Primary Instructor	.15***	.14***	.09***	-0.06**	.19***
Overall Satisfaction	Life Satisfaction	-0.03	-0.02	.00	.03	.00
	Happy Being in GradSchool	-0.07**	-0.06**	-0.02	-0.01	-0.05*
	Stress from GradSchool	.04	.03	.05*	.05*	.07**
Specific Psychological Needs Satisfaction	Good Relationships	-0.02	-0.02	.01	-0.02	-0.02
	Autonomy	-0.13***	-0.11***	-0.04	-0.10***	-0.10***
	Feel Competent	.01	.02	.02	.00	.03
Recommend School	-0.01	.00	-0.01	.00	-0.01	
Time to Graduation	Total Years to Graduate	-0.08**	-0.10***	.04	-0.08***	-0.03
	Graduate on Time (d)	-0.09***	-0.07**	-0.07*	-0.03	-0.04
Postgraduate Plans	You Intend Academia (d)	-0.22***	-0.23***	-0.09***	-0.15***	-0.19***
	Advisor Intend Academia (d)	-0.31***	-0.32***	-0.14***	-0.21***	-0.25***
	Chances of Employment	.07**	.07**	.04	.02	.04
Demographics	Age	.04	.03	.02	.06**	.08***
	Gender (d)	.03	.03	.05*	.02	.02
	Debt	.23***	.23***	.13***	.21***	.25***

Note: * p < .05, ** p < .01, *** p < .001. Items with (d) indicate dichotomous variables (1=no, 2=yes; 1=male, 2=female)

Table 2: Multiple regression

	NRC-Ranking	USNews	Total Publications	Primary Instructor	Life Satisfaction	Happy in GradSchool	Stress from GradSchool	Relationships	Autonomy	Competent	Recommend chance of GradSchool employment	Expected
Student Achievements	Total Publications	-.07**	-----			-.05*		-.05t		.10***		.06*
	"In Submission"		.24***	.06*								
	"In Preparation"	-.05t	.13***	.06*						.06*		
	Ongoing Projects		-.12***	-.10***					.05t			-.05t
	Posters		.33***	.13***						.04t		
	Teaching Assistantships		-.04t	.16***					.07**			-.06*
	Primary Instructor	.05**	.11***	-----		.05*		-.06**	-.04t			-.06**
	NRC - Research Activity	-----	.33***	.05t		.04t				.07*		.07*
	NRC - Student Support	-----	.24***									
	NRC - Diversity	-----	-.10***	.08***	-.05*		.05**					
Rankings	US News Ranking	.41***	-----	.20***							.05t	
	Carnegie Ranking	.31***	.39***	-.07*								
	Life Satisfaction		.07*		-----	.44***	-.08**	.08**		.11***		.12***
	Happy with GradSchool		-.07*	-.10**	.53***	-----	-.16***	.24***	.21***	.22***	.45***	.10**
Satisfaction and Need Variables	Stress from GradSchool				-.05**	-.09***	-----	.12***	-.12***	-.06***		
	Good Relationships		-.04t	-.05*	.06**	.15***	.13***	-----	.18***	.07**	.07**	.07**
	Autonomy	-.06**				.15***	-.15***	.20***	-----	.23***	.06*	
	Feel Competent	.05*	.11***		.09***	.17***	-.08**	.08**	.24***	-----	.12***	.22***
	Overall Model (F-value)	89.04***	99.81***	42.41***	14.31***	64.39***	98.10**	12.43***	24.15***	42.76***	46.95***	53.34***
Adjusted R ² of Achievements	.06	.07	.28	.07	.02	.04	.01	.01	.03	.07	.02	.02
Adjusted R ² of Rankings	.39	.45	.02	.05	.00	.00	.00	.00	.00	.00	.00	.00
Adjusted R ² of Satisfaction	.00	.00	.01	.01	.38	.47	.10	.19	.27	.25	.35	.13

Note: † p < .09, * p < .05, ** p < .01, *** p < .001. Total number of ongoing projects was created by adding the two questions about ongoing projects (first author, second author +). The lines through the predictors indicate that those variables were not entered into the analysis since they were part of the outcome variable.

Table 3: Survey item by year in PhD programs

	n	Years in PhD Program										F-value / chi-square	p-value
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8+				
Individual Accomplishments		653	613	618	563	449	256	102	45				
Total Publications	mean	1.04	1.45	2.04	3.13	3.83	4.03	3.53	2.67			70.62	<.001
	median	0	1	1	2	3	3	3	2				
	mode	0	0	0	0	2	1	0	2				
	(SD)	(1.84)	(2.12)	(2.55)	(3.32)	(3.61)	(3.68)	(3.19)	(2.71)				
First Author Publications	mean	.37	.53	.68	1.32	1.61	1.66	1.24	.98			43.24	<.001
	(SD)	(.82)	(1.33)	(1.08)	(2.05)	(2.13)	(1.95)	(1.53)	(2.34)				
Second Author Publications	mean	.36	.47	.74	1.05	1.17	1.18	1.22	.89			27.16	<.001
	(SD)	(.84)	(.99)	(1.25)	(1.52)	(1.59)	(1.68)	(1.48)	(1.35)				
Third Author+ Publications	mean	.43	.62	.85	1.08	1.33	1.35	1.34	1.10			21.74	<.001
	(SD)	(.99)	(1.25)	(1.37)	(1.64)	(1.97)	(1.86)	(1.61)	(1.36)				
Peer-Reviewed Publications	mean	.77	1.02	1.57	2.31	2.93	3.09	2.56	1.66			55.42	<.001
	(SD)	(1.54)	(1.73)	(2.02)	(2.71)	(3.22)	(3.26)	(2.64)	(2.11)				
How many "In Submission"	mean	.31	.44	.63	.88	.93	.85	.68	.25			22.60	<.001
	(SD)	(.67)	(1.01)	(.96)	(1.31)	(1.22)	(1.19)	(1.29)	(.62)				
How many "In Preparation"	mean	.94	1.37	1.58	1.84	1.99	1.78	1.43	1.16			28.05	<.001
	(SD)	(1.01)	(1.43)	(1.35)	(1.70)	(1.68)	(1.47)	(1.35)	(1.31)				
Ongoing Research as First Author	mean	1.45	1.80	1.87	2.02	2.07	1.85	1.58	1.55			13.10	<.001
	(SD)	(1.03)	(1.32)	(1.18)	(1.50)	(1.41)	(1.22)	(1.03)	(1.19)				
Ongoing Research Second+ Author	mean	1.30	1.44	1.43	1.27	1.23	1.03	.89	.59			6.93	<.001
	(SD)	(1.12)	(1.49)	(1.30)	(1.34)	(1.29)	(1.12)	(1.14)	(.87)				
Number of Conferences Attended	mean	2.42	3.30	4.31	5.38	6.38	6.61	6.96	7.07			113.34	<.001
	(SD)	(2.41)	(2.80)	(3.07)	(3.29)	(3.55)	(3.78)	(4.12)	(4.65)				
Number of Posters at Conferences	mean	2.46	3.41	4.63	5.76	7.07	7.28	5.50	4.50			80.03	<.001
	(SD)	(2.99)	(3.35)	(4.05)	(4.49)	(4.78)	(4.93)	(4.75)	(4.39)				
Number of times as TA	mean	1.62	2.02	3.00	3.66	4.27	5.29	5.04	4.93			69.65	<.001
	(SD)	(2.02)	(2.05)	(3.07)	(3.44)	(3.64)	(4.39)	(4.52)	(4.69)				
Number of times Primary Instructor	mean	.25	.43	.86	1.53	2.19	2.87	3.80	3.07			84.25	<.001
	(SD)	(1.22)	(1.01)	(1.75)	(2.22)	(3.13)	(3.49)	(4.56)	(4.72)				

	Years in PhD Program										F-value / chi-square	p-value
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8+				
Student Experiences	n	653	613	618	563	449	256	102	45			
Life Satisfaction (7-point scale)	mean	5.19	5.16	5.05	5.24	5.16	5.04	4.75	5.18		2.62	.01
	(SD)	(1.31)	(1.24)	(1.34)	(1.25)	(1.29)	(1.32)	(1.50)	(1.45)			
Happy in GradSchool (7-point)	mean	5.18	5.03	4.86	4.77	4.69	4.41	3.81	3.36		22.12	<.001
	(SD)	(1.46)	(1.51)	(1.50)	(1.50)	(1.57)	(1.68)	(1.68)	(1.78)			
Stress level (7-point scale)	mean	5.18	5.25	5.39	5.35	5.19	5.28	5.58	5.59		2.99	.004
	(SD)	(1.30)	(1.26)	(1.23)	(1.26)	(1.27)	(1.30)	(1.18)	(1.15)			
Good Relationships (7-point scale)	mean	5.69	5.64	5.53	5.60	5.47	5.46	5.07	4.89		5.24	<.001
	(SD)	(1.24)	(1.30)	(1.35)	(1.37)	(1.46)	(1.36)	(1.58)	(1.35)			
Autonomy (7-point scale)	mean	5.40	5.37	5.33	5.52	5.50	5.29	5.11	4.86		2.96	.004
	(SD)	(1.27)	(1.42)	(1.43)	(1.37)	(1.41)	(1.54)	(1.63)	(1.67)			
Feel Competent (7-point scale)	mean	5.10	5.20	5.24	5.45	5.43	5.19	5.08	4.75		5.58	<.001
	(SD)	(1.30)	(1.34)	(1.33)	(1.21)	(1.38)	(1.41)	(1.61)	(1.43)			
Recommend GradSchool (7-point)	mean	5.36	5.23	5.06	5.04	4.84	4.62	4.36	4.27		15.59	<.001
	(SD)	(1.33)	(1.39)	(1.43)	(1.39)	(1.58)	(1.53)	(1.62)	(1.66)			
Total Years Expected to Graduate	mean	4.88	4.92	4.94	5.22	5.63	6.16	6.82	7.95		89.68	<.001
	(SD)	(.90)	(.97)	(1.26)	(1.28)	(1.38)	(1.79)	(2.36)	(2.96)			
Going to Graduate at Expected Time	% yes	44.6	60.8	61.7	58.0	46.8	24.7	4.9	4.5		1295.27	<.001
	% no	5.4	11.4	25.5	35.6	50.6	73.7	94.1	93.2			
	% don't know	50.1	27.7	12.8	6.4	2.7	1.6	1.0	2.3			
Intend to get a Job in Academia	% yes	54.9	54.8	54.4	52.5	57.4	52.4	52.0	47.7		51.92	<.001
	% no	18.9	19.2	23.8	26.7	29.1	28.0	25.5	36.4			
	% don't know	26.2	25.9	21.8	20.8	13.5	19.7	22.5	15.9			
Advisor Expect Academic Job	% yes	48.2	52.6	53.4	51.3	55.3	54.9	56.6	50.0		55.06	<.001
	% no	19.1	23.0	24.3	27.5	27.2	28.1	26.3	25.0			
	% don't know	32.6	24.3	22.3	21.2	17.5	17.0	17.2	25.0			
Chances of Employment (7-point)	mean	5.52	5.60	5.39	5.41	5.52	5.35	5.51	5.52		1.77	.09
	(SD)	(1.18)	(1.25)	(1.37)	(1.28)	(1.44)	(1.55)	(1.49)	(1.62)			
Debt	% yes	41.8	49.7	52.6	55.2	57.2	61.0	64.7	72.7		58.13	<.001
	% no	58.2	50.3	47.4	44.8	42.8	39.0	35.3	27.3			

Note: For the two questions about intending an academic job, the "% yes total" includes the sum of the five options (PhD granting with research focus, PhD granting with less research focus, Masters granting, Liberal Arts, 2-year school).

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How Supervisors Perceive PhD Supervision – And How They Practice It

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Abstract

In many Western countries, higher education has experienced a cultural change as a result of increased budgetary constraints, calls for greater accountability, and the greater competition for students. This development has had a profound influence on the working conditions of academic staff and on knowledge production in general at universities. The education of PhD students is no exception. However, little research has been carried out in regard to the implications of these changes. In particular, the way the supervisors think and react has not been explored.

What do supervisors think about educating PhD students in today's university context? And how and to what extent do they modify their practice based on that understanding? This article seeks to qualify, illustrate, and discuss these questions based on an interview study among twelve experienced supervisors at the Faculty of Engineering and Science at Aalborg University in Denmark.

The data show that it has become more complex to be a PhD supervisor. Three knowledge production perspectives are identified, each embracing a specific university agenda: (1) High quality research; (2) Economically viable and efficient research; and (3) Internationally adapted research. Currently, the second perspective is dominant in the understanding and practice of supervisors – to some extent at the expense of the two other agendas. Finally, the consequences of this are discussed.

Keywords: PhD supervision, Practice of PhD supervisors, Knowledge production, Doctoral student education, Working conditions for academic staff.

Introduction

Higher education in many western countries has experienced a change in culture relating from budgetary constraints, calls for greater accountability and competition for students (Schniederjans, 2007). In Europe this change in culture has been spurred by the Bologna process (Bianchetti & Quartiero, 2010) and the associated view of policy makers that higher education institutions are

increasingly viewed as “economic engines” (Sursock & Smidt, 2010, p. 14).

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This development has had a profound influence on the working conditions of academic staff in all areas of their work (Buchanan, Gordon, & Scuck 2008, Meyer, 2012). The training and development of doctoral students is greatly affected by these new trends. In a Danish evaluation report on the current situation for educating and facilitating the

Editor: Nitza Geri

Submitted: June 2, 2014; Revised: January 5, 2015; Accepted: January 9, 2015

careers of young researchers it is stated that each PhD supervisor, on average, takes on more PhD students, while at the same time requirements for completion and productivity are increased (Forsknings- og innovationsstyrelsen, 2011). Also, an increasing proportion of PhD students are from international backgrounds. Another defining factor of the current development is that funding for PhD projects is becoming increasingly more diverse (Forsknings- og innovationsstyrelsen, 2011). PhD students can be fully financed by the university, wholly or partly financed by industry, or by (foreign) scholarships and own funds. In sum, these trends indicate a changing and more complex working environment for the PhD supervisor. Knowledge production linked to the education of PhD students is changing profoundly.

In parallel with the current changes in the PhD supervision area, more manuals are published about PhD supervision addressed to both supervisors and students. Especially in the UK, literature has been published that focuses on how PhD students and their supervisors best manage the research process (Delamont, Atkinson & Parry, 2004; Dunleavy, 2003; Eley & Jennings, 2005; Rugg & Petre, 2004; Taylor & Beasley, 2005). Characteristic of these and similar works is the focus on tools and techniques to improve performance. Other researchers like Handal and Lauvås (2006), Grant (2005), Dysthe (2002), Lindén (1998), and Lee (2008) deal more conceptually with the aim and content of PhD supervision and accordingly rise above a purely practical level. They discuss different models of supervision. What kind of roles can and do supervisors and their students take on in different situations, stages and disciplines – and with what consequences? Several of these contributions, like Grant (2005), Dysthe (2002), and Lee (2008), are based on empirical inquiries into actual supervisor-student relationships. These studies aim to identify different approaches from which we can learn about the perspectives of both the student and the supervisor.

Looking into the supervision literature at large, however, most of the literature addresses the perspective of the PhD student (of which Gardner (2008) is an example), while the perspective of the supervisor is not made a specific subject of study (Jones, 2013; Wichmann-Hansen, Eika, & Mørcke, 2007). Especially, there is a lack of knowledge about how the new working conditions for many supervisors affect the way they look upon supervision and how they consequently carry out supervision, not only as an activity in itself, but as one activity among other academic activities at universities. What do supervisors think about educating PhD students in today's university context? Or to put it more specifically, what is their understanding of the purpose of PhD related knowledge production? And how does this understanding affect their supervisory practice? These are the two questions that will be addressed in this article. The purpose being to investigate what consequences the current trends have for the working conditions of the PhD supervisors and the education of PhD students at large.

The first step will be to address what is understood by knowledge production in a historical university context. This forms the theoretical framework of the article. Following this, an interview study will be introduced and the methodology by which to analyse the results. 12 supervisors at the Faculty for Engineering and Science at Aalborg University in Denmark have been interviewed. The empirical data will present how supervisors ideally understand knowledge production today and how they consequently practice supervision in light of this understanding. How the different modes of knowledge production currently evolve and what kind of challenges they run into, given the working context of universities today, will also be investigated. Finally, the findings will be discussed in light of the existing literature and the consequences for the education of PhD students at large.

Knowledge Production in a Historical University Context

The *raison d'être* of universities is knowledge production and the education of graduates who possess knowledge, competences, and skills. The education of PhD students is a key element in

this connection, and the manner in which the individual supervisor perceives the purpose of PhD education is bound to affect the course of the individual supervisory process. Over time, universities have had different motivations for the production of knowledge, and in the following an outline is presented of the history of knowledge production at universities and thereby the historical evolution in the function and values of universities.

Knowledge production in universities has been on the sociological agenda for quite a while, with the work by Gibbons, Limoges, Nowotny, Schwartzman, Scott, and Trow (1994) marking an important highpoint, as they introduce a new mode of knowledge production based on market demands, different from the traditional knowledge production based on disciplines. Taking a point of departure in this division and inspired by Wenneberg (2001), Barnett (1994, 2011) and Jamison, Christensen, & Botin (2011) it is possible to identify three different perspectives on knowledge production as seen through sociology of education and a historical approach: an academic, a market oriented, and a changing society perspective. The two first perspectives are from Wenneberg (2001), while the last perspective is inspired by Barnett (1994) and Jamison et al. (2011). See Table 1.

Table 1. Three perspectives on knowledge production

	Knowledge production in an academic perspective	Knowledge production in a market perspective	Knowledge production in a changing society perspective
The purpose of the university	To produce true knowledge and to educate graduates who have acquired this knowledge	To produce believable and useful knowledge	To produce believable and useful knowledge for a globalised world
Concept of knowledge	Knowledge as true, justified conviction Production of knowledge is central	Knowledge as a social element Employing knowledge is central	Knowledge as a source of empowerment and change Value-based, contextual exchange of knowledge is central
University as part of society	Universities must produce true knowledge and add to the collective knowledge of society	Universities must take part in creating economic growth and welfare	Universities must create change agents in a world facing global challenges

The classical perspective on universities – the academic – is that universities must produce true knowledge and educate graduates who have acquired this knowledge (Wenneberg, 2001). To produce true knowledge is a goal in and of itself. It is professionalism for the sake of professionalism. Focus is on professional norms and values. How this knowledge is put to use and by whom is not central to this perspective; knowledge and learning is, on the contrary, dominated by theoretical issues and traditional academic virtues (Barnett, 2011). All universities founded earlier than the mid-twentieth century can safely be assumed to be born with this perspective.

Around the mid-twentieth century, a new understanding of science and technology came into being, which gradually affected knowledge production at universities (Jamison et al., 2011, p. 13). The background for this new understanding is to be found in an increased societal need for innovation, and that graduates are able to employ their knowledge through the acquisition of skills and competences – not the least through their role as founders of their own businesses (Bar-

nett, 1994). This new perspective, knowledge production in a market perspective, is centred on profitability, entrepreneurship, and innovation – to make money and to do business. Ideas and inventions lead to the development of new products, which, in the end, generates profit. The usage of the knowledge produced and the dialectic relationship between usage and the production of knowledge plays an increasingly central role at universities (Jamison et al., 2011, p. 14; Wenneberg, 2001, p. 40).

Parallel to this, there is a change in the understanding of what knowledge is and where it is created. The concept of knowledge is widened, and knowledge creation is now possible through the collaboration of universities and businesses. The concept of knowledge thereby enters the domain of social constructivism. Knowledge is no longer true *per se*; it is a product created through a more or less reassuring process (Wenneberg, 2001, p. 41). Universities are transformed from being a self-referent producer of knowledge into one of several actors cooperating to create growth and profit. In this era, university leadership is changed according to “New Public Management”, where leaders are seen more as employees and given extended powers and where state regulation is permeated by the realities of the market (Barnett, 2011). New collaborations, such as science parks, research shared between universities and companies, and university staff working as consultants, can be seen as results of the market perspective. This development is not equally distributed within the universities. Knowledge, ideas, and disciplines carrying profitable perspectives have more opportunities than other subject areas, which do not have the same business appeal, as such different disciplines and faculties increasingly experience different opportunities, with the technical disciplines as the ones with most opportunities.

The third perspective – knowledge production in a changing society perspective – originates in social, popular movements, which have occasionally set the agenda in the western world concerning basic issues in life (Jamison et al., 2011, p. 22). Examples include peace movements, women’s liberation movements, and environmental movements from the sixties and onwards. These movements have attempted to address global democratic, environmental, or discrimination issues and to promote cooperation. Development and cross-disciplinary and cross-cultural exchange of knowledge are central characteristics of knowledge production in this perspective.

The primary characteristic is that knowledge, which is produced and employed, brings real change and improvement, which is directed toward increased equality, networking, democracy, and liberation (Barnett, 1994). This perspective demands involvement and commitment. It focuses on integrity and the development of personality and identity as part of academic discourse.

The three perspectives contain different views on science. How does new knowledge emerge, what is important to notice regarding science and technology, and which role can and should science (and technology) have in society? The two first perspectives, the academic perspective and the market perspective on the production of knowledge, are described by Jamison et al. (2011) as far more dominant discourses in society than the third perspective. At universities, the academic perspective has traditionally been dominant, but is continually facing competition from state regulation with the purpose of increasing the production of graduates and articles and preparing universities for the private sector’s demand for more work- and practice-oriented graduates and research. Jamison et al. (2011) point out that the classical academic perspective often assumes the role of a defensive reactionary protest, whereas the changing society perspective is considered a creative and liberating protest.

It is the intention to relate the theoretical framework above to a specific empirical case, but before that, the case and the design of the interview procedure is presented.

The Empirical Case – Design and Discussion of Method

The empirical material of this article derives from a series of interviews in 2012 among 12 PhD supervisors at two science school programs at the Faculty of Engineering and Science at Aalborg University in Denmark. The purpose of the interview study has been to explore how supervisors experience and handle some of the earlier mentioned challenges to supervision: an increased number of PhD students, a higher percentage of PhD students with an international background, budget constraints, generally shorter deadlines, and more stakeholders with an interest in the results of the PhD projects. The interview study was part of a greater project financed by Aalborg University and the Agency for Competence Development in the State Sector: “Competence Development of the PhD Supervisor in an Intercultural Reality” (Bøgelund, 2011).

The two science school programs have been chosen because both have a lot of international students enrolled, and therefore both are at an advanced stage of transition. The term “International” covers all nationalities except Danish. Both programs contain large groups of Asian and Middle Eastern students. Southern and Eastern European and Indian students are also relatively well-represented. The one program balances between natural and social scientific traditions (Program A), while the other program is rooted in classical natural science (Program B). Program A has only recently been through a transitional process, during which the number of PhD students and the percentage of international students have increased significantly. The transition has taken place over a very short time span of only a few years. Program B started its transition at an earlier time allowing for a more gradual process. The choice of these two programs, thereby, offers the opportunity to look at an ongoing and a finished transitional process – at the same time keeping an eye on the impact resulting from the kind of field in question.

The involved supervisors represent a wide professional spectrum. We have consciously chosen supervisors from different scientific groups. On the one program, the supervisors were chosen on the background of a complete list of supervisors and PhD students according to their field of study. On the other program, supervisors were chosen based on advice from well-informed senior researchers, since a complete list did not exist on this program. All the supervisors have experience with international PhD students and most have or have had more than five PhD students. To a large extent, the interview can be seen as an overview of best practice in its field, given the fact that the interviewed supervisors are among the most experienced professors and associate professors. All in all 12 supervisors have been interviewed, six from each program, 11 males, one female. Seven supervisors are native Danish, three others from western cultures, and the last two are from eastern cultures. All the non-Danish supervisors have been in Denmark 10 years or more. The impacts of national cultures on these non-Danish supervisors were there, although not to an extent that it was possible to discuss it with any certainty or draw conclusions based on it.

Supervisors have been asked about their own practice, the dominant practice in their immediate professional surroundings, attitudes and expectations to PhD students and their own perception of the style of supervision, and their challenges in and experience of supervision – especially the supervision of international PhD students. The analytical framework is inspired by Kolmos’ and Holgaard’s (2007) model for situational supervision, and Argyris’ and Schön’s (1974) concepts of ‘theory-in-use’ and ‘espoused theory’ and may be summed up in Figure 1:

The focus is on the supervisor’s self-image and understandings of own practice, attitudes and expectations, especially of international PhD students. Figure 1 was presented to each supervisor prior to his or her interview in order to establish a common framework for the interview. No further elaboration of the terminology has been offered; thereby supervisors were given the opportunity for an individual approach to the subject. To obtain an in-depth and private situation the interviews have been centred around an individual semi-structured questionnaire founded on the themes of the figure. Some themes have taken priority in individual interviews depending on the

interviewed supervisor. Each interview extended from one to two hours in duration. The interviews were recorded as sound files and a detailed summary of them was made immediately after each interview, by the person who performed the interview. Participants were asked to comment on, and validate quotes which were central to their discussion (Olsen & Pedersen, 1997).

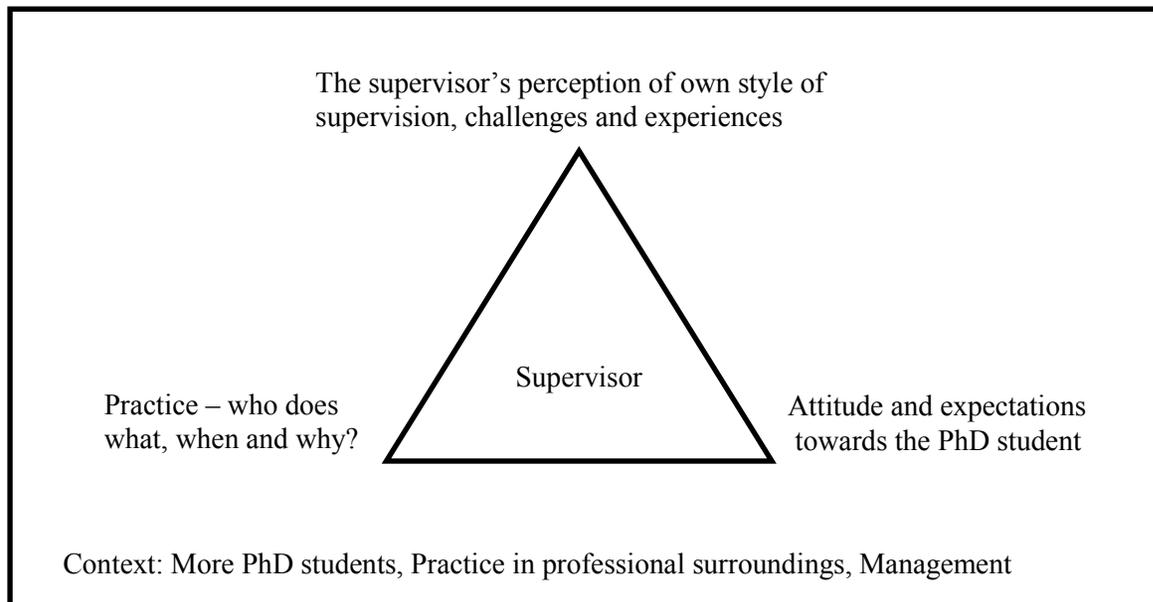


Figure 1: The analytical framework used for the interview study

On the basis of these summaries, two approaches for the analysis were employed. First, the summaries were read through, and intuitively interesting statements were noted. Second, all summaries were broken down and rearranged according to the analytical framework: Statements regarding context were placed together, as were statements regarding style of supervision, challenges, and experience, statements regarding attitudes and expectations of the PhD student, and statements regarding actual practice. Following this, the statements of each supervisor were scrutinised in the light of the three knowledge production perspectives: How did each supervisor perceive the purpose of knowledge production? What concepts of knowledge were advocated for? How should the knowledge produced contribute to society? On the basis of this what was considered important to strive for or do as a supervisor? What was considered unimportant to strive for or do or directly counterproductive? Often statements concerning the value of other ways to perceive or act as supervisor would shed light on the actual supervisor in question. Parallel with this process the similarities and differences between different supervisors and between the two research programs were identified, and thus the context were taken into consideration. Passages relevant for quoting have been transcribed and language corrections made. Quotes in Danish have been translated into English by the author.

In the following three sections the results of the study are presented. First the supervisors' understanding of the purpose with PhD related knowledge production is identified. Then how they actually practice based on that understanding. Finally, an overall picture of where practice is heading and what challenges are experienced by individual supervisors is presented.

Supervisors' Views on Knowledge Production

The supervisors' statements regarding their more or less conscious view on knowledge production are illustrated in Table 2. The theoretical distinction between the three perspectives on knowledge production has been the determining factor in distributing the statements. As far as

possible, the supervisors' own words have been used – this is indicated through the use of italics. As presented here, the perspectives are ideal types in order to underline the three perspectives. Most supervisors make statements which can be related to all three perspectives. None of the supervisors fit perfectly into one perspective or another. Likewise, it is important to stress that all statements made by the supervisors can be related to one of the three perspectives. Table 2 shows what is central to and focused on in each of the perspectives on supervision. It also shows, what is not given priority or considered downright unwanted.

Below, the three perspectives are further illustrated through three quotes from three supervisors who have been inspired by, respectively, the academic, the market oriented, and the changing society perspective. The quotes show what is central to each perspective regarding the supervision of PhD students: professional passion, the usefulness of the PhD student, and the wish for a cultural revolution. First, an academically oriented supervisor:

“I truly enjoy the PhD process and the environment surrounding it. I find it exciting working with people who venture on such journeys of discovery... In particular, I value the foundation of a critical perspective... to watch someone turning into an academic... that they are inspired and excited. ... It is not sufficient for them just to pass through the system... If their passion isn't there, why are we here? ... One of the rewards [of supervision] is sharing that [passion].” (Academically oriented supervisor, V1 A).

Then a market oriented supervisor:

“I like to work with issues from industry, because such issues are real... People in industry typically don't have the time to go into detail with anything... and that's where PhD students come in handy... Now, I am seeing things from a business perspective... The university gets [funding and a connection to the real world.] [PhD students] are a skilled resource. ... it [is] a far better investment for me to spend some of my time on a young, skilled person, making that person do, what I should otherwise have done.” (Market oriented supervisor, V1 B).

And finally a supervisor with a changing society perspective:

“If I get a Danish PhD student, I would welcome that person anytime, but I also think that we have an obligation to other countries... Basically, one must retain that ... in the three to four years one is here [as an international PhD student] it is possible to learn a lot ... The goal is not just the production of researchers, it is also producing people who can be innovative in their systems... We are taking part in a cultural revolution, when we try to make them a little more democratic, a little less prejudiced, a little more Danish. I think that is important to keep in mind.” (Supervisor with a changing society perspective, V2 A).

The statements in the table and the three quotes show the core of each perspective on knowledge production in a university context. The individual supervisor may, as mentioned, contain several facets, which also includes the three quoted supervisors. It is more the mix in the individual supervisor – and across supervisors – which is of interest.

Table 2. Ideal typical view as a PhD supervisor

	Knowledge production in an academic perspective	Knowledge production in a market Perspective	Knowledge production in a changing society perspective
What is important or positive according to this perspective?	<p><i>Good discussions and good cooperation</i></p> <p>Professional <i>prestige</i> in being a PhD supervisor</p> <p><i>Make one's mark on someone</i> and make use of the best people in one's own system</p> <p><i>Contributing academically in a specific field</i> and making an engaged difference</p> <p>Professional <i>passion</i> for the sake of the profession.</p>	<p>Cooperation with industry regarding <i>real</i> problems</p> <p><i>Contributing to local /national growth and welfare</i></p> <p><i>Resource optimization:</i> The production of many PhDs, articles and patents</p> <p>Staying <i>updated</i> and supporting own research with the aid of young people</p> <p>Using PhD supervision for boosting one's CV</p>	<p>Creating positive change in student's homeland</p> <p>Initiating learning <i>for the sake of the students</i></p> <p>Educating <i>fully-fledged academics – critical and self-motivated</i></p> <p><i>The obligation</i> to other countries regarding the spread of <i>problem based learning (PBL), democracy and humanistic ideals</i></p> <p>The <i>pedagogical challenge</i> of helping people through</p>
What is unimportant or negative according to this perspective?	<p>Argumentation based on status</p> <p>Dependent and unmotivated students.</p> <p><i>Deliverables</i> at the cost of theoretical and methodological substance</p> <p>Productivity considerations control the education of PhDs</p> <p><i>Project management</i></p>	<p><i>Cultural adjustment</i> and <i>nursing</i> of the individual PhD student</p> <p>Prioritizing the academic challenge</p> <p>The education of <i>our most difficult students</i> without the allocation of necessary resources</p> <p>Narrow focus on university economy and national <i>brain drain</i></p> <p>A too large percentage of foreigners</p>	<p>Narrow focus on the time it takes to educate PhD students</p> <p>To run things as <i>an assembly line in a factory</i></p> <p>Primarily using PhD students as <i>manpower in the supervisor's own projects</i></p> <p>Looking at PhD students as <i>research assistants</i></p>

Supervisors' Practice in Light of Each Perspective

As Table 3 shows, the individual supervisor's view on knowledge production is of great importance to how he or she practices as a supervisor. It is not without consequence how a person is oriented in relation to the perspectives on knowledge production. It affects the approach, the time spent, and the trust in the individual PhD student. In the table, examples of concrete activities have been added. These are not unique to the single perspective. The same activity may take place within all three perspectives, but with varying importance and meaning assigned to it.

Table 3. Ideal typical practice as a PhD supervisor

	Knowledge production in an academic perspective	Knowledge production in a market perspective	Knowledge production in a changing society perspective
Forum	The academic, professional field	The market oriented, professional field	The social and cultural, professional field
Expectation	Quality, high level and independence	Quality, independence, drive and ability to fit in	Finishing is primarily a question of right support
Focus	Motivation and professional guidance in relation to potential	Producing useful results	Understanding, reflecting on and employing theory in a new context
Role	Professional sparring partner	Project leader	All-round facilitator
Examples of activities	<p>Long, open discussions without suggestions for research questions</p> <p>Critical, theoretical and methodological dialogue</p> <p>Career management through networking</p> <p>Possible promoter in relation to the academic system</p>	<p>Actively controlling – often part of a differentiated supervisory system with two supervisors</p> <p>Recruitment according to quality, attitude and cultural adaptation</p> <p>Personnel management – among others in relation to skill and adaptation</p> <p>Founding of self-motivating communities and mentoring</p>	<p>Actively facilitating and present at the start. Scaffolding exercises and framework</p> <p>Developing a good social and professional environment around the students</p> <p>Employing humour and knowledge of Danish culture</p> <p>Global cultural exchange programs and workshops</p>

The academic perspective is often characterized by a mutual, professional relationship, where meetings with the supervisor are spent in discussion of professional terms and challenges. It is typical to this perspective, that extra-professional matters are not part of the supervisory function. To the extent that social and cultural aspects are touched upon, this often takes place outside formal meetings with the supervisor; during coffee breaks, or travelling to or from conferences, and more on a curious level than as part of the supervisory process. In this perspective, the PhD student is generally met with high expectations regarding commitment and independence. Passion and a professional, critical sense are of the utmost importance. The supervisor may see it as part

of supervising to introduce the PhD student to the supervisor's own network and guide the young person in the direction of professionally interesting research environments and conferences.

A supervisor adhering to the market perspective will primarily see him or herself as a project leader, and the relation to the PhD student may contain certain similarities to the relation between an employer and an employee. It is the supervisor who lays down the framework for the project and who takes control at the beginning of the project. The PhD student is a work resource who is expected to contribute with his or her own creativity and ideas within the given framework.

Therefore recruitment and ongoing personnel management and care are of great importance. Often several PhD students are tied to the same project or field and efforts are directed towards fulfilling market and academic demands according to the terms of the cooperation. Typically, the supervisor will also focus on rationalizing academic and market production. This can be achieved by sharing supervision between several supervisors with different competences. Establishing mentoring where research fellows support newly arrived PhD students or establishing professional environments with widespread use of sparring and co-writing may also be part of the supervisor's practice.

A supervisor adhering to the changing society perspective mainly perceives the reflective education of the PhD student and his or her ability to master change agency as part of the supervisor's tasks. The supervisor does not expect a priori that the PhD student is critical, reflexive, and highly independent. As a consequence, this type of supervisor has far greater interest in the professional, cultural, and social development of the PhD student than supervisors adhering to the two other perspectives, and this supervisor generally supervises persons in their entirety, including formation and identity. This is an aspect which especially comes into play in relation to international PhD students, who are foreign to the pedagogical and democratic practice that Danish universities, not the least Aalborg University, are proponents of. As the aforementioned quote shows, these supervisors are of the opinion that they should contribute to the education of reflective and innovative PhD students, who can make a change in their homeland. Activities supporting this goal are the establishment of a strong professional and social community; introduction to Danish values, modes of operation and Danish language; widespread use of practice exercises, structuring and matching of expectations; and a high degree of availability. In a somewhat larger context, cultural exchange programs, workshops, and cooperative projects on a global scale provide valuable cultural insight and partners for cooperation.

Domination and Challenges of the Different Perspectives

In line with Jamison et al (2011), it is the market perspective which dominates among the twelve interviewed supervisors and the changing society perspective which is least well represented. To some extent, all supervisors represent the academic perspective, even if its importance is negligible in some cases. It is also worth noting, that supervisors who adhere to the academic perspective and the socially restructuring perspective fit well with Jamison et al (2011), regarding how – respectively – they relate to the dominating market principle – reactively or more proactively. The supervisors most strongly inspired by the academic perspective are in opposition to the dominant trend; they are unable to see anything constructive in the present development. The supervisors adhering to the socially restructuring principle are also able to see potential in the present development (see quotes below). The combination of perspectives in supervisors is diverse. Even if the market perspective and the changing society perspective contain opposing principles, there are examples of supervisors who are inspired by both perspectives, typically with one perspective dominating. The perspectives are not mutually exclusive, even if a combination may give rise to internal balancing problems.

When one looks at the supervisors by program, there is a noticeable difference between the two groups of supervisors. Pluralism is more obvious in the science school program, which balances

between natural and social scientific traditions, while the market perspective clearly dominates on the other program, which is rooted in classical natural science. If one looks at the individual research groups, which are tied to the two programs, it is possible to identify entire environments which, primarily, are dominated by a particular perspective or by a particular combination of perspectives. The programs are also influenced by the amount of time available to adjust to their new framework. Frustrations regarding the short time span for transition are noteworthy at program A. It also makes an impression that the role of professional, collegial sparring partner is forced in the direction of the role as project leader. At program B, the role of project leader is more widely accepted – which must, however, be seen in the light of the program's general conditions, with cooperation with the business sector and large scale projects. Everyday practice under the new framework is more well-established at program B. Routines connected with recruiting and making a large team of international and Danish PhD students function as a group are more established.

Supervisors report on different challenges in their supervision depending on which perspective they are most inspired by. Supervisors most inspired by the academic perspective are challenged, when the professional angle is in conflict with other interests or spheres of interest. It could, for instance, be when managerial dispositions threaten to undermine professional quality:

“This foolishness, that a PhD should be granted for writing three articles – that is setting the bar too low ... It is important, that you learn how to combine theoretical and methodological considerations ... At this faculty .. many say... that now PhD students should take part in making “deliverables”, and later we call them theses ... the basics are neglected.” (Supervisor 3, A)

“The concept of a PhD is changing ... everything is about writing publications ... before they spend time constructing an understanding of literature ... and there is an increasing pressure from management, that they should finish on schedule .. [As a supervisor] you have to decide, if you want to stick with old fashioned values or if you want to become more of a project leader ... Like in “I’ve got the money, this is what we must do” ... What fills me is that the system has unrealistic expectations. Suddenly we have a lot of PhD students who exert pressure on our way of working ... With the two who finished before Christmas, we followed a more traditional path. We had very long, very open discussions, where we only encouraged them ... We never suggested what their research questions should be. We had a fine, critical dialogue ... Increasingly – and especially with international students – you discover that this is not going to happen. Not in three or four years, maybe not at all.” (Supervisor 1, A).

Other circumstances may challenge supervisors who are mainly inspired by the market perspective. Here, productivity and effectiveness are central, and when these interests are squeezed, supervisors are challenged. An example is the lack of formal ways in which to introduce “probation” for PhD students making it possible to get rid of them in “a civilized way”, if the PhD student does not live up to expectations. One supervisor clarifies the background for his wish for a probation period:

“I really like having PhD students, but not when things don’t run smoothly. Then I am left with bad conscience and have to spend time working with that, and I don’t want to ... I cannot allow myself to say, You are doing too poorly and just let things be ... I also can’t hand the student on to someone else. To terminate is such a damned heavy piece of machinery ... The easiest thing is to let the process run its course, but that’s a terrible waste of money. ... How do we get rid of them?” (Supervisor 2, B).

The challenge of “adapting people culturally” may also interfere with effectiveness:

“I don’t do things differently with different PhD students – I think, I have grown more cynical because of what I’ve learned. [I] only employ Chinese who have taken their master’s degree in

Europe, Then they have acclimatised to our culture ... I don't employ people directly from China ... It means too much overhead providing cultural adaptation too. I have tried to [go straight for it] using the best man on paper – a Chinese – and that was a heavy task ... You have to be their mentor for a long period of time, and you are free to choose that. But that is not what I want to do.” (Supervisor 1, B).

Finally, concern for professional quality may interfere with the external cooperation, since market agendas may cause “*academic novelty*” to be “*at the low end*” in some PhD projects. The dilemma between productivity, efficiency, and market concerns on the one side and quality, social, and cultural concerns on the other side is the major challenge in this perspective. It does not become evident by supervisors stating that they end up on the wrong side regarding quality and time spent on the individual PhD student. It is more evident in the clear denouncement of one supervisor’s “*complacency*” and the claim, that the supervisor is using PhD supervision as “*a means of generating money*”.

To the supervisors who are inspired by the changing society perspective, one of the major challenges is keeping a “*playful*” element in supervision and to keep workload within acceptable limits:

“Preferably – what I would prefer to do, was to sit back ... and not have to be so strict, and say: What would you like to do? That looks really interesting! Are you sure, this [topic] is that good? More playful and open. Maybe I will be able to do that in some years. Because then there is an environment here, and then one PhD student draws in the next ... [But right now I cannot] sit back.” (Supervisor with a changing society perspective, V4 A).

“If I had known [how much work this would be], I'm not sure, I would have dedicated myself this wholeheartedly to [attracting so many international students.]” (Supervisor with a changing society perspective, V2 A).

Supervisors who are mainly inspired by this perspective spend a disproportionate amount of time on the supervision of (international) PhD students and may find it difficult to draw the line. This applies in particular to supervisors inexperienced with the supervision of international PhD students. This challenge is related to another, namely the challenge of relating to the cultural habits and work routines of PhD students, which can be rather time consuming (see Bøgelund, 2014). Finally it is related to a certain unwillingness to terminate processes which consume too many resources. As expressed by one of the supervisors, “*Terminating someone is something I've been reluctant to do – but that is where I am now*”. In summary, the major challenge to supervisors adhering to the changing society perspective is limiting PhD supervision so it does not take resources from other tasks – or from the supervisor him or herself.

Discussion

As the empirical data show, the task of supervising PhD students has become more complex. As the university evolves and incorporates a new agenda with regards to the purpose and value of knowledge production, so supervisors have been asked to adapt to several new legitimate agendas. This study shows that the sole pursuit of academic and professional aims no longer dominates, whereas knowledge production from a market perspective gains ground. This is interesting when we compare it with the findings of Grant (2005). In her study, Grant identifies four discourses related to supervision of master students, which she names the psychological, the traditional academic, the techno-scientific, and the neo-liberal discourses. There is a large element of accordance between the two last mentioned discourses and knowledge production from a market perspective. Likewise the traditional academic discourse can be somewhat compared with knowledge production from an academic perspective, and the knowledge production mode of societal changes does have elements of the psychological discourse. Grant concludes that the

psychological discourse is by far the most dominating, whereas the traditional academic *'does show'* in her data, the techno-scientific *'never surfaced'* and the neo-liberal *'appeared infrequently'* (Grant, 2005, p. 8-9). It is noteworthy that her results seem to be in opposition to the results of this study, even if the categories do not compare entirely. There could be several explanations for this.

First of all, her study is carried out in the arts, humanities, and social sciences, whereas the supervisors of this study come from the technical sciences. Traditionally the technical science culture is characterized more by co-operation with and funding by external firms, and male and masculine norms of academic life (Johnson, Lee, & Green, 2000). This is also reflected in the differences between the two programs in this study. Program B, characterized by classic technical disciplines, is dominated by the market perspective. Program A, at the interface of technology and social science, is more diverse. Secondly, there is a difference between supervising master students and PhD students. PhD students are more frequently part of research and often financed by external sources, thereby introducing more market driven agendas. Finally, the time difference between 2005 and 2012 may also explain why knowledge production from a market perspective dominates the perspective of the supervisors in this study and is hardly traceable in the study of Grant. The development towards tighter time limits, more external funding, more PhD students per supervisor, and more international students is a development that has increased and spread to more and more departments during the last ten years – as is also visible in the transformation of the two research programs in this study. The supervisors from program B said their transformation started 10 years ago, while the supervisors from program A said their transformation started only a couple of years ago.

One way or the other, the results of this study show that knowledge production related to PhDs is interpreted in several ways mirroring the different agendas of a modern university. It is also visible from the study that different perspectives have different values, challenges, and consequences. Ideally a university of today needs supervisors who pursue the values of all three perspectives. The results of this study, however, show a tendency towards the market perspective. Old fashioned virtues like contributing academically to a field and valuing professional passion are put under pressure by new productivity and efficiency demands, which affect the job satisfaction of some supervisors (See also Bianchetti & Quartiero, 2010; Smith, 2012). On a greater scale it might also affect the quality of the research carried out, bearing in mind the comment from one supervisor that the *"academic novelty"* is *"at the low end"* in some PhD projects. In general all supervisors are put under pressure to make sure deadlines are kept and, in case of external funding, that expectations from outside are met. To PhD education as a whole, it is interesting if the data of the research thereby draw a general picture of a development towards more leadership and control by supervisors and stronger ties between PhD research and the supervisor's own research. This is mainly of interest in connection with the question of where decision-making regarding central choices in research processes can or should be placed – with the supervisor or with the PhD student – and what this means to the independence of the PhD student. A development towards a more controlling role for the PhD supervisor with greater responsibility for project contents and more teaching of culturally bound work routines also affects the supervisor's work conditions and his or her chances to cope with the facilitation of the professional development of an increasing number of PhD students.

The new agenda also presents other challenges to the role of the supervisor. These concern the cultural dimension. As is evident from the empirical data, supervisors react differently to the fact that international PhD students bring new habits, values, and modes of operation. Some supervisors make an effort to embrace and facilitate the understandings of international PhD students, whereas more supervisors consider the cultural exchange a burdensome and time demanding activity in the name of efficiency and productivity. In this respect the results of the study lean to-

wards the results of researchers like Leathwood (2006) and Goode (2007). The efficient way of dealing with internationalization by some supervisors is to make sure international PhD students are not too unfamiliar with the ways research are carried out here a priori, e.g., by choosing only international students who have done a European master beforehand or spent some time as research assistant before starting the PhD study. In this sense internationalization and cultural exchange are not furthered. If we look at the two research programs, it cannot be concluded that extended exposure to internationalization (research program B) leads to increased cultural exchange: probably increased knowledge and more routines regarding the handling of challenges, but not a larger degree of openness. The question begging an answer is how international and open really are we in educating PhDs? And how much rationalisation efforts and tighter time limits mean in this connection? What are the consequences for international PhD students coming here? This cannot be answered based on this piece of research, but it would make an interesting topic in a research and education perspective.

Conclusion

This empirical inquiry examines how certain conditions bound by context – including the number and type of PhD students – exert influence on PhD supervisors' practice and self-image in a concrete professional connection; the Faculty of Engineering and Science at Aalborg University. As such, this inquiry carries the most validity in comparable professional research environments that experience similar agendas and conditions. In the profession of the humanities, for example, you will most probably find a different setting and context for the PhD supervisors, resulting in another distribution and nature of the knowledge production there. Given the exploratory nature of the inquiry, it can be seen as the initial examination of tendencies which are well-suited for further research. Regarding the data, it is worth mentioning that the two groups of researchers (in program A and program B, respectively) have been interviewed at two different stages of transition. This is an advantage in identifying understandings and practices in two different phases, but the lack of simultaneousness should be noted when drawing conclusions (Olsen & Pedersen, 1997, p. 190).

The questions that have been addressed in this article are the following: What is the understanding of PhD supervisors with regards to the purpose of PhD related knowledge production? How do they actually practice based on that understanding? The larger purpose being to investigate what consequences the current trends have for the working conditions of the PhD supervisors and the education of PhD students at large.

The empirical evidence shows that it has become more complex to be a PhD supervisor. Ideally the university has several legitimate agendas, which the supervisors are asked to balance, not necessarily in a single PhD project, but at least at a more aggregated level. Three knowledge perspectives are identified in this study: knowledge production in an academic perspective, knowledge production in a market perspective, and knowledge production in a changing society perspective. Each embracing a specific university agenda: 1) High quality research, 2) Economic viable and efficient research, and 3) Internationally relevant change agency research. Ideally each of these perspectives corresponds to a specific role and focus as a supervisor: 1) The role as professional sparring partner focusing on motivation and professional guidance, 2) The role as project leader focusing on the production of usable results, and 3) The role as an all-round facilitator focusing on the ability of the PhD student to understand and reflect on theory and put it to practical use in a new context.

The research shows that, currently, knowledge production in a market perspective is the dominating perspective, putting the two other perspectives under pressure. For instance, knowledge production in an academic perspective is put under pressure by more strict deadlines and more narrow agendas and calls for productivity. Knowledge production in a changing society perspective

is likewise put under pressure by the work load related to facilitating international PhD students into change agents and the corresponding lack of resources put into the task by the university management. The top concern from a market perspective is how to introduce probation for PhD students, so it becomes possible to terminate students that do not perform well.

For the education of PhD students as such, the current development implies a more leading and visible role for the supervisor, even in terms of what to study, giving the supervisor a more central and responsible part compared to earlier. It also implies an increased pressure on academic quality. What all this means to the PhD students is an interesting question to pursue from here. Surely different knowledge perspectives will affect PhD students in different ways.

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Biography



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Cite as: Hardré, P. L., & Hackett, S. (2015). Defining the graduate college experience: What it “should” versus “does” include. *International Journal of Doctoral Studies*, 10, 57-77. Retrieved from <http://ijds.org/Volume10/IJDSv10p057-077Hardre0665.pdf>

Defining the Graduate College Experience: What it “Should” versus “Does” Include

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Abstract

Gaps between expectations and actual educational experience may influence motivation, learning and performance. The graduate college experience (GCE) is shrouded in myth and legend that may create unrealistic expectations, while its reality includes elements of politics, economics and organizational psychology. This study examined 1,629 present and former graduate students' perceptions of what their graduate school experiences *should* and *did* include. The sample was analyzed as a whole and also divided and tested for subgroup differences by: degree types (masters and doctorate); at four different points along their degree paths (entrance, midpoint, exit, alumni); and by disciplinary subgroups (hard sciences, social sciences, arts, interdisciplinary). Statistically significant differences were found between subgroups on perceptions of what the GCE “should” and “does” include separately. Further, within-groups comparison of what the graduate college experience “should” and “does” include showed significant differences for the whole group and all subgroups. In addition, the differences between graduate students' expected and actual experience (should - does) negatively predicted overall satisfaction with their graduate experience. These contrasts of students' actual and expected graduate experiences present potential to explain some of graduate students' dissatisfaction and non-completion, and offer information to support program improvement and retention of graduate students.

Keywords: Graduate education, graduate school expectations, attrition, graduate student satisfaction, program improvement

Introduction

Any educational journey is a complex experience, unique to students, based on their prior knowledge and experience, and on the goals and expectations that they bring to it. Graduate education is more individualized than compulsory or undergraduate, because graduate students have different degrees of choice, are at different phases of life as well as education, go on to graduate education for different reasons, and bring different outcome expectations (many of which are implicit).

Much can be learned about how different people experience graduate education from illuminating these expectations and how the actual experience either matched with or diverged from them.

To address these issues, this manuscript first reviews the existing research literature on the graduate experience. Second, it presents the study's purpose, research

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questions and methods. Third, it reports data from 1,629 current and former graduate students, the overall descriptive results as foundation, followed by comparative and predictive analyses. Comparative analyses address the significance of between-group differences of “should” and “does” perceptions separately, and then significance of within-group differences between “should” and “does” perceptions directly compared. Predictive analysis examines the degree to which these differences (should – does) predicts difference in students’ overall satisfaction with their graduate experience. Finally, this manuscript discusses the importance of these findings and their potential role in the improvement of graduate programs.

Literature Review

Graduate programs in the U.S. alone account for 2.8 million students each year (National Center for Educational Statistics, 2013), and many times more globally. Even though some universities have more graduate students attending than undergraduates, much less research is conducted on graduates’ educational experiences.

U.S. studies on various elements of graduate students’ experiences have generally been localized to a discipline or program (e.g., Coulter, Goin & Gerard, 2004; Gardner & Barnes, 2007), while some international studies have combined disciplinary and institutional characteristics with culture (e.g., Kanan & Baker, 2005), both producing deeply contextualized findings primarily addressing local needs. More generalizable research is essential to inform the work of faculty and staff who teach, train, manage, mentor, plan and make policy to support graduate students (Nesheim, Guentzel, Gansemer-Topf, Ross, & Turrentine, 2006).

Graduate education involves major changes of context and experience for students, both those coming directly from undergraduate programs and those returning after time away from academe (Austin, Cameron, Glass, Kosko, Marsh, Abdelmagid, & Burge, 2009; Gardner, 2009). These dramatic changes require people to redirect their cognitive priorities and emotional energy, and reframe their perceptions of themselves and of others (Murray, 2009). Such demands and challenges can initiate identity development and transformation (Hall & Burns, 2009; Sweitzer, 2009). However, they may also trigger deep self-doubt and anxiety (Gansemer-Topf, Ross, & Johnson, 2004). Being back in academe after years away can be a tremendous adjustment. That adjustment is amplified when the return is to a different discipline and professional culture of expectations, demanding re-acculturation and socialization (Baker & Lattuca, 2010). It is clear why many students need substantial support to manage these shifts, in the face of academic demands combined with managing a family and outside job responsibilities (Hardré & Hackett, in press, 2014). In addition to the money, time and other resources that it requires of students, graduate education also takes significant commitment of time, funding and expertise from faculty and staff in academic departments and institutions (Smallwood, 2004). Yet attrition from graduate programs is estimated to be as high as 50% or more (Offstein, Larson, McNeill, & Mwale, 2004). This rate of attrition raises the question of how such a substantial resource loss might be reduced.

Most research on graduate students’ experience has been largely academic (Golde, 2000), but academics only explain part of graduate students’ success. Other huge contributions are made by motivation, personal and professional identity development, personal satisfaction, finances and support resources, social support, peer relationships and community, and overall well-being (Gansemer-Topf et al., 2004; Hardré & Chen, 2005, 2006; Offstein et al., 2004; Weidman, Twale, & Stein, 2001). These elements of the graduate experience are scarcely evident in the research literature, except in the work of a small group of researchers. Thus, it is unclear how the diverse elements of the graduate experience match the expectations of an increasingly diverse and ever-changing profile of the graduate student.

The Role of Perceptions and Motivation

To address these issues, research needs to provide insight into the current and authentic nature of the graduate college experience, illuminated through students' perceptions of their graduate journeys. Perceptions reflect the lived reality of novel experience, because the nature and impacts of experience depend less on the actual, measurable events than on the *participants' individual and collective perceptions of those events* (Hardré & Burris, 2011; Schlossberg, Waters, & Goodman, 1995). Perceptions of the experience are responsive to current, salient experiences and to meta-cognitive reflection (van Manen, 1990).

Among critical perceptions in a transitional experience like graduate school are goals, which impact how people work and learn (Kenner & Weinerman, 2011). People enter into experiences for personally-valued reasons, and they invest and persist for personally-valued outcomes (Latham, 2007). However, little systematic research has included the goals and expectations that graduate students bring into their educational experiences or how their experiences match those expectations. Teaching and mentoring by faculty and senior peers is a key factor in graduate students' motivation and success (Delaney, 2004; Fagen & Suedkamp Wells, 2004). Yet students may not all have the same expectations and experiences of those relationships (Tenenbaum, Crosby, & Gliner, 2001). Graduate students' identity development includes cognitive, social and psychosocial changes (Gardner, 2009). That identity development affects how students see their world, themselves and others (Harrison 2008). Students' initial expectations and developmental perceptions, interactions with others and overall satisfaction with their graduate experience, affect the quality of their academic work (Golde, 2000). These perceptions also influence their effort investment, and whether they complete their degrees or add to the attrition statistics (Lipschultz & Hilt, 1999; Lovitts, 2001). Thus, these perceptual and motivational characteristics have major implications for graduate education and understanding the graduate experience.

Study Purpose

The purpose of this study was to investigate how a diverse group of university graduate students and recent graduates defined the graduate experience. The measurement framework posited two perspectives, one ideal or expected (what it should include), and the other, actual or experiential (what it did include). Further analysis compared the two sets of perceptions for the same individuals and groups, and investigated their relationship to overall satisfaction with the graduate experience.

Research Questions

1. How do graduate students define the graduate experience? What characteristics do they believe it *should* include, and how do they rank the importance of these characteristics?
2. How do graduate students define their own graduate college experience? What characteristics do they believe it *does* include (or has included), and how do they rank the importance of these characteristics?
3. To what degree do graduate students' perceptions of what their own graduate experience *does* include differ significantly from what they believe it *should* include?
4. Do differences between students' expected and actual graduate college experience predict differences in their overall satisfaction with their graduate experience?

Methods

Study Design

To address these questions, the researchers administered a set of questionnaires assessing graduate students' perceptions of their expected and actual experiences as well as their overall satisfaction with their graduate experience. The instruments and procedures were designed to allow for both within-subjects and between-subjects analyses.

Procedure

All administration occurred in an asynchronous online survey administration system. The online administration method was used to maximize efficiency and optimize access to off-campus and distributed participants. Participants were recruited via email invitation, using lists of eligible students and recently-graduated alumni, provided by the university's graduate college. Participants were offered small individual incentives (tee-shirts) and entered into a drawing for a larger incentive (a popular digital device). To ensure anonymity and objectivity, participant identification was automatically separated from responses in the system. All study activities were consistent with institutional human subject requirements, with data de-identified and confidentiality maintained. Response rate for current students was 50%, and for alumni 10%.

Institutional Context

The research site was a large public university in the United States. As a public institution, it had a generally open recruitment and acceptance policy. The university was not highly selective, though additional requirements were set by academic departments and programs. The century-old graduate college enrolls more than 4,000 students annually. Doctoral and masters degrees and certificates are offered in nearly every academic program, from traditional to continuing and professional education. Some programs are highly-structured, while others allow students to progress at their own pace. Colleges and departments have autonomy to set program and curriculum requirements. The graduate college monitors progress and maintains accountability for established benchmarks and requisites. The graduate student body is comprised of about 70% U.S. students and 30% international students from over 40 nations. Graduate students are almost evenly divided by gender, and range in age from 21-90. About 60% of students attend school full-time, and 40% part-time. Many also work outside jobs, and have families.

Participants

Participants were 1,430 current masters and doctoral students and 199 recently-graduated alumni. They were invited to take one of four parallel forms of a questionnaire appropriate to their point-in-program: entry (516), midpoint (372), exit (542) or alumni (199). Table 1 shows summary participant demographics. Study participation was voluntary (as required by institutional human subjects committee), and group sizes (*N*) reflect actual voluntary participation. Even so, the participant group profile was demographically similar to the larger graduate student population on campus (within +/- 5%).

Table 1: Participant demographics

	All (N=1629)	Masters (N=1400)	PhD (N=229)
Gender			
Male	740	612	127
Female	880	779	100
Other Gendered	1	1	--
Ethnicity			
African American/Black	143	130	13
Asian American/Asian	116	87	29
Pacific Islander/Native Hawaiian	5	5	--
Hispanic/Latino	92	79	11
Native American/American Indian	75	67	8
White/Caucasian	1131	971	160
Other	61	54	7
Colleges			
Architecture	24	24	--
Arts & Sciences	556	455	101
Atmospheric & Geographic Sciences	32	26	6
Business	85	80	5
Earth & Energy	44	41	3
Education	189	150	37
Engineering	116	90	26
Fine Arts	43	30	13
Journalism and Mass Communication	31	24	7
International Studies	42	42	--
Liberal Studies	199	194	5
Dual Degree/Interdisciplinary	258	232	26

Measures

Defining the Graduate Experience

The “Defining the Graduate Experience” questionnaires, as well as the graduate satisfaction scale, were originally developed from graduate students’ qualitative responses to the question: “What characterizes the graduate college experience?” Open responses were then distilled into standardized items, reviewed and endorsed by graduate faculty, and tested with interdisciplinary graduate students, demonstrating good reliability and validity evidence (for details see Hardré & Hackett, in press & online, 2014). Two parallel forms (“does” and “should”) were developed, with identical items but different item stems. Both forms were administered to all participants, allowing within-subjects as well as between-subjects analyses. Participants could not see the second version while responding to the first, nor could they go back and change responses after leaving a section. In addition, students completed the assessment of their overall satisfaction with their graduate experience, which was developed through the same process (standardized items refined from generative statements provided by graduate students and endorsed by faculty).

Perceptions of the student's ideal or expected graduate experience (“should”). This section assessed what students thought the graduate experience should include (32 items; 8-point Likert-type; $\alpha = .97$). The cluster was structured with an item stem, “To me, the graduate experience *should* include...” followed by a list of responses to endorse. Sample item: “an environment to study and grow intellectually”.

Perceived nature of the student's actual graduate experience (“does”). This section assessed what students perceived their own graduate experience to include (32 items; 8-point Likert-type; $\alpha = .98$). The cluster was structured with an item stem, “For me, the graduate experience *does* include...” followed by a list of responses to endorse, matched to those in the previous scale. Sample item: “being part of an academic community”.

Satisfaction with the graduate experience. This scale assessed students' overall satisfaction with their graduate experience (12 items; Likert-type; $\alpha = .90$). It presented individual statements to endorse. Sample items: “I enjoy being a graduate student” and “At this time, I am satisfied with my overall graduate experience.”

Analysis

The scales demonstrated high internal consistency (Cronbach's α s of .90-.98 for all subgroups), supporting their use as coherent to represent this set of perceptions for analyses (Cook & Beckman, 2006; DeVellis, 2013). First, participant responses were compared, descriptively and statistically, for mean score differences, by whole group and by the three sets of subgroups, within each of the parallel scales (comparing different groups' perceptions of “should” and “does” separately). Second, the whole group and subgroups' mean scores were compared across the scales (comparing within-groups “should” to “does”). Third, the difference scores (between “should” and “does”) were tested for relationship with students' overall satisfaction with their graduate experience. All parallel scale comparison analyses were conducted using the t-test, because it is an appropriate statistical analysis method to compare between-groups' responses on the same measures (independent-samples t-test), and responses from same-subject groups on independent (not repeated) measures (dependent or paired-samples t-test) (Newton & Rudestam, 2013; Salkind, 2014). ANOVA was used for the analyses that included more than two comparison groups, such as point-in-program and disciplinary subgroups. The tests of predictive relationship between the difference score on overall satisfaction with the GCE were conducted using simple linear regression, which is appropriate for predicting response on one variable from responses on a different variable (Salkind, 2014; Vik, 2014). Given the lack of precedent for these investigations, the level of significance was set at $p < .05$.

Degree type subgroups (masters and doctoral) were identified by the graduate college records and confirmed by students' self-reported demographics. Point-in-progress subgroups (entrance, mid-point, exit & alumni) were identified by the graduate college records, based on credit hours and major degree benchmarks completed. Disciplinary subgroups were determined by clustering the major programs into four groups based on similarities in their domain skills and professional competencies: hard sciences (e.g., Mathematics, Biology, Meteorology, Chemistry, Physics, Geology, Engineering); social sciences (e.g., Communication, Anthropology, Psychology, Social Work, Political Science, Business, Education); arts (e.g., Literature, Languages, Fine Arts, Drama, Dance); and interdisciplinary (e.g., International Relations, Interdisciplinary Studies, Liberal Studies).

Results

Should Include—Whole and Subgroups

The first research question, regarding what students believed the graduate experience *should* be was as follows: How do graduate students define the graduate experience? What characteristics do they believe it *should* include and how do they rank the importance of these characteristics? To address this question, the researchers analyzed mean scores on the first parallel form of the “Defining” scale by whole group, then by degree type subgroups, then by point-in-progress subgroups, and finally by disciplinary subgroups. Table 2 shows item and scale means responses for the whole group and degree-type subgroups (masters and doctoral).

For the whole group of graduate students, based on highest mean scores, the three most important aspects the graduate experience should include are: “clear guidelines as to what is expected and required to complete the degree;” “an environment to study and grow intellectually;” and “opportunities to increase my scholarly understanding.” The least important aspect the graduate experience should include is: “more of the same as in undergraduate.”

Results showed a significant difference between masters ($M = 6.61$, $SD = 0.96$) and doctoral ($M = 6.75$, $SD = 0.82$) students [$t(1627) = -2.19$, $p = .029$]. In general, doctoral students endorsed more strongly that their graduate experience *should* contain the scale items than did masters students. However, masters students’ means were significantly higher than doctoral students’ for just four characteristics: “authentic, applied experiences linked to real work expectations” [$t(1617) = 2.20$, $p = .028$]; “value-added that makes the degree worth what it cost” [$t(1609) = 4.03$, $p < .001$]; “taking on topics and issues that can make a difference in the world” [$t(1618) = 2.62$, $p = .032$]; and “more of the same as in undergraduate” [$t(1614) = 3.53$, $p < .001$].

Next the researchers compared mean scores for the whole scale and by items for subgroups by point-in-progress toward degree. Table 3 shows item and scale means for the “should” scale by point-in-progress subgroups (entry, midpoint, exit, alumni).

Results showed almost significant differences between Entrance ($M = 6.63$, $SD = 0.95$), Midpoint ($M = 6.55$, $SD = 1.06$), Exit ($M = 6.63$, $SD = 0.90$), and Alumni ($M = 6.76$, $SD = 0.73$) students [$F(3, 1626) = 2.28$, $p = .078$]. A post hoc Tukey test showed a significant difference between Midpoint and Alumni ($p = .045$), with alumni most strongly endorsing the scale characteristics. The general trend was endorsement of the characteristics as part of the actual graduate college experience increasing toward degree completion, after a drop at midpoint for some characteristics, as reflected in Table 3.

Finally the researchers compared what the graduate college experience “should” include by disciplinary subgroups. Table 4 compares mean scores for the disciplinary subgroups (hard sciences, social sciences, arts, and interdisciplinary).

Results showed a significant difference between Hard Sciences ($M = 6.69$, $SD = 0.93$), Social Sciences ($M = 6.63$, $SD = 0.93$), Arts ($M = 6.87$, $SD = 0.68$), and Interdisciplinary ($M = 6.53$, $SD = 0.99$) students, [$F(3, 1626) = 5.20$, $p = .001$]. A post hoc Tukey test showed Arts had a significantly higher mean than both Social Sciences ($p = .043$) and Interdisciplinary ($p = .002$). Students in the Arts believe more strongly than those in the Social Sciences and Interdisciplinary majors that the graduate experience should contain the items listed in the scale.

Table 2: Graduate experience “should include” by whole group and degree type

<i>To me, the graduate experience should include...</i>	All (N=1629)	Masters (N=1400)	PhD (N=229)
an environment to study and grow intellectually.	7.39	7.38	7.44
being a part of an academic community.	6.99	6.96	7.15
a high level of intellectual training.	7.31	7.29	7.42
opportunities to increase my scholarly understanding.	7.32	7.30	7.42
opportunities very different from undergraduate education.	6.59	6.58	6.62
having interactions with other students in my program and department.	6.94	6.92	7.05
interacting with students from other departments and colleges.	5.93	5.91	6.04
being focused on one program of content and skills.	5.97	6.01	5.77
a high level of stress and anxiety.	3.55	3.52	3.79
high expectations and exacting standards of performance.	6.65	6.64	6.74
developing close connections with faculty.	6.45	6.38	6.90
close mentoring.	6.52	6.45	6.90
developing true expertise in my field.	7.19	7.15	7.43
having the opportunity to be published.	5.71	5.51	6.93
presenting work at scholarly and professional conferences.	5.70	5.48	7.03
learning to be the best at what I do.	7.01	6.99	7.10
meeting and connecting with other graduate students.	6.45	6.44	6.49
more of the same as in undergraduate.	3.51	3.59	3.07
instruction by experts in the field.	7.15	7.14	7.22
solid, theoretical and research grounding.	6.83	6.76	7.23
links to authentic professional practice.	7.03	7.02	7.07
authentic, applied experiences linked to real work expectations.	7.07	7.10	6.90
integration of theory and authentic professional practice.	7.06	7.06	7.06
support for graduate students by the university.	7.08	7.07	7.17
feeling connected to others with similar goals and aspirations.	6.76	6.76	6.78
faculty members who really care whether all graduate students succeed.	7.18	7.17	7.23
value-added that makes the degree worth what it cost.	7.05	7.10	6.72
good communication between faculty and graduate students.	7.27	7.27	7.31
clear guidelines as to what is expected and required to complete the degree.	7.40	7.40	7.43
deeply meaningful learning opportunities.	7.22	7.22	7.21
taking on topics and issues that can make a difference in the world.	6.94	6.98	6.71
daring to dream big and actually achieving those dreams.	6.85	6.85	6.80
Scale means	6.63	6.61	6.75

Table 3: Graduate experience “should include” by point-in-progress

<i>To me, the graduate experience should include...</i>	Entrance (N=516)	Midpoint (N=372)	Exit (N=542)	Alumni (N=199)
an environment to study and grow intellectually.	7.35	7.35	7.39	7.53
being a part of an academic community.	6.94	7.00	6.97	7.13
a high level of intellectual training.	7.27	7.24	7.33	7.46
opportunities to increase my scholarly understanding.	7.31	7.27	7.32	7.42
opportunities very different from undergraduate education.	6.60	6.50	6.64	6.58
having interactions with other students in my program and department.	6.91	6.89	6.92	7.16
interacting with students from other departments and colleges.	5.91	5.80	5.97	6.09
being focused on one program of content and skills.	6.11	5.81	6.05	5.71
a high level of stress and anxiety.	3.57	3.48	3.62	3.46
high expectations and exacting standards of performance.	6.58	6.63	6.72	6.66
developing close connections with faculty.	6.38	6.39	6.47	6.69
close mentoring.	6.52	6.39	6.50	6.81
developing true expertise in my field.	7.17	7.11	7.19	7.38
having the opportunity to be published.	5.75	5.65	5.58	6.11
presenting work at scholarly and professional conferences.	5.77	5.60	5.57	6.10
learning to be the best at what I do.	7.03	6.88	7.02	7.15
meeting and connecting with other graduate students.	6.46	6.40	6.43	6.56
more of the same as in undergraduate.	3.78	3.35	3.51	3.17
instruction by experts in the field.	7.04	7.17	7.18	7.30
solid, theoretical and research grounding.	6.78	6.86	6.77	7.05
links to authentic professional practice.	7.09	6.92	6.99	7.16
authentic, applied experiences linked to real work expectations.	7.12	6.92	7.10	7.16
integration of theory and authentic professional practice.	7.07	6.98	7.09	7.14
support for graduate students by the university.	7.10	7.02	7.04	7.25
feeling connected to others with similar goals and aspirations.	6.79	6.62	6.75	6.97
faculty members who really care whether all graduate students succeed.	7.16	7.10	7.18	7.36
value-added that makes the degree worth what it cost.	7.04	6.92	7.10	7.20
good communication between faculty and graduate students.	7.26	7.20	7.27	7.47
clear guidelines as to what is expected and required to complete the degree.	7.36	7.35	7.42	7.54
deeply meaningful learning opportunities.	7.16	7.04	7.32	7.44
taking on topics and issues that can make a difference in the world.	6.88	6.89	6.96	7.14
daring to dream big and actually achieving those dreams.	6.86	6.70	6.86	7.03
Scale means	6.63	6.55	6.63	6.76

Table 4: Graduate experience “should include” by disciplines

<i>For me, the graduate experience should include...</i>	Hard Sciences (N=281)	Social Sciences (N=693)	Arts (N=125)	Inter-disciplinary (N=532)
an environment to study and grow intellectually.	7.35	7.36	7.61	7.38
being a part of an academic community.	6.99	6.99	7.26	6.92
a high level of intellectual training.	7.33	7.27	7.43	7.31
opportunities to increase my scholarly understanding.	7.33	7.28	7.45	7.33
opportunities very different from undergraduate education.	6.51	6.65	6.79	6.50
having interactions with other students in my program and department.	6.97	7.00	7.24	6.77
interacting with students from other departments and colleges.	6.25	5.77	6.11	5.92
being focused on one program of content and skills.	5.91	5.95	5.93	6.04
a high level of stress and anxiety.	4.01	3.38	3.52	3.55
high expectations and exacting standards of performance.	6.48	6.59	7.01	6.72
developing close connections with faculty.	6.69	6.54	7.05	6.06
close mentoring.	6.63	6.60	7.18	6.18
developing true expertise in my field.	7.23	7.22	7.59	7.02
having the opportunity to be published.	6.72	5.50	6.56	5.26
presenting work at scholarly and professional conferences.	6.70	5.53	6.61	5.19
learning to be the best at what I do.	7.08	7.05	7.36	6.83
meeting and connecting with other graduate students.	6.54	6.51	6.71	6.25
more of the same as in undergraduate.	3.91	3.37	2.93	3.62
instruction by experts in the field.	6.98	7.17	7.37	7.17
solid, theoretical and research grounding.	6.90	6.77	7.02	6.82
links to authentic professional practice.	6.95	7.11	7.24	6.90
authentic, applied experiences linked to real work expectations.	6.94	7.18	7.14	6.99
integration of theory and authentic professional practice.	6.99	7.11	7.10	7.02
support for graduate students by the university.	7.04	7.14	7.47	6.94
feeling connected to others with similar goals and aspirations.	6.74	6.87	7.06	6.55
faculty members who really care whether all graduate students succeed.	7.10	7.23	7.56	7.06
value-added that makes the degree worth what it cost.	6.77	7.07	7.09	7.15
good communication between faculty and graduate students.	7.24	7.29	7.58	7.20
clear guidelines as to what is expected and required to complete the degree.	7.30	7.40	7.60	7.40
deeply meaningful learning opportunities.	7.09	7.30	7.39	7.15
taking on topics and issues that can make a difference in the world.	6.81	7.02	6.78	6.94
daring to dream big and actually achieving those dreams.	6.80	6.91	6.91	6.76
Scale means	6.70	6.63	6.87	6.53

Does Include—Whole Group and Subgroups

The second research question, regarding what students' perceived their own graduate experience *did* include was as follows: How do graduate students define their own graduate college experience? What characteristics do they believe it *does* include (or has included), and how do they rank the importance of these characteristics? To address this question, the researchers analyzed mean scores on the second (does) parallel form of the “Defining” scale for the whole group and same subgroups as for the first (should) form of the scale. Table 5 shows item-level and scale means for the whole group and degree type subgroups (masters and doctoral).

Table 5: Graduate experience “does include” whole group and degree types

<i>For me, the graduate experience does include...</i>	All (N=1629)	Masters (N=1400)	PhD (N=229)
an environment to study and grow intellectually.	6.90	6.88	7.04
being a part of an academic community.	6.55	6.51	6.75
a high level of intellectual training.	6.74	6.72	6.92
opportunities to increase my scholarly understanding.	6.93	6.90	7.07
opportunities very different from undergraduate education.	6.21	6.13	6.66
having interactions with other students in my program and department.	6.68	6.67	6.74
interacting with students from other departments and colleges.	4.85	4.85	4.89
being focused on one program of content and skills.	6.35	6.36	6.28
a high level of stress and anxiety.	5.33	5.25	5.84
high expectations and exacting standards of performance.	6.49	6.46	6.69
developing close connections with faculty.	5.78	5.71	6.22
close mentoring.	5.36	5.27	5.95
developing true expertise in my field.	6.18	6.12	6.53
having the opportunity to be published.	4.49	4.27	5.83
presenting work at scholarly and professional conferences.	4.45	4.21	5.94
learning to be the best at what I do.	6.19	6.16	6.35
meeting and connecting with other graduate students.	6.16	6.15	6.22
more of the same as in undergraduate.	4.01	4.15	3.18
instruction by experts in the field.	6.65	6.64	6.75
solid, theoretical and research grounding.	6.54	6.51	6.77
links to authentic professional practice.	6.14	6.15	6.07
authentic, applied experiences linked to real work expectations.	6.13	6.16	5.94
integration of theory and authentic professional practice.	6.24	6.27	6.04
support for graduate students by the university.	6.00	5.99	6.05
feeling connected to others with similar goals and aspirations.	6.14	6.16	6.04
faculty members who really care whether all graduate students succeed.	6.41	6.41	6.44
value-added that makes the degree worth what it cost.	6.11	6.14	5.92
good communication between faculty and graduate students.	6.16	6.20	5.96
clear guidelines as to what is expected and required to complete the degree.	6.34	6.38	6.07
deeply meaningful learning opportunities.	6.43	6.43	6.45
taking on topics and issues that can make a difference in the world.	6.25	6.28	6.07
daring to dream big and actually achieving those dreams.	6.18	6.19	6.13
Scale means	6.05	6.03	6.19

Defining the Graduate College Experience

Results showed an almost significant difference between masters ($M = 6.03$, $SD = 1.26$) and doctoral ($M = 6.19$, $SD = 1.10$) students, [$t(1627) = -1.83$, $p = .068$]. Doctoral students feel more strongly that their graduate experience does (or did) contain the scale items than masters. Masters students reported statistically higher means than doctoral students for only two items on the “does” scale: “clear guidelines as to what is expected and required to complete the degree” [$t(1602) = 2.40$, $p = .017$] and “more of the same as in undergraduate” [$t(1602) = 5.90$, $p < .001$]. Table 6 compares means for responses on the “does” scale the same means for the point-in-progress subgroups (entry, midpoint, late).

Table 6: Graduate experience “does include” by point-in-progress”

<i>For me, the graduate experience does include...</i>	Entrance (N=516)	Midpoint (N=372)	Exit (N=542)	Alumni (N=199)
an environment to study and grow intellectually.	6.91	6.77	6.94	6.98
being a part of an academic community.	6.61	6.44	6.55	6.57
a high level of intellectual training.	6.78	6.71	6.75	6.69
opportunities to increase my scholarly understanding.	6.91	6.87	6.99	6.91
opportunities very different from undergraduate education.	6.15	6.24	6.25	6.16
having interactions with other students in my program and department.	6.72	6.70	6.61	6.73
interacting with students from other departments and colleges.	5.07	4.69	4.90	4.48
being focused on one program of content and skills.	6.46	6.32	6.37	6.03
a high level of stress and anxiety.	5.16	5.27	5.54	5.35
high expectations and exacting standards of performance.	6.59	6.37	6.51	6.39
developing close connections with faculty.	5.91	5.49	5.90	5.67
close mentoring.	5.57	5.10	5.41	5.18
developing true expertise in my field.	6.27	6.06	6.23	6.02
having the opportunity to be published.	4.50	4.28	4.57	4.62
presenting work at scholarly and professional conferences.	4.46	4.20	4.48	4.83
learning to be the best at what I do.	6.34	6.01	6.26	5.91
meeting and connecting with other graduate students.	6.18	6.13	6.12	6.24
more of the same as in undergraduate.	4.19	3.83	3.97	4.00
instruction by experts in the field.	6.71	6.69	6.59	6.63
solid, theoretical and research grounding.	6.57	6.57	6.49	6.55
links to authentic professional practice.	6.26	6.01	6.15	5.99
authentic, applied experiences linked to real work expectations.	6.28	6.02	6.16	5.84
integration of theory and authentic professional practice.	6.39	6.17	6.23	6.01
support for graduate students by the university.	6.17	5.87	6.02	5.75
feeling connected to others with similar goals and aspirations.	6.29	6.05	6.15	5.90
faculty members who really care whether all graduate students succeed.	6.65	6.28	6.37	6.15
value-added that makes the degree worth what it cost.	6.26	5.97	6.12	5.91
good communication between faculty and graduate students.	6.48	5.98	6.06	5.95
clear guidelines as to what is expected and required to complete the degree.	6.53	6.20	6.32	6.15
deeply meaningful learning opportunities.	6.46	6.34	6.48	6.38

<i>For me, the graduate experience does include...</i>	Entrance (N=516)	Midpoint (N=372)	Exit (N=542)	Alumni (N=199)
taking on topics and issues that can make a difference in the world.	6.30	6.22	6.23	6.19
daring to dream big and actually achieving those dreams.	6.27	6.10	6.21	6.01
Scale means	6.14	5.95	6.06	5.97

Results showed no significant difference between Entrance ($M = 6.14$, $SD = 1.23$), Midpoint ($M = 5.95$, $SD = 1.24$), Exit ($M = 6.06$, $SD = 1.26$), and Alumni ($M = 5.97$, $SD = 1.18$) students, [$F(3, 1626) = 1.97$, $p = .117$]. Table 7 compares disciplinary subgroup responses (hard sciences, social sciences, arts, and interdisciplinary).

Table 7: Graduate experience “does include” by disciplines

<i>To me, the graduate experience does include...</i>	Hard Sciences (N=281)	Social Sciences (N=693)	Arts (N=125)	Inter-disciplinary (N=532)
an environment to study and grow intellectually.	6.97	6.94	7.02	6.77
being a part of an academic community.	6.71	6.57	6.83	6.37
a high level of intellectual training.	6.79	6.70	6.95	6.73
opportunities to increase my scholarly understanding.	6.92	6.88	7.14	6.93
opportunities very different from undergraduate education.	6.33	6.18	6.34	6.15
having interactions with other students in my program and department.	6.73	6.88	6.86	6.35
interacting with students from other departments and colleges.	5.45	4.64	4.58	4.89
being focused on one program of content and skills.	6.37	6.38	6.41	6.27
a high level of stress and anxiety.	5.96	5.27	5.98	4.94
high expectations and exacting standards of performance.	6.56	6.42	6.94	6.44
developing close connections with faculty.	6.36	5.71	6.35	5.44
close mentoring.	6.08	5.20	6.07	5.03
developing true expertise in my field.	6.32	6.17	6.52	6.03
having the opportunity to be published.	6.01	4.26	5.02	3.86
presenting work at scholarly and professional conferences.	5.70	4.30	5.35	3.78
learning to be the best at what I do.	6.43	6.18	6.55	5.98
meeting and connecting with other graduate students.	6.40	6.32	6.33	5.77
more of the same as in undergraduate.	4.75	3.91	3.34	3.91
instruction by experts in the field.	6.68	6.64	7.03	6.57
solid, theoretical and research grounding.	6.54	6.54	6.67	6.52
links to authentic professional practice.	6.16	6.22	6.25	5.99
authentic, applied experiences linked to real work expectations.	6.05	6.23	6.02	6.04
integration of theory and authentic professional practice.	6.12	6.31	6.26	6.20
support for graduate students by the university.	6.28	5.89	5.94	6.01
feeling connected to others with similar goals and aspirations.	6.16	6.29	6.21	5.92

<i>To me, the graduate experience does include...</i>	Hard Sciences (N=281)	Social Sciences (N=693)	Arts (N=125)	Inter-disciplinary (N=532)
faculty members who really care whether all graduate students succeed.	6.43	6.40	6.64	6.36
value-added that makes the degree worth what it cost.	6.12	6.05	5.84	6.24
good communication between faculty and graduate students.	6.24	6.09	6.11	6.22
clear guidelines as to what is expected and required to complete the degree.	6.35	6.26	6.30	6.45
deeply meaningful learning opportunities.	6.39	6.43	6.54	6.42
taking on topics and issues that can make a difference in the world.	6.20	6.31	5.82	6.29
daring to dream big and actually achieving those dreams.	6.19	6.14	6.12	6.24
Scale means	6.27	6.03	6.20	5.92

Results showed a significant difference between Hard Sciences ($M = 6.27$, $SD = 1.14$), Social Sciences ($M = 6.03$, $SD = 1.22$), Arts ($M = 6.20$, $SD = 1.14$), and Interdisciplinary ($M = 5.92$, $SD = 1.32$) students [$F(3, 1626) = 5.804$, $p = .001$]. Specifically, a post hoc Tukey test showed Hard Sciences had significantly higher means than Social Sciences ($p = .027$) and Interdisciplinary ($p = .001$). Students in Hard Science majors agree more strongly than those in Social Sciences and Interdisciplinary that the graduate experience does/did contain the items listed in the scale.

Should vs Does

The third research question, regarding contrasts between what students believed the graduate experience *should* be and what their own experiences *were*, was as follows: To what degree do graduate students' perceptions of what their own graduate experience *does* include differ significantly from what they believe it *should* include? To address this question, the researchers analyzed groups' mean scores on the two parallel forms of the "Defining" scale for significant differences. Table 8 shows the results of the t-tests for significant differences between "should" and "does" for each set of subgroups, along with means of subgroup differences and overall satisfaction.

Table 8: Graduate experience "should" vs "does" whole and subgroups

Group	N	Should M (SD)	Does M (SD)	t	p	Cohen's d
All	1629	6.63 (0.94)	6.05 (1.24)	21.09	< .001	0.53
Degree Type						
Masters	1400	6.61 (0.96)	6.03 (1.26)	19.36	< .001	0.52
Doctoral	229	6.75 (0.82)	6.19 (1.10)	8.38	< .001	0.58
Point-In-Program						
Entrance	516	6.63 (0.95)	6.14 (1.23)	10.57	< .001	0.45
Midpoint	372	6.55 (1.06)	5.95 (1.24)	9.93	< .001	0.52
Exit	542	6.63 (0.90)	6.06 (1.26)	12.21	< .001	0.52
Alumni	199	6.76 (0.73)	5.97 (1.18)	9.57	< .001	0.81
Area of Study						
Hard Sciences	281	6.70 (0.93)	6.27 (1.14)	7.77	< .001	0.41
Social Sciences	693	6.63 (0.93)	6.03 (1.22)	13.70	< .001	0.55
Arts	125	6.87 (0.68)	6.20 (1.14)	7.05	< .001	0.71
Interdisciplinary	532	6.53 (0.99)	5.92 (1.32)	12.28	< .001	0.52

Paired samples t-tests showed significant differences between means of the “should” and “does” perceptions subscales for *the whole group and for all subgroups* (at p-values < .001). In all cases, their “does” scores are lower than “should”, demonstrating that all of these students found their actual graduate experience significantly less defined by these characteristics than they believed it should be. By degree types, across point-in-progress groups, and among disciplinary subgroups, graduate students consistently evidenced this same pattern of significant difference between expectations and actual graduate experience.

Perceived Difference Predicting Satisfaction

The fourth question, regarding the relationship between the gap between expected and actual graduate experience and overall satisfaction with the graduate experience, was as follows: Do differences between students’ expected and actual graduate college experience predict differences in their overall satisfaction with their graduate experience? To address this question, the researchers analyzed overall mean differences in the scores between the two parallel forms of the “Defining” scale as predictive of the same students’ mean scores on the scale assessing overall satisfaction of their graduate experience. Table 9 shows the results of the regression analyses for the whole group and subgroups.

Table 9: “Should” vs “does” difference predicts satisfaction with GCE

Group	N	Should-Does Difference M (SD)	Satisfaction M (SD)	B	SE	F	p
All	1629	0.57 (1.11)	6.52 (1.32)	-0.48	0.02	770.26	< .001
Degree Type							
Masters	1400	0.58 (1.12)	6.54 (1.32)	-0.49	0.02	685.09	< .001
Doctoral	229	0.57 (1.02)	6.36 (1.31)	-0.41	0.04	89.24	< .001
Point-In-Program							
Entrance	516	0.49 (1.05)	6.63 (1.25)	-0.41	0.03	163.60	< .001
Midpoint	372	0.59 (1.16)	6.35 (1.35)	-0.48	0.04	163.30	< .001
Exit	542	0.57 (1.08)	6.50 (1.39)	-0.50	0.03	377.09	< .001
Alumni	199	0.79 (1.17)	6.60 (1.21)	-0.58	0.06	106.93	< .001
Area of Study							
Hard Sciences	281	0.42 (0.91)	6.44 (1.24)	-0.35	0.04	84.39	< .001
Social Sciences	693	0.60 (1.15)	6.51 (1.34)	-0.47	0.03	292.10	< .001
Arts	125	0.66 (1.06)	6.14 (1.46)	-0.48	0.05	100.39	< .001
Interdisciplinary	532	0.61 (1.15)	6.65 (1.28)	-0.56	0.03	338.55	< .001

The regression analysis showed that the difference between means of the “should” and “does” perceptions subscales negatively predicted overall satisfaction with the graduate college experience for *the whole group and for all subgroups* (at p-values < .001). The greater graduate students’ perceived gap between their expectations of the graduate experience and their actual experience, the lower their satisfaction with their graduate college experience.

Discussion

Students enter graduate programs with specific goals linked to career and professional development and change (Gardner & Barnes, 2007; Ostrove, Stewart & Curtin, 2011). Their expectations of what graduate study will offer are linked to the new opportunities they want to embrace and the new identities they need to develop (Benishek & Chessler, 2005; Coulter et al., 2004). Disap-

pointment of expectations is related to graduate program attrition and students' lack of completion (Golde, 2009; Kanan & Baker, 2006), and understanding their needs and expectations enables faculty and staff to bridge gaps and meet needs to help them succeed (Pontius & Harper, 2006).

This study investigated characteristics that graduate students believed should be part of their graduate programs, and the degree to which their graduate experiences fulfilled those expectations. The research questions addressed what characteristics students felt should and did describe their graduate college experiences, for a diverse group of students and for subgroups by degree type, point-in-progress and disciplines.

The whole group and all subgroups reported positive and moderately strong endorsement of the listed characteristics as present in their graduate experiences (mean of 6.05 out of 8), along with positive and at least moderate overall satisfaction with their graduate experiences (mean of 6.52 out of 8). Even so, there were significant differences between their expected and actual graduate experiences, and those differences demonstrated significant influence on their satisfaction.

Among consistent findings were that the whole group and all subgroups demonstrated (within-groups) significant differences between their perceptions of what the graduate college experience "should" and "does" include. Further, the whole group and all subgroups (should-does) difference scores negatively predicted their overall satisfaction with their graduate experiences. While the magnitude of these differences varied some, based on response-group patterns and group size, all were highly significant (at $p < .001$). These two findings, first that there are consistent gaps between graduate students' expected and actual perceptions of the graduate experience; and second, that those differences consistently and negatively predict their satisfaction with their overall graduate experience; have not previously been demonstrated. Beyond these general findings, some differences specific to the various subgroups are discussed below.

Masters and doctoral students' responses were statistically different on perceptions of both what their graduate experience should include and what it did include. The degree type subgroups' responses were much more homogeneous on what their graduate experiences *did* include than on what they *should* include. This contrast demonstrates that doctoral and masters students expected their graduate experiences to be more unique than they actually experienced. On both "should" and "does", doctoral students' mean responses were higher, as they endorsed the characteristics more strongly than masters students overall. Masters students reported statistically significant higher means than doctoral student for only four items on the "should" scale and only one on the "does" scale. However, the ranking of their "should" characteristics differed, while their rankings (by relative magnitude of response) on "does" were identical. These findings underscore nuanced differences between masters and doctoral students' expectations and priorities for graduate education.

Point-in-progress subgroups were significantly different in what they perceived their graduate experiences should include, but not in what they did include. From the within-scale analyses, groups based on their progress toward degree completion showed more differences in both magnitude of mean scores and in ranking of characteristics, on the "should" scale characteristics than on the "does" scale. Generally, alumni reported somewhat higher (though nonsignificant) scores than current students on the "should" scale; however, since the alumni response rate was lower than current students, this in part may reflect a volunteer self-selection bias. Even so, the contrast of perceptions between current students and alumni present opportunity to benefit from the perspective of graduates who have tested their preparation in the workforce and can evaluate it from that viewpoint (see also Delaney, 2004). However, most notable for all point-in-progress groups is the between-groups differences in "should" scores and the within-groups differences between "should" and "does" scores.

The disciplinary subgroups demonstrated the most significant mean differences and the most varying ranking of characteristics, within both the “should” and “does” scales, as well as the most pronounced variability among their should-does differences. This pattern of findings supports the assertion that examining disciplinary differences on perceptions and assessments of graduate education could enrich understanding of how students evaluate their graduate college experiences, and thus support institution-level decision-making.

Research Contributions

This study introduces an innovative use of the parallel-form, perceptions questionnaire, to compare their actual to ideal or expected experiences. It includes the demonstration of nuanced differences in the degree to which characteristics often attributed broadly to graduate students’ experiences, vary between subgroups by different degree types, at various points-in-progress toward degree completion, and between disciplines.

In addition this study demonstrates significant differences between graduate students’ expected and actual educational experiences, which may lend insight into one possible cause of high attrition among graduate students. Given the resource commitment required of students, faculty, staff and institutions to engage and succeed in graduate studies, knowing students’ needs and expectations, and understanding how actual program offerings align with those expectations, can help institutions use limited resources effectively and strategically.

While these findings may be anecdotally asserted and intuitively plausible, they have not previously been empirically demonstrated for these characteristics and groups. This study—like many other important studies—verifies with data and systematic design what graduate faculty and administrators may consider likely but lack data to demonstrate. It also parses out significant differences by particular groups and illuminates novel perspectives on the graduate experience and specific characteristics on which they differ.

These findings build on the previously-published research on graduate education and the graduate experience. Coulter et al. (2004) found that many graduate students lack adequate orientation to expectations, resources and information at entry to graduate education. This study illuminates a gap between their educational expectations and experience that endures much longer. Previous research has underscored the importance of graduate student involvement and socialization, both personal and professional (e.g., Gardner & Barnes, 2007), and this study ties it to other characteristics of the graduate experience. Many previous studies that attempt to address the complexity of the graduate experience are qualitative (e.g., Offstein et al., 2004). Though they illuminate rich elements of the graduate experience, they are difficult to replicate and extend. The present study offers methods and measures to support a systemic research agenda on these issues, leading to potential improvement in academic programs and centralized student services. The point made by previous researchers (e.g., Nesheim et al. 2006), that the best way to know what graduate students need is to ask them, is intuitively basic but technically challenging, unless institutions are equipped with systematic measurement tools.

Implications

These findings demonstrate fresh ways to examine the differential perceptions and perspectives of graduate students. Traditionally, perceptions have been parsed by conventional demographics such as gender and ethnicity, but not previously using experiential factors such as trajectory based on point-in-progress toward degree. In addition, the differences observed here between expectations and experience contrast by disciplines and also along the graduate trajectory. These findings invite a different, closer look in research and evaluation of the graduate experience. Profoundly, these data showed that contrast between expected and actual graduate experience was significant

for all groups. This finding reflects back on the importance of expectations that drive recruitment, adjustment and acculturation. In addition, the fact that those very differences predicted overall satisfaction with the graduate experience presents additional implications for achievement, retention and completion of graduate degree programs. Given these relationships, both convergent and divergent, a questionnaire of this kind and the data it yields can be used as a diagnostic tool to pinpoint areas in graduate programs that require attention to improve graduate student satisfaction.

As emphasized by Lipschultz and Hilt (1999), systematic organizational assessment can be a critical, positive force in educational improvement and reform, and institutions' needs for efficient and effective approaches to assessing and addressing the needs of graduate students are amplified by shrinking budgets. In addition to their potential for use in ongoing and future research, the products and processes used in this study can be used to evaluate and improve graduate programs. The instruments can be used in needs analysis, to better understand what programs *should offer* to this new generation of graduate students to meet their expectations, or what information may be needed to *address misconceptions* they may have. The comparison process and scales (should vs does) can be used to assess where programs are falling short of expectations for students already in graduate school, to promote retention and completion. Perceived gaps between ideal or expected and actual graduate experiences may be used to help explain why some students are more or less satisfied with their graduate experiences. Similar measures may be useful at the college and program levels, specific to disciplinary and unit goals, to identify and address more nuanced gaps.

Limitations and Future Directions

While the sample was gratifyingly large and diverse, the fact that the present study drew students from a single institution presents a limitation on its generalizability. That limitation was an appropriate control for extreme variance that may have resulted from a different design, such as a random sample from many different institutions. However, having demonstrated these patterns in one university, a next step in this research is multi-institutional extensions, to test how well these findings replicate across other universities and colleges. Recognizing the relationship between satisfaction and intent to persist, and the research that links dropout intentions to actual dropout (e.g., Hardré & Reeve, 2003), an additional future extension of this research, based on the link to overall satisfaction, is possible links to intentions to persist (versus drop out) of graduate school.

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Cite as: Bowden, C., & Galindo-Gonzalez, S. (2015). Interviewing when you're not face-to-face: The use of email interviews in a phenomenological study. *International Journal of Doctoral Studies*, 10, 79-92. Retrieved <http://ijds.org/Volume10/IJDSv10p079-092Bowden0684.pdf>

Interviewing When You're Not Face-To-Face: The Use of Email Interviews in a Phenomenological Study

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Abstract

As Internet usage becomes more commonplace, researchers are beginning to explore the use of email interviews. Email interviews have a unique set of tools, advantages, and limitations, and are not meant to be blind reproductions of traditional face-to-face interview techniques. Email interviews should be implemented when: 1) researchers can justify email interviews are useful to a research project; 2) there is evidence that the target population will be open to email interviewing as a form of data collection; and 3) the justification of the email interview supports the researchers' theoretical perspective. The objective of this study was to develop an email interviewing methodology. As with other forms of qualitative interviewing, it is important that the researcher: 1) identifies constraints; 2) adequately prepares for the interview; 3) establishes rapport; 4) asks appropriate questions; 5) actively listens; and 6) ends the email interview appropriately.

Keywords: Millennials, email interviewing, Gadamerian Hermeneutical Phenomenology, mixed-use communities

Introduction

As more people congregate online, qualitative researchers are exploring the use of online tools for research (Abrams, Wang, Song, & Galindo-Gonzalez, 2014; Jones, 1999; Hine, 2000, 2004, 2005; Mann & Stewart, 2000; Seymour, 2001; Synnot, Hill, Summers, & Taylor, 2014). These tools include email interviewing, instant messaging, and (a)synchronous online focus groups. Written communication can indeed induce strong feelings and reactions in its readers (Watson, Peacock, & Jones, 2006). Williams (2009) attested to becoming upset while reading email interviews of participants' stories of abuse and self-harm. She felt that this emotional reaction helped her to interpret the experiences of participants. Indeed, writing often has a cathartic effect on the

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author, helping to work through emotions (Etherington, 2003; Pennebaker, 1993). Using computers to collect qualitative data easily fits into most contemporary technologically imbued lifestyles. In particular, email has become a normal and responsible mode of communication (Burns, 2010).

Editor: Michael Jones

Submitted: April 30, 2014; Revised: November 20, 2014; Accepted: January 21, 2015

The Values and Limitations of Email Interviews

Email interviews cannot be implemented as a reproduction of traditional face-to-face interview techniques. It is a data collection method with a unique set of tools, values, and limitations (Grafigna & Bosio, 2006).

Values

Eliminates the boundaries of time and space. The use of computers allows researchers to extend their access to potential participants. This can be especially advantageous when geographical distance is too great to travel (Burns, 2010; Chen & Hinton, 1999; Dimond, Fiesler, DiSalvo, Pelc, & Bruckman, 2012; James & Busher, 2009; Mann & Stewart, 2000), and when seeking access to difficult to reach populations such as the sick (Cook, 2012; Synnot et al., 2014), the military (Opdenakker, 2006), the elderly (Brondani, MacEntee, & O'Connor, 2011), and teen drug users (Barratt, 2012).

Reduces research costs. Email interviews save time and reduce project costs because there is no required travel in order to interview (Fontes & O'Mahony, 2008; Opdenakker, 2006), neither are there transcription costs (Bowker & Tuffin, 2004; Fontes & O'Mahony, 2008; Opdenakker, 2006; Seymour, 2001).

Prioritizes participants' comfortability. Tanis (2007) posits that written forms of communication allow for greater participation by people who may have speech and/or hearing difficulties. Additionally, with email interviews, participants can reply to questions at his/her convenience (Bowker & Tuffin, 2004; Burns, 2010; Cooper, 2009; Opdenakker, 2006). Being able to respond to interview questions in the comfort of one's home or during 'down time' may encourage participants to feel safer about sharing their personal experiences (Bowker & Tuffin, 2004; Egan, Chenoweth, & Mcauliffe, 2006), including experiences that may be particularly sensitive and/or embarrassing (Deakin & Wakefield, 2014).

Encourages iterative reflection throughout the interview process. In email interviews, both the researcher and the participant have more time to reflect on the question(s) and provide thoughtful answers. Researchers also have time to iteratively interpret data before asking follow-up questions (Opdenakker, 2006; Ratislavová & Ratislav, 2014; Sammel, 2003).

Streamlines the interview. Having the interview already transcribed eliminates transcriber bias when translating audio data to textual data (Ayling & Mewse, 2009). Additionally, there is no background noise being recorded during the interview (Opdenakker, 2006). Data quality is essentially the same between email and face-to-face interviews (see Meho, 2006). However, multiple studies have demonstrated that data collected online via text is more succinct than data that is collected verbally (Abrams et al., 2014; Benford & Standen, 2011; Campbell et al., 2001; Dimond et al., 2012; Egan et al., 2006; Nicholas et al., 2010; Synnot et al., 2014). Although the transcripts of online interviews are typically shorter than face-to-face interviews, the online groups tend to provide more concrete examples in answering interview questions (Synnot et al., 2014). Face-to-face interviewees are more likely to share more stories, which potentially provide additional data that online participants do not generate, but these additional stories are not always relevant to the research questions (Campbell et al., 2001; Nicholas et al., 2010; Synnot et al., 2014).

Limitations

Marginalized research method. Face-to-face interviews are often privileged over email interviews as a primary means of data collection as face-to-face interviews have been the norm for many decades. Typically, face-to-face interviews are implemented as an uncontested component

of the research design, whereas online interviews are viewed as a second choice alternative when face-to-face interviews are not possible (Deakin & Wakefield, 2014).

May marginalize available participants. With email interviews, participants must have access to the Internet and be competent in computer use (Egan et al., 2006; Jowett, Peel, & Shaw, 2011).

Lack of social cues. Face-to-face interviews have the advantage of being conducted synchronously in both time and place. That is, the interviewer and interviewee can see each other and take advantage of social cues such as paralanguage, body language, pauses, inflection, and tone (Barratt, 2012; Opdenakker, 2006). The lack of social cues in email interviews, however, may increase ambiguity and misinterpretations of the messages exchanged (Chen & Hinton, 1999).

Delay in receiving data and other data issues. Because participants in email interviews respond to questions at their convenience, researchers may have to wait several days to receive a response (Cooper, 2009; Opdenakker, 2006). The delay in response may also eliminate spontaneity as a source of data (Opdenakker, 2006). The time lag in response increases the likelihood that participants may forget to reply at all (Fontes & O'Mahoney, 2008; Kivits, 2005), and increases the opportunities to lose participants at multiple stages throughout the interview (Burns, 2010).

Issues with logistics. Because researchers and participants never interact physically, it can be a challenge to establish rapport prior to the interview (Kivits, 2005). Although there is no background noise that is typically prevalent during face-to-face interviews, the researcher has much less control over other distractions the participant may face while interviewing, and may not even be aware of distractions participants face such as multi-tasking (Chen & Hinton, 1999; Volda, Mynatt, Erickson, & Kellogg, 2004). Additional logistical issues include not being able to verify if the participant is whom they say they are (Fontes & O'Mahoney, 2008; James & Busher, 2009); difficulty analyzing transcripts due to no audio recordings to refer to, and limited or absent paralinguistic cues (Synnot et al., 2014); and difficulty ending the interview session as email interviews may take place over an extended period of time (Kivits, 2005; Opdenakker, 2006).

As with any methodology, there are limitations that need to be mitigated to ensure reliable and valid results. Table 1 presents common limitations researchers encounter when conducting email interviews and provides strategies to overcome them.

Table 1. Limitations of email interviews and strategies to overcome them

Limitation	Suggested Strategy to Overcome
Research participants must have access to the Internet and have sufficient computer literacy skills	Digital divide is increasingly shrinking as technologies become less expensive and more ubiquitous. Offer alternatives to email interviewing.
Lack of social cues to demonstrate listening and understanding	Actively engage in dialogue, not silence, to demonstrate listening and understanding (Mann & Stewart, 2002).
Researcher may need to wait several days to receive response from participant	Inform participants of the time frame for the actual interview. Send email reminders about answering interview questions (Meho, 2006).
Building rapport may be stifled	Be deliberate in establishing rapport <i>before</i> asking interview questions (Illingworth, 2001; Kivits, 2005; Mann & Stewart, 2002).
Uncertainty as to whether participant is who they say they are	Evaluate how the story is constructed and consistency of story to ensure trustworthiness (James & Busher, 2009).
More points of "loss" from participant drop off/lack of interest	Inform participants that research is bounded by specific length of time and/or number of sessions (Meho, 2006).

A major theme embedded within these suggested strategies is to actively engage the research participant in communication at the initiation of the research relationship and throughout the entire interview process.

Research Context

This study was the pilot component of a larger project. In this part, we wanted to answer the question, “How do Millennials make sense of their experiences living in mixed-use communities?”, and used this study as a guide to develop a method for how to conduct interviews via email. The first author of this paper played an active role in the study as interviewer, while the second author was a peer researcher who supported the first author in her interviews.

Why Millennials?

Millennials are the largest American generational cohort since the Baby Boomers. Representing 25% of the American population, there are currently 80 million Millennials (Duggal, 2013) born between 1977 and 2000 (Pew Research Center, 2010). Millennials are the most ethnically diverse generation in American history with 40% of them being either Latino or African-American (Belden Sussonello Strategists, 2013). Millennials spend over 200 billion dollars annually (Barkely Independent Advertising, 2012). With older Millennials (ages 18-34) beginning to enter the housing market, it is important to determine what factors influence their housing consumer choices as their sheer numbers and economic footprint could change the face of the American housing market.

There is evidence that suggests Millennials want multiple uses from their homes and neighborhoods. Duggel (2013) conducted a survey and determined that community gathering spaces, flexible floor plans and homes equipped with infrastructure to support their personal technologies were most important to Millennials. Millennials also want their neighborhoods to be green, walkable, located near transit, restaurants, and/or libraries, and contain a mix of housing styles and types.

Our Participants

We had a total of five participants (Table 2) selected via convenience and snowball sampling.

Table 2. Demographic information about participants

Participant	Age	Location	Tenure	Dominant Lifestyle
Lynn	25	Gainesville, FL (City Limits)	Homeowner	Spaces
Laura	33	Gainesville, FL (Downtown)	Renter	Well-Being
Dionna	32	Philadelphia, PA (City Limits)	Renter	Spaces
Elias	26	New York, NY (City Limits)	Renter	Well-Being
Manny	34	Fort Worth, TX (Downtown)	Renter	Well-Being

First, we contacted local Millennials we knew who lived within our city limits. From there, we asked our participants to provide the names of additional Millennials who would qualify for participation in our study. We also asked younger faculty members for the names of additional Millennials who may be able to participate. Each of the participants we contacted agreed to participate in the study. Demographic characteristics of the participants include: age, location (where

downtown is the city center), tenure (renter or owner), and dominant lifestyle. Lifestyle was determined via a questionnaire (see Appendix) where participants rated how important a particular neighborhood and community factor was to them in choosing their current residence. Each email interview was limited to a maximum number of 10 email exchanges or 14 days, whichever came first. Of the participants, ‘Elias’ had the fewest number of email exchanges (eight). All other participants had 10 exchanges (including reminder emails), and lasted 14 days.

Conducting Email Interviews

In the same vein as Jones and Alony (2011), we will integrate the theoretical guidelines with *how we used email interviews to collect data*. This section will include *first* and third person forms of communication, where *first person indicates the practical insights we gleaned from implementing this process (which is also in italics for clarity)* and third person indicates the theoretical underpinnings of this method. Each section will be introduced with a question.

Does my research lend itself to email interviews?

Online interviewing is not an “easy option” (James & Busher, 2009, p. 40) for data collection, and should be implemented only when researchers can justify that this form is useful for their research project (Cooper, 2009). Researchers who conduct email interviews must have a strong commitment to the topic of interest, the participants, and the interview process itself (Kivits, 2005).

Because email interviews remove the element of spontaneity as a part of data collection, a researcher needs to determine if spontaneity in response to the interview questions (Williams, Clausen, Robertson, Peacock, & McPherson, 2012) and direct probing (Meho, 2006) are essential components in answering the research questions.

We wanted to conduct an exploratory study to understand how Millennials make sense of their lived experiences in mixed-use communities. Although we live in a college town and have several mixed-use neighborhoods, we felt that the local demographic available to us was too homogeneous to gather a diversity of perspectives. So, we decided to expand our research pool to Millennials throughout the United States.

What evidence is there that suggests my target population would be open to online data collection?

Before committing to email interviews it is imperative that researchers first determine whether or not their participants would be responsive to this form of data collection. Boshoff, Alant, & May (2005) assert that asynchronous online research can help facilitate research of individuals that lead busy professional lives.

We know that Millennials value flexibility in obligatory tasks and are likely to rely on technology to help them multi-task since they do not like wasting time (Sweeney, 2006). We also know that generally Millennials feel comfortable communicating online. Turkle (2011) conducted an ethnographic study of communication among adolescents who reported that texting was the only way they felt they could connect to their emotions. Turkle (2011) concluded that as thumbs-based communication continues to increase, (e.g., texting, instant messaging, online forums, social sites, etc.), so will individuals’ preferences for text-based communication.

Does this data collection method support my research theoretical perspective?

One's theoretical perspective is a philosophical stance that informs their research methodology and method. We positioned ourselves within the theoretical perspective of Interpretivism, specifically, Gadamerian Hermeneutical phenomenology. For Gadamer (1989), hermeneutical understanding seeks to utilize the horizon of one's past experiences to interpret the horizon of present experiences. Understanding takes place when the past and present horizons of the researcher fuses with the past and present horizons of the participant, and a new horizon of understanding is created.

We decided to conduct a Gadamerian Hermeneutical phenomenology as we wanted to co-construct knowledge with our participants. The hermeneutical aspect meant that we would utilize an iterative data analysis approach such that with each successive email, we reached the essence of the participants' experiences within mixed-use communities. We sought to compare the parts and whole of each participant's experiences. The time delay built into email interviews incorporated a reflexive component to data collection and supported a more iterative data analysis. The Gadamerian aspect of this phenomenology meant that knowledge would be co-constructed with our participants where, at the conclusion of the interview, the horizon of experience of both the participants and the researcher expanded with new understanding.

Gadamer (1989) asserts that his phenomenology encourages both the researcher and participant to expand their horizons of understanding through communication, which requires that both parties be open and flexible to the changing dynamics of the interview process.

The Gadamerian aspect of this study was initially uncomfortable for Chandra, the one who conducted the interviews, who by nature is private and values boundaries between the work and the personal. She was aware of her past horizons of experiences including her struggles as a Millennial, and how she makes sense of how her previous professional and personal experiences have shaped who she is as a doctoral student, and her feelings of pride/shame of her development thus far. She was surprised when, at the request of a participant, she was asked to express these life experiences.

Chandra {at the conclusion of her introductory email}: If you don't have any objections, it would be nice to learn a little more about you.

Manny: No objections here, I'm pretty open--- {After a three paragraph introduction}--- I am curious, what's your exigence [sic] in your line of work? Where's your gravitas? Or what are you most passionate about/interested in?

With respect to sharing her present horizon of understanding, Chandra chose to tell a participant her personal reaction to the participant's thoughts about the local food movement. Both Chandra and the participant, 'Laura', were able to expand their understanding of their opinion of the local food movement.

Chandra {in response to Laura's full endorsement of the local food movement}: I struggle with 1) having personal beliefs that local, less processed food is healthier, 2) having a desire to see people from all socioeconomic backgrounds be able to have a choice on the types of food they eat, and where they live, and 3) wondering if I am imposing my beliefs on them---What are your thoughts on this? And what perspective can you provide as a member of a local community that values the power of choice in how residents spend their money in order to sustain their community, and believes in the power collective action?

Laura: You brought up some good points in your last email. I have spoken with XXX and do agree with many of her viewpoints on local food. I should add to my previous statements that there may not be one perfect model for anyone/everyone---

What are my constraints?

Email interviews remove time constraints from the participant, allowing for more thoughtful and detailed responses (Mann & Stewart, 2000; Murray, 2004; Tates et al. 2009). That does not, however, preclude time constraints imposed upon the researcher.

We were excited to begin conducting interviews in a novel manner; we quickly realized, however, that there were time constraints on the number of interviews that we could conduct simultaneously. Iterative interviewing is labor intensive as data analysis occurs throughout the interview. We only conducted two interviews at a time as we felt that allowed us to be fully engaged with our participants and provided adequate time to read, analyze, and reply to emails in a timely fashion.

How do I prepare for an email interview?

Typically, the individuals that researchers may want to interview via email are found online. Recruitment strategies include individual solicitation, snowballing, listservs, message boards, discussion groups, and personal research websites (Meho, 2006).

We created a personal research website that explained the study, and solicited participants via snowball sampling. We laid the groundwork for the relationship that we would establish with participants by communicating our research objectives and establishing the boundaries of privacy issues on our website. Research participants who chose to enroll in the study completed an electronic consent form and were emailed a brief demographic questionnaire in order to determine their dominant lifestyle factor and values. The first interview question was dictated by their primary lifestyle factor, and their dominant value(s) supported our analysis of their responses.

“How-to” conduct email interviews

Establish rapport. The success of any qualitative interview is contingent on how well the researcher establishes rapport with participants. Much of the literature on qualitative interviewing is dedicated to establishing rapport (Shaw, 2010). Before beginning the interview process, it is important that the researcher gets to know the participant and establish trust (Mann & Stewart, 2002). One way to establish trust is to demonstrate a shared identity with participants. Indeed, many online researchers suggest that self-disclosure early in the interview process is essential to a fruitful interview experience (Kivits, 2005; Illingworth, 2001; O’Connor & Madge, 2001).

Before we sent any interview questions, we used our first email exchange to introduce Chandra. She shared information about her age, work, and hobbies and, if participants felt comfortable doing so, asked them to do the same. We were able to pick up a lot about the personalities of the participants based on their responses to that first email. For instance, we perceived that with ‘Manny’, it would not be as much of an effort to get rich descriptions from him, but with ‘Elias’, Chandra would have to do more probing to get to share.

Chandra {at the conclusion of her introductory email}: If you don’t have any objections, it would be nice to learn a little more about you.

Manny: No objections here, I’m pretty open--- {After a three paragraph introduction}---I am curious, what’s your exigence in your line of work? Where’s your gravitas? Or what are you most passionate about/interested in?

Elias {After writing a one paragraph introduction}: There is a lot more to tell, but introduction has never been my forte. Let me know how best to assist your research.

O'Connor and Madge (2001) assert that online interviewing is less formal than face-to-face interviewing, and that their efforts in establishing rapport were perhaps unnecessary.

We disagree. Kivits (2005) asserts that establishing relationships was a prerequisite to gathering sufficient, rich data, and we found this to be true in our study as well.

Asking questions. Embedding questions within the body of the email results in a significantly higher response rate than utilizing questions that are listed as part of an attachment (Dommeyer and Morlaty, 2000). In a typical phenomenological interview, the first question is rather general and asks the participant to explain an experience in detail (Lavarty, 2003).

*After participants completed a demographic survey, the first interview question was asked based on the dominant lifestyle factor of each participant. There were four lifestyle factors: spaces, well-being, social, and environtech. **Spaces:** Tell me about a time when you felt that the spaces within your home and/or neighborhood really suited your particular needs for an occasion. **Well-being:** Tell me about a time when you felt that the layout, vibe, or residents of your home/neighborhood made you feel safe or promoted your overall well-being. **Social:** Tell me about your favorite memory when you were able to be social with your family or friends while in your home and/or neighborhood. **Environtech:** Tell me about a time when you were able to live out pro-environmental behaviors in your home and/or neighborhood. No matter the interview question, participants were encouraged to submit a photo (with a signed photo consent form, if applicable) of images within their home and/or neighborhood.*

Sammel (2003) conducted a Gadamerian Hermeneutical phenomenology with environmental educators. At the first interview, Sammel used questions to guide the interview. At the follow up interview, she used a list of quotes from the first interview in lieu of new questions to deepen her understanding of how these educators made sense of their experiences. She used questions in the second interview only for clarification.

In our study, each new exchange with our participants included references to previous writings with an interpretation and request for clarification.

Chandra {to Elias}: I really appreciate your response. It was very enlightening. It seems that you are 'cool' with your neighborhood, but not 'enjoying' your neighborhood. Is this a fair conclusion? Please let me know. I'd like to ask you a few follow-up questions about what your needs are and how your neighborhood meets (or doesn't meet) your needs---

In order not to overwhelm participants, it is important that the researcher not ask too many questions at one time (Burns, 2010). The researcher must determine the most prevalent themes that they would like to explore in each email exchange.

Listening. This skill is essential in email interviewing and may be challenging to master as there are little to no paralanguage cues to employ to demonstrate listening. While interviewing online, it is important that the researcher realizes that "listening needs to be expressed as words, not silence" (Mann & Stewart, 2002, p. 618). Letting the participant know you interpret what is shared is critical to minimizing miscommunication.

Chandra: Thanks again for replying to my questions. It seems that the Wissahickon Valley Trail is an important space in your community because it provides a tranquil location for you to maintain your social connections. Did I interpret this correctly? I'd like to ask you a few follow up questions about the Trail and your social ties.

Dionna: Yes, that is a correct interpretation.

Finally, it is important not only to “hear” what is spoken, but what is also not spoken (Kvale, 1996).

Elias: As for "how your neighborhood meets (or doesn't meet) your needs," I am really unable to assess that at this time because I am unsure of what needs my neighborhood should meet. [Wow! He does not look for external fun, activities. He sounds lonely.] Not venturing out much does not help my case. [He doesn't seem to be engaged with his community.] At one point, and still, I love very active/loud areas [Something is different, Elias is usually more engaged, feeds off of energy, gives out energy that is more upbeat] but now I am bear/stand neighborhoods with a slower pace.

Ensure privacy. It is important that researchers handle sensitive information with discretion and periodically remind participants that their privacy will be protected (Kivits, 2005).

Chandra: On another note, I was talking with my methodologist this morning. He mentioned that my name dropping (i.e., XXXXX & XXXXX) may lead my participants (namely you) to believe that I talk about you with others. I want you to know I have not mentioned your responses to anyone, and when sharing my data with my methodologist, I removed identifying information before sharing it with him.

Laura: No worries on the name dropping – I realize our interview may have been a little less formal than your others will be, but thank you for bringing it up and ensuring confidentiality.

Elias: I decided to return to NYC for reasons that I would not like to disclose in this study. XXXX may know the reason, but I do not want to discuss it here. Over drinks, maybe. Just kidding.

Chandra: No worries about not sharing why you left Oregon. When you said over drinks, I laughed (a good laugh). I assume you're taking life's detours in stride and that's all good.

I want you to know that I do not talk with XXXX about my study, or about my participants. I thanked her for sending out my information, and told her two people responded to her call, but did not tell her who they were.

XXXX doesn't know that I know you.

I wouldn't tell your business, anyway. This is why I asked you to provide an alias, so that I would not inadvertently provide any identifying information. And, when I share my interviews with my professor, I always remove your email. Gossip is grimy, and I'm not into that.

End the interview (or responding when the interview seems to end when you haven't finished collecting data). Asynchronous online data collection, such as email interviews, typically last several weeks (Williams et al., 2012), and it can be difficult for both the researcher and participant to accept closure after the email interview has ended (Kivits, 2005). To ensure that the study actually comes to an end, researchers can create an email account specifically dedicated to the research project so that they can delete the contact list and preserve research participants' confidentiality (Fontes & O'Mahoney, 2008).

At the conclusion of our interviews, we thanked the participants for their participation and informed them that we would share the results of the study with them once we analyzed all interviews. We sent each participant a PowerPoint presentation containing the major themes, sub-themes, and contradictory themes shared by participants.

Alternatively, the interview can end at the discretion of the participant. This can be overt (expressing a desire to end the interview) or covert (not replying to follow up emails).

In our study, the interview was bounded by 10 email exchanges or 14 days, whichever came first. A relatively short interview period was advantageous for us both in securing participants and limiting the sudden feeling of loss of a relationship between researcher and participant (Kivits, 2005). Even with our short interview window, we had two participants end the process covertly. Though it has been suggested that busy professionals may prefer the email interview method (Boshoff et al., 2005), we are unable to conclude that this method ensured the greatest retention of our participants, and we are unaware of literature that compared the attrition of professionals versus non-professionals interviewed via emails.

Kivits (2005) asserts that the primary challenge in her study was to preserve participant interest in the interview. Because the email interview is carried out over an extended period of time, the original excitement tends to wane and increases the likelihood for participant attrition. One of the first warning signs of attrition is an extended time lag between responses. What can a researcher do to encourage the consistency of the interview when it takes their participants longer than usual to respond to questions?

We experienced delays in participants completing their demographic survey and/or replying to interview questions. Because of our relatively short interview window, we chose to give participants 48 hours (on rare occasions 72 hours) to respond to our inquiries. Most participants replied to our follow-up emails. There were two occasions when participants did not reply to our repeated requests for information. 'Elias' only partially completed his final evaluation survey, and 'Manny' did not reply to our follow-up email requesting feedback on themes that Chandra gleaned from their interview.

A limitation of email interviewing is that there are multiple places where the researcher can 'lose' participants before the interview is complete. Researchers must decide if, or how, to use partial data.

With both of these participants, we chose to use what we had.

How participants felt about email interviews

To our knowledge, no studies exist which explore how Millennials perceive an email interview research experience.

As part of reflecting on the usefulness of this method with Millennials, we sent participants an open-ended survey at the conclusion of the interview and asked for feedback about the interview process. The participants liked being able to reply to interview questions at their convenience, and having a time limit to the interview (i.e. 10 email exchanges or 14 days) made them more likely to participate, as without this time constraint, they might not have participated. Having a time constraint on the interviews was advantageous to us as well. It encouraged us to begin analyzing new interviews quickly after we received them, which helped to keep the ongoing conversation fresh and relevant.

Obtaining a signed consent form for photos was a deterrent for nearly all participants. Those who did choose to submit pictures did not submit images with identifiable people in them in an effort to avoid having a form signed. Participants appreciated that there were a limited number of questions with each email exchange, and enjoyed receiving the summaries of their responses to our interview questions. This feedback from the respondents is important in iterative data analysis. The participants enjoyed their rapport with Chandra, but did not feel that her self-disclosure was necessary for them to want to share their responses. This is interesting because we intentionally made sure that Chandra shared her historical and present horizons of experience as part of a Gadamerian Hermeneutical phenomenology.

Conclusion

The objective of this study was to develop a method on how to conduct email interviews with Millennials. Email interviews appear to be a strong data collection method for this demographic as most Millennials are computer literate and have access to the Internet (Turkle, 2011). Millennials also value flexibility when completing responsibilities and rely on technology to help them multi-task. We feel that for an exploratory study, this data collection was sufficient. A comparative study with another interview method, such as face-to-face, would be necessary to determine if similar themes emerged no matter the interview method. Like all other forms of qualitative interviewing, it is important that the researcher: 1) establishes rapport; 2) asks appropriate questions; 3) actively listen; and 4) end the interview appropriately.

A Personal Reflection on Email Interviewing

Email interviewing was a satisfactory data collection method for this study. As a pilot, we had no available funds to collect data that would inform a larger dissertation study. This method allowed us to obtain and utilize preliminary data efficiently. This data collection method situated us to think of our target audience from the inception of this project, including the design of our research website, how we established rapport, and how we conducted the interview. Analyzing communicative data without non-verbal cues proved a challenge as we wanted to ensure that we honored the perspectives of our participants. This required close reading of the email messages. The iterative data analysis process, due to the time delay, however, helped to make the analysis run more smoothly as we could ask for feedback on our interpretations and clarify any misunderstandings. Our participants felt pleased to provide their insight and appreciated that we shared communication that resonated with them.

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Appendix

Please think about your current home. How important was each of the following to you when deciding whether or not to move into your current home?

It was important to me that my home:

(Well-Being Factors)

- Be easy to clean
- Be a place where I can relax
- Be a place where I felt secure
- Be a place that contributed to my overall well-being

(Social Factors)

- Be in a location that would be easy for my friends/relatives to visit
- Helped me maintain my social contacts
- Be part of a community with a thriving social scene
- Be located near cultural amenities

(Spaces)

- Have beautifully landscaped outdoor space
- Have plenty of room for recreational activities
- Have a flexible floor plan so that I could rearrange furniture

(Envirotech)

- Have the most up-to-date features
- Be located near public transportation
- Be located within a community where I do not have to rely on a car to get around
- Be located near my job/school
- Have the infrastructure to support my personal technologies
- Be equipped with energy-efficient appliances

Biographies



Chandra Bowden is a doctoral student studying how values and lifestyle influence Millennial choice in mixed-use community housing. When she is not working on her dissertation, she supports the University of Florida Division of Enrollment Management in developing statistical models to determine what factors influence freshmen choice to enroll or not enroll in the University.



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Cite as: Leech, N. L., & Haug, C. A. (2015). Investigating graduate level research and statistics courses in schools of education. *International Journal of Doctoral Studies*, 10, 93-110. Retrieved from <http://ijds.org/Volume10/IJDSv10p093-110Leech0658.pdf>

Investigating Graduate Level Research and Statistics Courses in Schools of Education

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Abstract

Instruction in research methods, particularly statistical training, is an essential requirement for most higher education advanced-degree students. However, results from the institutional survey reported here demonstrate that many faculty in schools of education still do not require or offer a variety of research and analysis courses to provide this training. This article will explore graduate-level requirements for research methods and data analysis courses in schools of education across the United States. Two surveys, one asking questions about research methods courses and one about statistics courses, were distributed through listservs to faculty at institutions of higher education. Twenty-eight responses, representing 28 institutions, were collected for the research course survey and 19 responses, representing 19 institutions, were collected for the statistics course survey. The number of courses offered and required and the number of credit hours for them are presented for Master's, Ed.D., and Ph.D. students. From this study, it is evident that several universities do not offer or require many research methods or statistics courses for education graduate students. The authors intend that this information will assist faculty in rethinking what coursework is necessary to educate successful graduate students.

Keywords: research courses; statistics courses; requirements in doctoral programs; requirements in Master's programs

Introduction

Faculty in schools of education have questioned what research and analysis methods courses should be taught and how many research and analysis methods courses are appropriate in order to have students graduate with the ability to conduct rigorous research (Levine, 2007; Page, 2001). As used in this study, a school of education is a school, college, or department at an institution of higher education offering graduate degrees and initial and advanced educator preparation licensure programs. It is important for students to become successful researchers, as Cravens, Ulibarri, Cornelius, Royalty, and Nabergoj (2014) state, "As important as it is that students learn concrete

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analytic techniques, it is even more important that they graduate with the competence to undertake independent research" (p. 242). In 2001, Page asked,

Should doctoral programs require preparation in research methods and if so, why? Should all students...gain competence in research methodology, and in one or several?...And how much of a doctoral program should be devoted to

Editor: Ahabab Chowdury

Submitted: July 18, 2014; Revised: December 1, 2014; Accepted: January 27, 2015

methodological preparation, as opposed to foundational or empirical literatures on key topics? (p. 19)

Interestingly, even though these questions were posed over a decade ago, very little research has been conducted to better understand what experiences and courses help to develop successful educational researchers (Leech, 2012).

There are few published studies investigating research and statistics courses in schools of education. For example, one study (Capraro & Thompson, 2008) investigated required doctoral-level research courses at 21 schools or colleges of education and found that 72% required a quantitative course, 46% required a qualitative course, and 26% required neither. Similarly, Leech and Goodwin (2008) researched methods courses at 100 schools or colleges of education and found 63% required basic statistics, 54% required intermediate statistics, 62% required a quantitative research course, and 62% required a qualitative course. Other researchers have focused on specific schools and/or colleges of education or entire universities as case studies (e.g., Allen, Smyth, & Wahlstrom, 2002; Bernauer, Semich, Klentzin, & Holdan, 2013; Brooke, Chen, Lui, & Valle, 2013; Harris, Freeman, & Aerni, 2009; Kuipers, 2011; Leonard & Fennema, 2008), yet little has been published looking across schools.

A few researchers have investigated research and statistics courses in schools and programs in different disciplines. Sonstrom, Rachal, and Mohn (2012) researched 37 North American doctoral programs in adult education and compared their course descriptions to the published Standards for Graduate Education in Adult Education (Commission of Professors of Adult Education, 2008). These researchers found 91.9% of the programs met the standard of “appropriate depth of qualitative or quantitative research methodology coursework to support dissertation research and ability to use existing literature” (Sonstrom et al., 2012, p. 156). In contrast, Ishiyama, Miles, & Balarezo (2010) explored 122 Ph.D.-granting political science programs in the United States and their focus on teaching students to teach. Their findings reveal that there is little focus on teaching graduate students to teach quantitative methods; interestingly, qualitative or mixed methods was not mentioned. Finally, Jones (2013) examined 995 papers written between the years 1971 and 2012 on the topic of doctoral studies. From this analysis, six themes emerged: (a) teaching, (b) doctoral program design, (c) writing and research, (d) employment and career, (e) student-supervisor relationship, and (f) the doctoral student experience. Concerning writing and research, “the discussions around writing and research focused on the increasing need for students to write well and publish, and to do so earlier with an increased emphasis on quality” (Jones, 2013, p. 89). Six sub-themes for writing and research were identified: collaborative approaches, research awareness, students’ attitude toward writing, training for research and publication, pressure to publish, and research productivity.

To complicate the issue, the different programs offered through schools of education (i.e., Ph.D., Ed.D., and Master’s) usually have different requirements for their methods courses (Carnegie Project on the Education Doctorate, 2009). According to the Association of American Universities (1998), having a Ph.D. indicates an ability to conduct empirical research. The Carnegie Project on the Education Doctorate (CPED) (Carnegie Project on the Education Doctorate, 2015) was developed to distinguish between Ph.D. degrees and Ed.D degrees in schools of education mainly in the US, currently also with two participating universities in Canada, with the focus on how Ed.D. degrees prepare students to develop professional knowledge by integrating practical and research knowledge (Carnegie Project on the Education Doctorate, 2009). The main difference between the Ed.D. and Ph.D. degree is that the Ed.D. program stresses *practical* and *applied* research that investigates problems of practice and the Ph.D. program has a broader focus for research; yet, each of these doctoral programs must prepare students to conduct research.

Regardless of the program, it is important for students to learn how to conduct qualitative, quantitative, and mixed methods research (Tashakkori & Creswell, 2008). According to Henson, Hull, and Williams (2010), “Newly minted education researchers should be able to read and critically evaluate research findings from a wide range of methods while being expert in a specific methodological orientation” (p. 229). Yet, “a serious discussion of how to prepare scholars in research methodology is relatively uncharted” (Tashakkori & Creswell, 2008, p. 291). Furthermore, there is little information guiding what students should know and be able to do in regard to research, and debate over how much of a graduate program should be devoted to methodological preparation as opposed to foundational concepts in focus areas of study.

Ensuring that the advanced degree meets the needs of stakeholders is a worldwide concern (Carnegie Project on the Education Doctorate, 2015; Higher Education Funding Councils, 2003). Because globalization heavily impacts higher education and moves it toward increased international involvement (Altbach & Knight, 2007), the field of advanced study in education is in need of studies of how prepared all students are, not just those from our own classes and programs. Higher education must prepare students for global work regardless of where they went to school. However, few studies exist to meet these needs. In education, Allen, Smyth & Wahlstrom (2002) documented the rationale for significant revision to a Canadian Ph.D. program, decisions based largely on the recognition that the traditional Ph.D. curriculum was not meeting the needs of the broad audience of stakeholders.

Other professional areas, such as nursing, political science, and the arts and sciences, have posed similar ideas. For example, after finding very little research outside the United States on quality nursing programs, Kim, McKenna, & Ketefian (2006) investigated and developed guidelines for “quality criteria, standards, and indicators for doctoral programs in nursing that may be used worldwide” (p. 477). In the field of political science, the quality of doctoral student preparedness by research universities in the United States was found to be lacking in a variety of areas (Schwartz-Shea, 2003). A survey of doctoral students in the arts and sciences suggested that the curriculum needed revision to prepare them for their jobs (Golde & Dore, 2001). The current study investigates the commonality across research universities in the United States in the area of research methods preparation for advanced education students, and calls for additional studies in other settings. We anticipate that the current survey research study can serve as an initial exploration of offerings and requirements in schools of education, and that it will allow for identification of other research questions (e.g., why are certain courses required/not required? Why are certain courses offered/not offered? What are the challenges to providing graduate education students with more comprehensive research and analysis training?), which can serve as the basis for further research.

Conceptual Framework

This study utilized Leech’s (2012) model for understanding how to educate knowledgeable and skilled researchers as a conceptual framework. Leech’s (2012) model builds on three extant theories/studies (Bozeman, Dietz, & Gaughan, 2001; Levine, 2007; Lovitts, 2005). Bozeman, Dietz, and Gaughan (2001) developed the Theory of Scientific and Technical (S&T) Human Capital, which encapsulates human capital (i.e., cognitive skills, knowledge, craft skills) and social/research project capital (i.e., research projects). Human capital includes a person’s cognitive skills, craft skills, and knowledge. Social capital is “the sum of resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu & Wacquant, 1992, p. 119). Leech (2012) adapted these ideas into the following areas: cognitive skills, amount of knowledge, and social capital (measured by the research projects a researcher is involved in). The model includes qualitative, quantitative, and mixed methods projects as well as indicators of the

level of participation, from low participation (e.g., being fourth author on a project) to high participation (e.g., being first author on a project). Based on the adapted model, a novice researcher would have low cognitive skills, low knowledge, and little social capital. In comparison, a skilled and knowledgeable researcher would have high cognitive skills and knowledge, and broad social capital.

Levine's (2007) study researched three areas of schools of education including the program (i.e., purpose, admissions, graduation and degree standards, finances), the curriculum (i.e., how well it matches the purpose and goals of the program, how often the students have other experiences outside of the classroom, as well as assessment), and the faculty (i.e., productivity, expert teachers, and research quality) to identify what aspects of a program are needed to graduate successful researchers. A successful researcher is defined as a researcher who can effectively participate in "the preparation of grant proposals and the writing and presentation of research papers" (p. 25). From this investigation, Levine identified nine aspects that are associated with successful researchers: (a) purpose of program, (b) curriculum coherence, (c) curriculum balance, (d) faculty, (e) admissions, (f) graduation and degree standards, (g) research, (h) finances, and (i) assessment. Students who attended programs that included all nine points tended to graduate researchers that are more successful. According to Levine (2007) an:

exemplary program is one that substantially meets all nine criteria. A strong program is one that substantially satisfies most of the criteria. An inadequate program is defined as one that fails to achieve most of the criteria or has a fatal flaw, such as having faculty who do not publish. (p. 16)

Finally, Lovitts (2005) developed a model to better understand how to develop skilled and knowledgeable researchers. The model outlines factors that "produce outstanding research and scholarship" (p. 139). In the model there are three interacting main areas: the macro environment which includes the culture of the discipline, the microenvironment which includes the location of school and the advisor, and individual resources which includes intelligence and motivation). According to Lovitts, if any of these areas is deficient the probability decreases of a student producing a quality dissertation and becoming a successful researcher.

Leech (2012) took these three theories/studies and developed a new model that infuses aspects of all three extant theories/studies. Figure 1 depicts the new model from Leech (2012). This model incorporates the macroenvironment (i.e., the culture of the graduate education and the culture of the discipline), the microenvironment (i.e., advisor, mentoring, peers and other faculty, department, curriculum, instruction, assessment, standards, and location), and individual resources (i.e., intelligence, motivation, knowledge, personality, and thinking styles) These multiple facets combine to create a skilled and knowledgeable researcher with the Program (i.e., the curriculum) being important to this success.

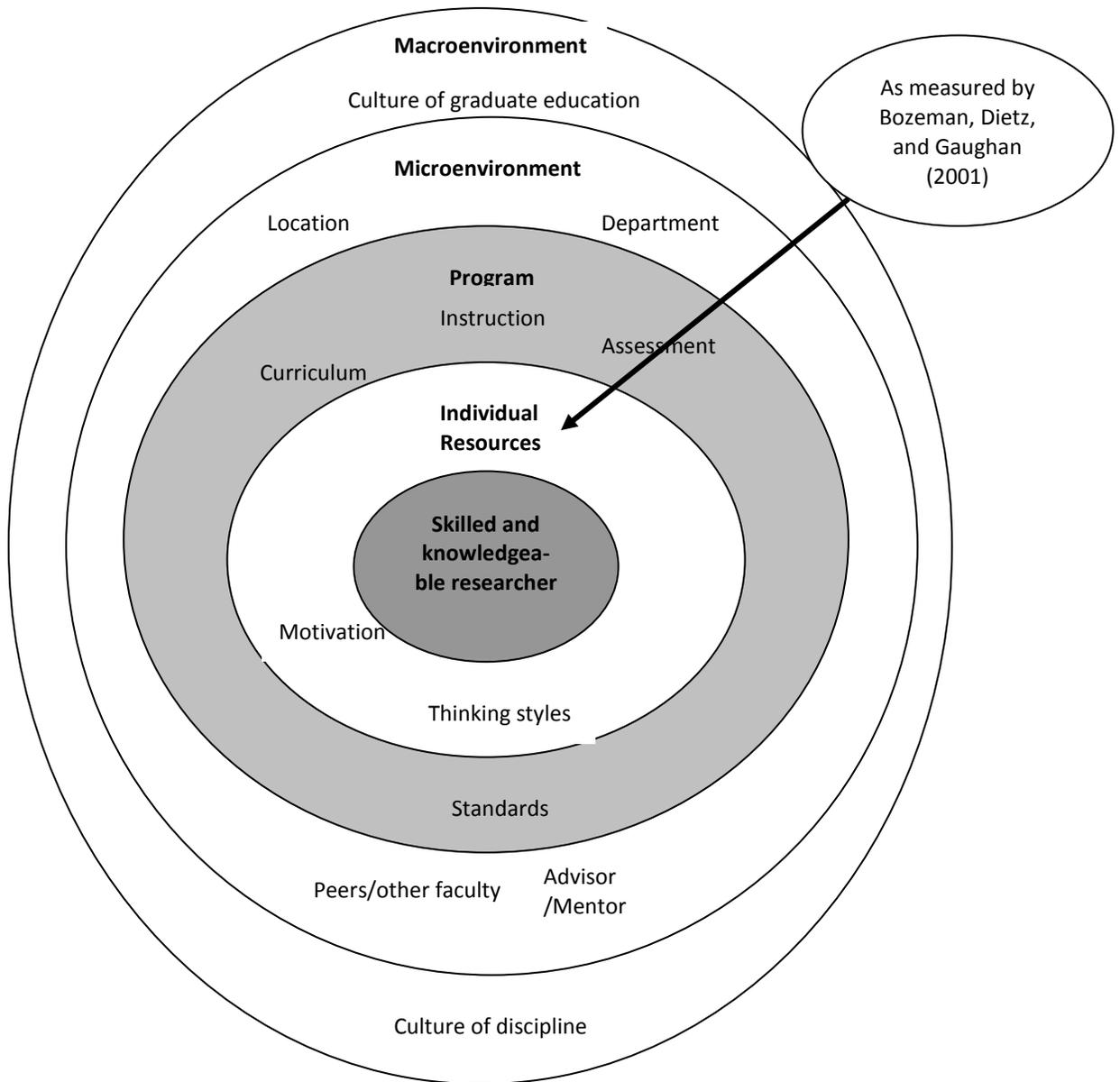


Figure 1. Leech’s (2012) model for understanding doctoral student success.

The purpose of this study was to build on Leech and Goodwin’s (2008) study to increase understanding of current inquiry course requirements in Master’s and doctoral programs in schools and colleges of education around the country and explore the balance between qualitative and quantitative inquiry course requirements. This study will answer the following research questions: (a) What type of research and statistics courses are being offered in Master’s, Ed.D., and Ph.D. programs in the United States?, and (b) What type of research and statistics courses are being required by Master’s, Ed.D., and Ph.D. programs in the United States?

Methods

This study was an exploratory quantitative study. The survey used in Leech and Goodwin's (2008) study was updated and adapted for online dissemination. Questions focused on the type of degree(s) offered, the number of full time students admitted to and completing the program, the types of courses offered and required for each level of student (i.e., Master's, Ed.D., and Ph.D.), whether there were differing expectations in these courses for each level of student, and whether there were changes being contemplated for any of the programs. The research and statistics surveys were tailored to the discipline of education at the graduate level and are presented in the Appendix. The institutional research board's approval at the authors' institution gave approval for the conduct of this study.

Participants and Procedure

A convenience sample of participants was identified through the three listservs: (a) the listserv for the American Educational Research Association's (AERA) Special Interest Group (SIG) Professors of Educational Research, (b) the listserv for the AERA's SIG Educational Statisticians and (3) the listserv for the AERA's SIG Mixed Methods Research. A posting was available on the listservs explaining the study's purpose, asking whether the recipient taught research or statistics courses in a school of education university setting or was someone who knew about the program's required and elective courses, explaining how the participation was voluntary, outlining the benefits and risks of participating in the study, and requesting participation in the study. The survey asked for the name, position, and the institution for which they were reporting so that only one person reported on the same institution. The respondents included assistant professors, associate professors, full professors, and chairs of departments. The posting provided two links: one for a survey regarding statistics courses and one for a survey asking about research courses. By completing the survey, the participants were indicating their consent.

The online survey was administered and managed using REDCap (Research Electronic Data Capture), an electronic data capture tool (Harris et al., 2009), hosted at the University of Colorado Denver. Twenty-eight responses representing 28 different institutions were collected for the research course survey and 19 responses representing 19 different institutions were collected for the statistics course survey.

Analysis

The unit of analysis for this study was the institution. It was not possible to determine a response rate because we cannot quantify the universe of schools of education represented in the three AERA SIG listservs. Multiple SIG members might belong to the same school of education, negating our ability to count institutions by counting SIG members. For each school of education, only one response was admitted for analysis. We did not receive more than one response per institution.

Researchers used descriptive statistics to analyze results from the surveys. Data were downloaded from REDCap to SPSS version 22. After the data were downloaded into SPSS all identifiers were removed.

Results

The Research Survey

Of the participants who responded to the research methods course survey, 15 (54%) offered an M.A., 25 (89%) offered a M.S., and 13 (46%) offered an Ed.D., and 18 (64%) offered a Ph.D. For

these participants, the number of students admitted in these programs ranged from 6 to 2000 ($M = 204.79$, Median = 30.00, $SD = 471.18$) and the number of students who completed the program ranged from 0 to 2000 ($M = 185.18$, Median = 22.00, $SD = 479.67$).

Twenty-five percent of the programs reported having differing expectations for Master's, Ed.D., and Ph.D. students in the research courses. As for specialty research courses that are offered, the following were listed by program: (a) ethnography, evaluation, needs assessment, case study, and single case design; (b) paradigms of research; (c) qualitative case study, single subject/case, measurement, survey research, self-study, program evaluation; and (d) survey research.

Table 1 presents the number and percent of respondents that indicated that the research course was required or offered as an elective. The table also includes the range, mean, and standard deviations for the number of credits for the research methods courses. Overall, more than half of the programs required and provided elective research courses for Master's students (57%). Interestingly, most of the Master's level programs required basic research methods courses (54%) with very few Master's programs requiring qualitative research methods courses (7%) or quantitative research courses (7%). None of the Master's programs required advanced courses in qualitative or quantitative research methods, although 7% provide an advanced qualitative course and 11% provide an advanced quantitative course as electives. Regarding mixed methods courses, none of the programs required a mixed methods course with only one program offering it as an elective. None of the Master's level programs offered other specialty courses (e.g., survey methods, ethnography). The number of credits for all Master's courses ranged from 3 – 6 credits. One course in basic research design, with optional additional courses, seems to be the requirement in about half of these programs. However, the other approximately half of these Master's programs do not have any research course requirements.

Less than half (43%) of the Ed.D. programs reported having research methods courses available for their students. Of these courses, 36% required a basic research methods course, with the number of required credits ranging from 3 – 9. Qualitative courses were required by 36% of the programs, with required credits ranging from 3 – 6, and 32% required a quantitative course. None of the Ed.D. programs required advanced qualitative or quantitative courses. A required mixed methods course was rare (7% of the programs), as was an elective mixed methods course (7% of the programs). No institutions reported any specialty courses as being available for Ed.D. students. This might be due to Ed.D. cohort models where the students do not have an option to take an elective course.

For Ph.D. students, 25% of the programs provide research methods courses for their students. Only 14% require a basic research methods course with required credits ranging from 3 – 4. A fourth of the programs (25%) reported requiring a qualitative research methods course, and only 7% require an advanced qualitative research methods course. Additionally, only 7% require a quantitative research methods course, with only 7% of the Ph.D. programs offering an advanced quantitative research methods course. Only 7% of the programs require a mixed methods course, with 11% offering the course as an elective. Almost all course credits ranged from 3 – 4. The paucity of research methods requirements for Ph.D. students is noteworthy because of their need to conduct original research to complete the degree and succeed in certain careers.

Table 1. *Number and Percent of Programs that Require or Offer as an Elective Research Methods Courses including the Range, Means and Standard Deviations for the Number of Course Credits*

	Masters				Ed.D.				Ph.D.			
	N (%)	Number of Credits Range	Number of Credits M (SD)	N (%)	Number of Credits Range	Number of Credits M (SD)	N (%)	Number of Credits Range	Number of Credits M (SD)	N (%)	Number of Credits Range	Number of Credits M (SD)
Research methods courses available	16 (57%)			12 (43%)			7 (25%)					
Research methods courses												
Required and Number of required credits	15 (54%)	3 – 6	3.42 (.90)	10 (36%)	3 – 9	4.60 (2.50)	4 (14%)	3 – 4	3.50 (.58)			
Elective and Number of elective credits	4 (14%)	3	3.00 (.00)	1 (4%)	3	3.00 (.00)	2 (7%)	3	3.00 (.00)			
Qualitative methods course												
Required and Number of required credits	2 (7%)	3	3.00 (.00)	10 (36%)	3 – 6	3.67 (1.32)	7 (25%)	4	4.00 (.00)			
Elective and Number of elective credits	6 (21%)	3	3.00 (.00)	3 (11%)	3	3.00 (.00)	2 (7%)	3 – 6	4.50 (2.12)			
Advanced qualitative methods course												
Required and Number of required credits	0 (0%)	-	-	0 (0%)	-	-	2 (7%)	0 – 4	1.75 (2.06)			
Elective and Number of elective credits	2 (7%)	3	3.00 (.00)	3 (11%)	3 – 6	4.50 (2.12)	5 (18%)	3 – 4	3.33 (.58)			
Quantitative methods course												
Required and Number of required credits	2 (7%)	3	3.00 (.00)	9 (32%)	3 – 6	3.75 (1.39)	7 (25%)	3 – 4	3.33 (.52)			
Elective and Number of elective credits	4 (14%)	3 – 6	4.00 (1.73)	2 (7%)	4 – 6	5.00 (1.41)	1 (4%)	-	-			
Advanced quantitative methods course												
Required and Number of required credits	0 (0%)	-	-	0 (0%)	-	-	2 (7%)	3 – 4	3.50 (.71)			
Elective and Number of elective credits	3 (11%)	3 – 6	4.50 (2.12)	3 (11%)	3 – 6	4.50 (2.12)	5 (18%)	3 – 4	3.33 (.58)			

Mixed methods course									
Required and Number of required credits	0 (0%)	-	-	2 (7%)	3	3.00 (.00)	2 (7%)	3-4	3.50 (.71)
Elective and Number of elective credits	1 (4%)	3	3.00 (.00)	2 (7%)	3	3.00 (.00)	3 (11%)	3-4	3.50 (.71)
Other specialty research courses (e.g., survey methods, ethnography)	0 (0%)	-	-	0 (0%)	-	-	5 (18%)	-	-

Table 2. *Number and Percent of Programs that Require or Offer as an Elective Statistics Courses including the Range, Means and Standard Deviations for the Number of Course Credits*

	Masters			Ed.D.			Ph.D.		
	N (%)	Number of Credits Range	Number of Credits M (SD)	N (%)	Number of Credits Range	Number of Credits M (SD)	N (%)	Number of Credits Range	Number of Credits M (SD)
Statistics courses available	8 (42%)			10 (53%)			5 (26%)		
Basic statistics course									
Required and Number of required credits	7 (37%)	2-3	2.86 (.38)	8 (42%)	2-6	3.38 (1.19)	4 (21%)	3-4	3.25 (.50)
Elective and Number of elective credits	4 (21%)	3	3.00 (.00)	3 (16%)	3-4	3.33 (.58)	12 (11%)	3	3.00 (.00)
Intermediate statistics course									
Required and Number of required credits	2 (11%)	3-6	4.50 (2.12)	6 (32%)	3-6	3.67 (1.21)	4 (21%)	3-6	3.75 (1.50)
Elective and Number of elective credits	4 (21%)	3-6	5.00 (1.73)	6 (32%)	3-6	4.17 (1.47)	3 (16%)	3-6	4.50 (2.12)
Regression course									
Required and Number of required credits	1 (5%)	3	3.00 (.00)	0 (0%)	-	-	2 (11%)	3	3.00 (.00)
Elective and Number of elective credits	4 (21%)	3	3.00 (.00)	4 (21%)	3-6	3.75 (1.50)	2 (11%)	3	3.00 (.00)

ANOVA course									
Required and Number of required credits	2 (11%)	3	3.00 (.00)	2 (11%)	3 – 6	4.50 (2.12)	2 (11%)	3	3.00 (.00)
Elective and Number of elective credits	2 (11%)	3	3.00 (.00)	2 (11%)	3	3.00 (.00)	1 (5%)	3	3.00 (.00)
Multi-level models/HLM course									
Required and Number of required credits	0 (0%)	-	-	0 (0%)	-	-	1 (5%)	3	3.00 (.00)
Elective and Number of elective credits	2 (11%)	3	3.00 (.00)	3 (16%)	3	3.00 (.00)	3 (16%)	3	3.00 (.00)
Structural equation modeling (SEM) course									
Required and Number of required credits	0 (0%)	-	-	0 (0%)	-	-	0 (0%)	-	-
Elective and Number of elective credits	0 (0%)	-	-	4 (21%)	3	3.00 (.00)	3 (16%)	3	3.00 (.00)
Basic measurement course									
Required and Number of required credits	4 (21%)	3	3.00 (.00)	0 (0%)	-	-	1 (5%)	3	3.00 (.00)
Elective and Number of elective credits	4 (21%)	3	3.00 (.00)	5 (26%)	3 – 4	3.20 (.45)	2 (11%)	-	-
Advanced measurement (IRT, Rasch) course									
Required and Number of required credits	0 (0%)	-	-	0 (0%)	-	-	1 (5%)	3	3.00 (.00)
Elective and Number of elective credits	2 (11%)	3	3.00 (.00)	2 (11%)	3	3.00 (.00)	1 (5%)	3	3.00 (.00)
Other specialty statistics or measurement courses									
Required and Number of required credits	0 (0%)	-	-	0 (0%)	-	-	0 (0%)	-	-

The Statistics Survey

For the participants who responded to the statistics course survey, 11 (58%) offered an M.A., 15 (79%) offered an M.S., 7 (37%) offered an Ed.D., and 11 (58%) offered a Ph.D. For these participants, the number of students currently enrolled in these programs ranged from 6 to 2000 ($M = 254.20$, Median = 49.00, $SD = 616.26$) and the number of students who completed the program ranged from 0 to 2000 ($M = 261.22$, Median = 30.00, $SD = 654.86$). Table 2 presents the number and percent of respondents that indicated that the statistics course was required or offered as an elective. The table also includes the range, mean, and standard deviations for the number of credits for the statistics courses. Concerning having differing expectations in courses for Master's, Ed.D., and Ph.D. students, 26% responded that there were differences. None of the programs reported contemplating making changes to course requirements.

Forty-two percent of the Master's programs reported having statistics courses available for their students. Over a third (37%) of the Master's programs required a basic statistics course, with 21% offering it as an elective. Interestingly, the range of credits for required basic statistics courses ranged from 2 – 3. Only 11% of the programs required intermediate statistics course with 21% offering it as an elective. Only one program required a course in regression with 21% offering it as an elective. Eleven percent required an ANOVA course for Master's level students. None of the Master's level programs required a course in multi-level modeling/hierarchical linear modeling (HLM) or structural equation modeling (SEM). Only 21% of the programs required a basic measurement course and none of the programs required an advanced measurement (e.g., item response theory, Rasch modeling) course. None of the Master's level programs offered any specialty statistics or measurement courses.

For the Ed.D. students, 53% of the programs reported having statistics courses available. Forty-two percent of the programs required a basic statistics course for their Ed.D. students, with course credits ranging from 2 – 6, and 16% of the programs offering it as an elective. About one-third (32%) of the programs required an intermediate statistics course and the same number of programs offered this course as an elective. Only 11% of the programs required an ANOVA course. None of the Ed.D. programs required courses on regression, multi-level modeling/HLM, SEM, basic measurement, advanced measurement, or other specialty courses. Most of the course credits for these courses ranged from 3 – 6.

Only 21% of the Ph.D. programs required a basic statistics course, with credits ranging from 3 – 4, and 11% offered it as an elective. Less than a fourth (21%) of the Ph.D. programs required an intermediate statistics course. Only 11% required a regression course or a course on ANOVA. Interestingly, only 5% of the programs required a multi-level modeling/HLM, basic measurement, or advanced measurement courses, and none required courses on SEM or other specialty statistics or measurement courses.

Discussion

Using the model for understanding doctoral student success (Leech, 2012) introduced earlier, this study focuses on the program component within the microenvironment in an effort to better describe the potential to produce skilled and knowledgeable researchers. According to this model, the curriculum clearly is a key component to graduate student success. To be successful, doctoral students world-wide must be prepared to conduct empirical research (Association of American Universities, 1998; Carnegie Project on the Education Doctorate, 2009; Cravens et al., 2014; Higher Education Funding Councils, 2003; Jones, 2013; Sonstrom et al., 2012) leading to the conclusion that the doctoral curriculum, both for Ph.D. and Ed.D. programs, must include high quality research design and analysis courses. We extend these arguments to include advanced education Master's degree programs because they also prepare education leaders who must un-

derstand and apply research and measurement issues and acknowledge that there might be less uniformity in expectations in these programs, which could contribute to variability in Master's program requirements and offerings.

Interestingly, the results from the extant literature, regardless of country, tend to agree that more methods and statistics courses are needed in higher education to educate skilled researchers (e.g., Allen et al., 2002; Capraro & Thompson, 2008; Kim, McKenna, & Ketefian, 2006; Leech & Goodwin, 2008; Tashakkori & Creswell, 2008). This study contributes to the limited literature regarding the research methods and statistics courses offered by and required by graduate education programs at the masters, Ed.D., and Ph.D. levels in the United States, and adds to the broader international and interdisciplinary knowledge bases.

Not only do students need to be prepared to design and conduct studies utilizing quantitative data, they also need to be prepared to conduct studies with qualitative data and be able to combine both types of data in a mixed methods design (Henson et al, 2010; Tashakkori & Creswell, 2008). Despite the broad agreement about the necessity of graduate student preparation for research, available evidence indicates that required program coursework is inadequate. Results from the current study indicated there were low percentages of doctoral programs requiring research methods, basic qualitative and basic quantitative courses, and a near absence of programs requiring mixed methods or advanced courses. The dearth of requirements for qualitative and mixed methods courses is problematic, as is the spottiness of required quantitative and research design courses, for producing skilled and knowledgeable researchers according to Leech's (2012) model.

The Master's program requirement for research methods courses may partially explain the low percentage of doctoral programs requiring research courses: the doctoral programs may operate on an assumption that all entering doctoral students have taken a research methods course in a Master's program. However, these results indicate this is a faulty assumption because, although approximately half of the Master's programs require a research methods course, about half of them do not; additionally, courses taken in a Master's program completed possibly many years earlier may not be adequate to provide a solid basis for a doctoral student. One could make a similar argument about the basic measurement course, which is required in about one-fifth of Master's programs and only one doctoral program.

Although several institutions offer additional elective courses in research methods, qualitative methods, advanced qualitative methods, quantitative methods, advanced quantitative methods, and mixed methods, the percentage offering each type of these courses varies greatly and no one category of these electives is offered commonly, i.e., no one topic is offered consistently across programs. Where offered as electives, they can only be effective in developing high quality researchers to the extent that students are able to fit the elective courses into their schedules, motivated to take the course, and willing to pay for the additional credit hours required.

The most commonly required quantitative courses are basic statistics followed by intermediate statistics. Specialty statistics courses such as regression, ANOVA, multilevel modeling, and structured equation modeling are rarely available to doctoral students even as electives. Basic measurement courses were not commonly required, although their availability as an elective was somewhat more frequent.

This study shows that less than one-quarter of Ph.D. programs from our United States based sample require an intermediate statistics course, the level at which inferential statistics is thoroughly addressed, which begs a question about how prepared the newly-minted Ph.D. students will be to become the researchers we intend. A similar situation exists for students in the Ed.D. programs, where less than one-third require intermediate statistics. How prepared will the new Ed.D. students be to conduct and consume applied research studies? A new doctoral student coming from a Master's program that required courses in research methods, basic statistics, and basic measure-

ment and entering a doctoral program that requires intermediate statistics and a basic qualitative methods course and offers additional electives should provide a sound foundation that enables the doctoral student to be a successful researcher. However, this ideal situation does not apply to all students and programs: not all Master's programs require these courses and not all doctoral programs require even intermediate statistics or basic qualitative methods, nor do they all offer advanced methods courses.

Limitations to the current study include the nature of the sample, size of the sample, and representativeness of the sample. This study is based on a voluntary, convenience sample of institutional respondents to the two surveys administered. The sample is drawn from the United States and findings from this study may have less import in countries where there is more uniformity and centralized control over higher education. We are unable to calculate a response rate for the surveys because of the inability to quantify the institutions represented by listserv members receiving them. Further research is necessary to determine how representative these results are of all doctoral-granting institutions in the country.

With the increase in globalization (Altbach & Knight, 2007), it is imperative that faculty in higher education focus on preparing students for a wide range of positions that will allow them to impact innovation world-wide. Examples of how to approach the issue of reviewing and revising curricular requirements in advanced education programs exist, though they are limited, in other countries and profession fields. The Canadian example of consulting stakeholders to solicit feedback about advantageous program and curricular revisions (Allen et al., 2002) may be a valuable initial step. Ultimately, the education field may look to the program quality guidelines developed for advanced nursing degrees (Kim et al., 2006) or graduate curricula in other fields (Jones, 2013; Sonstrom et al., 2012) as models for similar quality standards in advanced education degrees.

Our requirements speak to our values. When faculty and administrators negotiate degree requirements, they make difficult decisions with regard to cost, length of time, and content areas. However, it seems that graduating students from advanced education programs without an assurance of an adequate research toolkit may be a disservice to them and to the field. Results from the current study should encourage faculty world-wide to carefully review current program requirements and consider the extent to which they assure all education graduate students receive a solid and adequate foundation to become successful researchers and leaders, an exercise that none of the programs reported contemplating at this time.

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Appendix

Questions Included in the Survey for Teaching Statistics and Measurement Courses

What type of degree(s) are students in these classes earning? (select all that apply)

M.A. M.S. Ph.D. Ed.D.

Number of full time M.A./M.S./Ph.D./Ed.D. students admitted in 2012 (include summer 2011, fall 2011, and spring 2012) _____

Number of M.A./M.S./Ph.D./Ed.D. students who completed the program in 2011 (include summer 2010, fall 2010, and spring 2011) _____

Courses

Please indicate the number of credits in each area that students are required to take. If the course is an elective, provide the typical number of credits students take.

	<u>Required for M.A. students</u>	<u>Electives for M.A. students</u>	<u>Required for M.S. students</u>	<u>Electives for M.S. students</u>	<u>Required for Ph.D. students</u>	<u>Electives for Ph.D. students</u>	<u>Required for Ed.D. students</u>	<u>Electives for Ed.D. students</u>
Basic statistics (<i>t</i> , <i>r</i> , χ^2 , etc.)								
Intermediate statistics (ANOVA, regression, etc.)								
Regression								
Analysis of Variance								
Multi-level models/HLM								
Structural Equation Modeling								
Basic Measurement								
Advanced Measurement (IRT, Rasch)								
Other specialty statistics or measurement courses (e.g., survey methods, advanced measurement) - please specify								
Other – please specify								

Differentiation

Are there differing expectations for master's, Ed.D., and Ph.D. students in these courses?

YES NO

If you answered yes, how are the courses or the expectations within the courses different?

Changes in the Program

Are you currently contemplating making changes to your Ph.D. statistics course requirements? If so, what are they?

Please tell us about yourself and your institution

Name of person completing questionnaire: _____

Position of person completing questionnaire: _____

Name of institution: _____

Questions Included in the Survey for Teaching Research Courses in

What type of degree(s) are students in these classes earning? (select all that apply)

M.A. M.S. Ph.D. Ed.D.

Number of full time M.A./M.S./Ph.D./Ed.D. students admitted in 2012 (include summer 2011, fall 2011, and spring 2012) _____

Number of M.A./M.S./Ph.D./Ed.D. students who completed the program in 2011 (include summer 2010, fall 2010, and spring 2011) _____

Courses

Please indicate the number of credits in each area that students are required to take. If the course is an elective, provide the typical number of credits students take.

	<u>Required for M.A. students</u>	<u>Electives for M.A. students</u>	<u>Required for M.S. students</u>	<u>Electives for M.S. students</u>	<u>Required for Ph.D. students</u>	<u>Electives for Ph.D. students</u>	<u>Required for Ed.D. students</u>	<u>Electives for Ed.D. students</u>
Basic Research Methods								
Qualitative Research Methods								
Advanced Qualitative Research Methods								
Quantitative Research Methods								
Advanced Quantitative Research Methods								
Mixed Methods Research								
Other specialty research courses (e.g., survey methods, ethnography,) - please specify								
Other – please specify								

Differentiation

Are there differing expectations for master’s, Ed.D., and Ph.D. students in these courses?

YES NO

If you answered yes, how are the courses or the expectations within the courses different?

Changes in the Program

Are you currently contemplating making changes to your Ph.D. research course requirements? If so, what are they?

Please tell us about yourself and your institution

Name of person completing questionnaire: _____

Position of person completing questionnaire: _____

Name of institution: _____

Biographies



Nancy L. Leech, Ph.D. is a professor at the University of Colorado Denver. Dr. Leech is currently teaching master's and Ph.D. level courses in research, statistics, and measurement. Her area of research is promoting new developments and better understandings in applied qualitative, quantitative, and mixed methodologies. To date, she has published more than 70 articles in refereed journals, and is co-author of three books; *SPSS for Basic Statistics: Use and Interpretation*, *SPSS for Intermediate Statistics: Use and Interpretation*, and *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*, all published by Taylor and Francis. Dr. Leech has made more than 85 presentations at regional, national, and international conferences.



national conferences.

Carolyn A. Haug, Ph.D., is Executive Director of Accreditation and Program Effectiveness in the School of Education and Human Development at the University of Colorado Denver. She teaches program evaluation, measurement, and statistics in the Research and Evaluation Methodology program. Her research interests include teacher preparation, educator effectiveness, and student achievement. She has served as Director of Assessment for the Colorado Department of Education and Director of School Improvement and Accountability for the Adams County 50 School District, where she provided leadership in areas of assessment, school improvement planning, program evaluation and accountability, both statewide and at a local school district level. Dr. Haug has made numerous presentations at regional, national, and inter-

Cite as: McAlpine, L., & Mitra, M. (2015). Becoming a scientist: PhD workplaces and other sites of learning. *International Journal of Doctoral Studies*, 10, 111-128. Retrieved from <http://ijds.org/Volume10/IJDSv10p111-128McAlpine0768.pdf>

Becoming a Scientist: PhD Workplaces and Other Sites of Learning

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Abstract

Doctoral students have often been described as apprentices engaged in workplace learning. Further, assumptions are frequently made in the literature about the common nature of such learning experiences, e.g., in the sciences, research-related practices are learned in a lab within the supervisor's program and team. A few recent studies of the science doctoral experience have challenged this view arguing such assumptions may overlook considerable variation. This longitudinal study, using frequently completed activity logs and an interview, reports on the research-related practices of twelve UK science doctoral students. The analysis, particularly of the logs, challenged some of the literature-based assumptions: students often chose to work in institutional offices, non-institutional sites and their homes rather than in labs; they did not necessarily engage regularly with a research team, nor were they necessarily engaged in a project directly linked to their supervisors'. That students chose not to work in traditionally assumed places suggests the importance of attending to: a) student agency, b) how research-related practices may be changing, and c) how sites of doctoral learning might need to be reconceived. As well, the findings suggest the value of non-traditional data collection methods in capturing variation in experience.

Keywords: Science doctoral experience, research-related practices, workplace learning, PhD workplaces

Context: Learning Science

In the literature, doctoral students have often been described as apprentices (Enders, 2005) learning research-related practices through observation, experience and interaction (aside from any required course work) in institutionally constituted workplaces. In this paper, research-related practices are conceptualized as the activities and interactions that support the conduct of doctoral research from initial thinking through to dissemination. These practices have been characterized in various ways (Pole, 2000; Morrison, Rudd, &

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Editor: Nitza Geri

Submitted: July 18, 2014; Revised: December 1, 2014; Accepted: January 27, 2015

Nerad, 2011; Timmerman, Feldon, Maher, Strickland, & Gilmour, 2013), but include reading, interaction with others to advance projects, feedback on work, thinking, in some cases collecting and maintaining samples of different kinds, analyzing, ethical decision-making – with the understanding that being a productive researcher and scholar requires different skills in different disciplines (Golde, 2005).

In this literature, assumptions are also frequently made about the common nature of such learning experiences, and how absence from these research cultures can circumscribe student learning (Deem & Brehony, 2000). In the sciences in particular, the research team is characterized as a mutually supportive environment which meets daily so there may be more distributed problem-solving to deal with challenges; students spend the day at the bench to produce consistent useable results; the student's project is part of the supervisor's research program; the result of this workplace learning is stability and intellectual and pedagogic continuity (Delamont & Atkinson, 2001; Hakala, 2009). Such descriptions reinforce assumptions about the common nature of doctoral research-related practices in the sciences, and their predominance in the literature speaks to their being of some value. However, Bowen and Roth (2007) and Cumming (2009) argue the need to capture more nuanced representations of science research-related practices (also see Gardner & Gopaul, 2012). This suggests the value of looking at the day-to-day experiences of science doctoral students as they learn to do research, and provides the context for the present study.

Goal

This qualitative study reports an analysis of the research-related practices described by 12 science doctoral students in the UK. It examines their weekly patterns of work as well as their retrospective accounts of these over a period of 18 months as they learned, through their research-related practices, how to become independent researchers (Golde, 2005). The questions asked are:

1. What were students' overall experiences of learning to conduct doctoral research?
2. *Where* were they learning; specifically, in which places did they advance their research-related practices?
3. In what ways, if any, did the students demonstrate agency in choosing where to engage in and learn particular practices? And what practices were they engaging in?
4. What was the relationship, if any, between their research-related practices and their discipline/field?

Conceptualizing Doctoral Work: Learning and Agency

Learning

The starting point for this study is that doctoral-academic work can be conceptualized as a form of workplace learning, which it has been argued can shift the focus from the supervisor to other forms of pedagogic interaction (Malfroy, 2005). From this perspective, aside from coursework, doctoral-academic learning occurs through observation, experience, trial and error, and interaction with others, since we argue that “there is no separation between engaging in conscious thought – such as when participating in socially derived activities and interactions – and learning” (Billett, 2002, p.457). Generally, doctoral learning is characterized as taking place in institutional workplaces such as offices, labs and libraries (Middleton, 2010). If one accepts that “the socially shaped physical world ... exercises pedagogic properties projected through the physical environment and artefacts that students encounter” (Billett, 2009, p.40), then the institutional workplace – both its affordances (e.g., specialized equipment, supervisor) and constraints (e.g., meeting requirements for completion, dealing with inadequate equipment) – creates in unintended ways a

tacit learning environment with learning outcomes less predictable and more variable than when learning is formally structured, e.g., in a course. Further, workplaces differ substantially in how they support learning (Billett, 2001). In fact, our own work has demonstrated the power of the institution in providing affordances and constraints for early career researchers. We have noted variations both across micro- and macro-level institutional units (McAlpine, Amundsen, & Turner, 2013) as well as in how the same affordances and constraints were interpreted differently by individuals (McAlpine & Lucas, 2011).

Of course, the assumption is that these institutional spaces for work are, in fact, where individuals conduct and learn to do research. Still, there is emerging evidence that suggests this may not consistently be the case. For instance, Pearson, Cumming, Evans, Macauley, and Ryland (2011) in an Australian survey of doctoral students reported that in the particular week surveyed only 42% had undertaken the majority of their doctoral activities on campus, with 33% working mostly at home and the remainder off-campus in other locations (with some variation by field). Thus, we argue that examining the spaces that students inhabit should provide insight into the ways they learn research-related practices.

Agency within Identity

We, like others studying science doctoral students (e.g., Holley, 2009; Felt, Fochler, & Müller, 2012), are interested in how individuals constitute their scientific identities as they engage in doctoral-academic work. Our view of identity, ‘identity-trajectory’ (McAlpine et al., 2013), attends to individual histories; that is, how individuals represent the continuity of stable personhood over time and concurrently, a sense of ongoing change (Elliott, 2005). We are particularly interested in individual agency: how individuals undertake to advance their intentions and hopes in their work practices and their broader lives – whether or not successful. This interest in agency aligns well with the expectation of doctoral experience supporting the development of independence as a researcher (Gardner, 2008; Pilbeam & Denyer, 2009).

Still, a focus on agency needs to recognize external influence since, for a realistic view of the relationship between agency and structure, individual intention needs to be investigated while not disregarding the structures that can support and constrain such agency (McAlpine & Amundsen, 2009). Thus, while the work environment informally and in unintended ways creates a tacit learning environment, the degree to which an individual engages with this environment – that is, takes advantage of the affordances and manages the constraints – will influence the nature and quality of the learning. Further, we imagine individuals may make decisions not to engage in the institutional workplaces given a certain set of constraints or access to other more conducive workplaces.

Billett (2001), in a study of three different non-academic workplaces, reported that individuals acted independently in ways inconsistent with work norms and practices – leading to the conclusion that participation is not passive or unquestioning. By exercising ongoing agency despite constraints, individuals have some ability to decide which aspects of the practices they encounter they will choose to engage in. The result is they can make or take for their own from what is encountered (Billett, 2006) given personal and work intentions. Still, while individuals have some ability to decide which aspects of the workplace practices they will engage in, and what their other options are, such agency does not imply that individuals are always successful in their attempts to achieve their intentions.

Methodology

This study is drawn from a longitudinal research program beginning in 2006 examining the experiences of doctoral students, post-PhD researchers and new lecturers in Canada and the UK (McAlpine & Amundsen, 2011). While initially data were collected from social sci-

entists, in 2010 we began studying natural scientists, the intention being, among others, to fill the gap in knowledge of their experiences. The research program draws on a qualitative narrative tradition which is used widely in the social sciences (Elliott, 2005). The underlying premise is that narratives represent constructions of identity (Sfard & Prusak, 2005; Riessman, 2008). We collect narratives of experience and through successive readings of these narratives seek the essence, the meaning, of each individual's accounts (Elliott, 2005). This involves preserving and exemplifying connections between events, the influence of the passage of time in carrying the action forward, and showing the goals and intentions of individuals (Coulter & Smith, 2009). Narrative research usually focuses on one individual, sometimes two or three, but like Thomson and Holland (2003) we have found looking across numbers of individuals useful since such analyses expand our understanding of the variation both within and across individuals. Lastly, much of the qualitative research addressing academic experience draws on a single interview which captures retrospective accounts and/or experience at the time of the interview. In contrast, longitudinal studies of academic experience like ours, which are relatively rare, make it possible to document concurrently consistencies as well as changes in experience and intention (Eby, Butts, & Lockwood, 2003).

Participants

The 12 science doctoral students were from two different UK research universities; five females and seven males, representing computing, engineering and the biosciences. While we focused on all the disciplines under the broad umbrella of the STEM (Science, Technology, Engineering, Mathematics) sciences when sending out our call for recruitment, the subject fields in the final sample (indicated above) comprise those that participated in our study.

Data Collection and Analysis

We collected multiple narratives of experience over time, beginning with an initial biographic questionnaire (that captured information such as age, field, role, prior work experience, possible future careers). This questionnaire, along with all other tools for data collection (except the interview which was face-to-face), was drafted in Microsoft word and sent out as an electronic file attachment via email, and comprised a mix of open- and close-ended questions. Bearing in mind the prevailing view that science students would be part of a team, individuals were asked, among other things, to describe the composition of their research team, if they belonged to one. The biographic questionnaire was followed by activity logs about a particular week. These logs were completed 5-6 times over a year (depending on the average response time of each participant) and captured their primary work spaces in that week; the experiences, activities, relationships, interactions and challenges of the particular week, as well as their overall mood over the course of the week. Next, a pre-interview questionnaire provided a retrospective view of the year that had passed since they began completing logs. Last, an interview elicited more detail about the earlier narratives (all data were read prior to the interview) as well as explored new areas, before the annual data collection cycle began again. This analysis draws on one complete year and the following half-year given our desire to collect enough logs from each individual to capture consistency as well as variation in patterns of work and learning.

We followed a thematic analysis common in narrative research, "keeping a story intact by theorizing from the case rather than from component themes across cases" (Riessman, 2008, p.53). This is different from thematic analyses common in other research traditions where findings are presented and organized first by theme rather than by individual (for examples, see Miles & Huberman, 1994). In this study, we were looking for patterns related to research-related practices and the spaces in which they were conducted. We drew on the various documents described

above, ranging from 9-15 documents per individual, including one interview transcript (average number of documents: 12).

We initially read and coded all narratives for two individuals and compared coding decisions; any discrepancies were dealt with. We then continued coding, checking portions of each other's coding periodically, again reconciling any pertinent issues and recoding as necessary. The procedure for coding was as follows. Each coder read through all the narratives for an individual in chronological order in order to code while still maintaining a biographic awareness. Then, for each narrative, any text relevant to the experience of work was identified: a) physical spaces (both institutional and non-institutional) where individuals reported working; b) the nature of the research-related activity; c) their explanation for why these sites were chosen; and d) the material and social resources and constraints in each site and how the individual managed them. These different aspects of their learning experiences would often co-occur in an individual's narrative as in this account from Catherine's log 4 (note that all the names as used in this paper are pseudonyms chosen by participants). Catherine was one of the two participants who reported working mostly in the lab, and she consistently reported difficulties which slowed her progress despite her best efforts:

The current DNA extraction protocols [research-related practice] used by my lab [physical space] do not give clean enough DNA [constraint] to perform a technique I need for one of my experiments [her doctoral research]. Also, as there are more people in my lab than previously the equipment is often not free [constraint] which has caused several delays recently. Tried multiple different procedures over about 3 days which was a significant investment of time [agency] but thus far have not found any significant improvement in quality, so will have to try again next week. To use some pieces of equipment I ended up staying very late in the evening [agency].

We excluded the following when coding:

- spaces related to other academic work, e.g., teaching and supervision, since the focus of the analysis was research-related activities;
- social and personal activities for which no explicit statement of impact on research activities was made; and
- past and future spaces and activities since the focus was their learning during the data collection period.

Once all data for an individual had been analyzed, the identified text selections were brought together to generate a researcher perspective on the cumulative experience. A final step was a cross-individual comparison to move beyond the particulars of any one individual towards an understanding of common patterns of workplace learning. This involved moving back and forth between each individual's experiences to construct a cumulative representation of the learning related to research-related practices.

Findings: Science Doctoral Student Research-Related Work Practices

We begin by overviewing the participants briefly, and provide three cameos to demonstrate individual variation. Then, we address each of the research questions interweaving discussion with results.

Who They Were

Despite the common assumption that science doctoral students tend to be younger and go directly from undergraduate/master's to PhD (Pearson et al., 2011), in fact, eight of the 12 had prior work experience of varying degrees (see the Appendix for brief introductions to each participant).

Thus, they ranged in age when starting the degree from 22 to 45, with most under 30. This distribution, varying from early to mid-adulthood, is relatively similar to the overall age range of science students enrolled in the two universities (primarily 20-40 years; with very few over 40), as were other demographic characteristics: a) of the five females, three were in the biosciences, the two others in engineering and computing; and b) seven were international students – four with English as another language. Of the 12, nine had funding (and later, an additional participant moved from self- to partial-funding). In looking beyond their doctoral work, 11 noted family and eight a partner as significant, and at least seven engaged in a range of physical and/or creative activities. When they began participating (September, 2011), four were in their 1st year, three each in their 2nd and 3rd years, with the remaining two in the 4th and 5th years.

The three cameos below provide a sense of the individual variation in experience. Tom experienced some ups and downs but generally had a positive experience of doing and learning to do research-related activities over the 18 months.

Tom, 2nd year, worked principally in his office (high-performance computational biology), lab (molecular biology where the equipment was) and home (writing where he wouldn't be disrupted). He also worked at another university for several weeks during this period after receiving a bursary to conduct additional lab experiments relating to his research there. His mood, over 18 months of participation in our study, varied from feeling cheerful, "just getting along" to "slightly stressed" (e.g., at not 'fixing' the animals, i.e. preparing samples for lab experiments). He reported procrastinating sometimes and had to set goals to complete important tasks. He noted he should be reading all the time, though didn't always manage this, and also worked on drafting articles, noting his belief that publications were representative of how productive he was as a scientist. He also passed his upgrade (waiting for the viva was stressful), assembled sequence data, made phylogenetic trees, and did data 'wrangling' in Excel (all of these are tasks within evolutionary developmental biology). He noted too many tasks and not enough time. He also trained master's and undergraduate students in molecular biology laboratory techniques e.g. embryo manipulation, molecular cloning and antibody staining. Tom had come with his own project idea so did not take on one provided by his supervisor. Still, two of the six in his research team worked in similar areas, and "I do quite a bit of my socialising within the lab group ... so teaching, research project, and lab experimental work are all sort of hand in hand and they're definitely taking up the most of my time." He also enjoyed a positive relationship with his supervisor and had won additional funds. Still, he felt constrained by the 3-year time limit: "Getting everything done in 3 years, especially when working with animals that spawn for only a few months a year, is pretty intense." Throughout, "my work has a major bearing on my emotions." Fortunately, his girlfriend and his sports activities helped him in this regard. At the end of the 18 months, Tom was preparing to submit his thesis and contemplating taking up a job offer from one of his collaborator laboratories in the Far East.

In contrast, 13196 had a more constant experience of pressure and isolation.

13196, 5th year computing sciences, consistently reported working at home; in fact, on another continent. For 13196, data computation and analysis had been running hand-in-hand with thesis writing primarily due to part-time work commitments, family commitments and substantial delays in achieving results that would be considered significant. He

was doing fieldwork and writing his thesis when he began his participation in our study, and was determined to finish, moreover, had quit his part-time job to ensure this was the case. He consistently felt isolated while still having email and Skype conversations with his supervisors, noting “it’s positive if you can use the isolation to concentrate on a problem and really work on it, but ... it can be a negative because of feelings of loneliness ... and [the] opportunity to ... procrastinate ... that, if your supervisor were watching you, ... wouldn’t be allowed to happen.” He missed department life and had to deal with problems related to his extensions, e.g., expiration of university card, which caused loss of access to email and computer systems, library, and remote access to research databases. He also found his family and domestic responsibilities disruptive and distracting. Further, coming with his own project, the other students did not share his interests. So while “they’ve been encouraging me ... sending me new information that might be relevant to my thesis ... they can’t help me at all. So, my relationship with the other doctoral students is ... tenuous at best.” As well, over time, he felt increasingly pressured by his supervisors and the department to finish as he had received all the extensions he could: “I am terrified of looking at my email every morning.” Still, having seen his thesis change radically over the five years, he felt that “good science takes as long as it takes, and I am being forced by the calendar to submit before I am ready. I hate my life.” Near the end, he was “feeling physically ill; worrying that I have only one week left to submit my thesis.” Nevertheless, 13196 submitted and completed his degree.

Lastly, Kadya’s experience was largely but not always positive as a result of the constant support provided by her husband and supervisor.

Kadya, 2nd year civil and environmental engineering, spent equal time working in her office and home (especially after recent surgery), and at other locations while travelling for conferences and meetings. She spent most of her time testing and amending hydrological models to predict water movement, writing documentation and software routines for building these models, making calculations and verifying predictability, and debugging the related computer code she was writing. Her moods shifted in line with the progress she made – varying from confident, engaged and satisfied when her model gave valuable results, to anxious and frustrated when the model didn’t work or her code needed debugging. In addition to her PhD work, she had a part-time Research Assistant job, two national council-funded projects, and did undergraduate teaching. She found writing papers “the most difficult part of research, as I am not a native-English [speaker]” and seemed especially encouraged by any validation of her work received through her supervisor and others. Her husband, who worked in a similar field, was a source of constant emotional and intellectual support, her most important relationship: “he was extremely important at the beginning when I decided to start my PhD, and [now] ... because ... when we have these chats about work, I run to the computer and try something that he inspires me to do.” She also received support from other doctoral students at work: “I often have meetings, even coffee breaks, with them, and that is a really interesting moment where we’re talking about experiments ... what we are going to do, and grab some ideas [off each other]”. Finally, Kadya’s supervisor was central in maintaining her motivation: “Every time I [feel] stressed and anxious because I’m not getting the result I want ... he always calms me down and says, ‘No worries – everything is going to be okay’”.

These cameos thus provide a snapshot view of the doctoral life of some of our participants: who they were, what work practices they were engaged in, and what the form and nature of support available (or not available) to them was. We now present a thematic analysis of the data by addressing each of the four questions raised above, in turn.

Question 1: What were Students' Overall Experiences of Learning to Conduct Research within their Doctoral Work?

The three cameos above demonstrate that engaging in doctoral work and more specifically in research-related practices was not only an intellectual journey but also an emotional series of ups and downs. Kadyna, for instance, reported successively over the 18 months being “inspired, satisfied, struggling, anxious, frustrated and enthusiastic” (when dealing with coding problems). Catherine was “struggling, stressed, more confident, unhappy, positive” and then “stressed” again as she was alternately not successful and then successful with her experiments. Occasionally, negative emotion was unrelenting; for instance, 13196 was almost constantly reporting negative emotions in relation to the university completion deadline: “isolated, stressed, hate my life, physically ill”. He only felt somewhat relieved when he did not receive deadline reminders. RP was relatively unusual in nearly always reporting positive feelings in relation to his research progress each week: “wonderful, excited, inspired, and highly energetic.”

Notably, negative emotions sometimes resulted from balancing research interests with the expectation of completing in three years. Similar to 13196 and Tom, Apollo described this ongoing insecurity:

The area of research ... it's not the most promising area ... and when I started ... I wanted to do ... the thing which appeals to me the most, not the one which seems to provide me [a secure] future. So ... I do not know for sure if I can finish in three years and eh ... the insecurity about funding for a possible and very probable, fourth year is ... the cause for this insecurity.

Writing was also often experienced negatively (e.g., Fred, who was otherwise nearly always positive, was consistently frustrated at his inability to write effectively). Travel too was a disruption (e.g., Apollo working at night and drinking coffee for the caffeine to keep him going as he dealt with jetlag). A number who noted the negative impact of research-related work offset this impact through social contact and other kinds of engagement, e.g., sports. Sophie (a male) exercised and played sports regularly (football, karting) to avoid getting a backache from sitting in front of his computer every day. Rumi attended tango and meditation each week to stay physically fit and increase her concentration at work.

These experiences resonate with Neumann's (2006) study of experienced researchers and Hopwood and Paulson's (2012) study of doctoral students. Neumann characterized experienced researchers' emotional experiences as extremely varied. While they sought and had occasional peak positive experiences of deep involvement, joy and a sense of accomplishment in conducting research, they also experienced long periods of “mucking about” which they described as disastrous, frustrating, upsetting, and painful. Hopwood and Paulson examined the toll that fatigue and stress took on doctoral students. We concur with the conclusions of both these studies: the intertwining of emotions with intellectual thought is often overlooked, yet is essential to undertaking research-related activities. More careful attention to this aspect of becoming a researcher could enhance the development of resilience (McAlpine & Amundsen, 2011) necessary in a culture sometimes characterized as one of rejection.

Question 2: Where were Students Learning; specifically, in which Places did they Advance their Research-Related Practices?

Regardless of where they were in their doctoral progress, the majority regularly worked in a number of different places: Apollo in his home, office and at conferences; Tom in his office, lab,

home, and other research unit; Tulip in the British Library and her office. Still, a few worked relatively consistently in only one place: Catherine in the lab, 13196 at home.

Individuals also changed where they worked over time. These shifts could be related to their research activities as they advanced their projects. Apollo, 1st year, for instance, noted doing more reading earlier in the period than later. And, near the end of the degree, nearly all participants reported increasing amounts of time spent on writing their theses. Still, such changes in work place were not necessarily related to their research, but rather to how their research was situated within the rest of their lives, e.g., Tom working more in the office this year than last since he no longer had teaching duties; Kadya spending more time at home at one point due to recent surgery.

Strikingly, in examining references to institutional spaces, there was more work reported in offices than labs; in fact, only Tom and Catherine made reference to lab use. (Of the 12 participants in this study, 10 reported having laboratories as work spaces but not using them; this included four who mentioned a computer lab. In other words, reference to a lab need not imply a wet lab or one with specialized equipment). Labs, of course, provide material resources that cannot be found elsewhere. And the maintenance of these material resources was seen as critical, e.g., Catherine struggled because reagents were faulty and batches of organisms did not arrive on time. In general, the material resources provided by offices were not as critical as those in labs. If offices created particular material spaces it was largely in terms of increased computing power or easier access to large data sets – though a major value was also being close to the supervisor. Interestingly, there was no reference to spending time in libraries, institutional spaces which at one time were central to much research work; the absence of reference to this is probably due to new technologies which have converted physical access into virtual ones.

Moreover, it was clear that non-institutional spaces were as frequently referred to as institutional ones. Non-institutional workplaces included conferences, hotel lobbies, the bed, home, and other research centres. The reports of working at home resonate with Kuntz's (2012) finding that the home is increasingly a site of academic work. Further, the results confirm the assertion that the prevailing view of science practices as lab-based may need reframing (Bowen & Roth, 2007; Cumming, 2009). More generally, the results raise questions about the nature of doctoral learning, which assumes that science doctoral students engage in research-related activities in common institutional spaces.

Question 3: In what ways, if any, did the Students Demonstrate Agency in Choosing where to Engage in and Learn Particular Practices? And what Practices were they Engaging in?

While question two addressed only the physical locations in which the students worked, this question takes up a more complex issue: the ways in which students were agentic in choosing which places to work in order to best meet their needs in undertaking different research-related activities. A defining feature of their choice of workplace was the material and social resources on offer and their individually varied responses to these. So we begin by demonstrating the variation in their decisions related to the resources attached to particular workplaces and activities, before exploring their specific use of institutional and non-institutional spaces.

Agency, resources, and research-related activities

Individuals described physical spaces as affording different material and social resources, and chose their workplaces based on what best suited the research-related activities they wanted to engage in. What they were doing, or learning to do, therefore influenced, as well as was influenced by, the space they chose to work in on a day-to-day basis. For instance, Tulip in zoology went to her office two days a week for supervisory and postdoc meetings, but otherwise worked

in the British Library (and sometimes her home) doing computational work and writing. She noted in particular how the British Library imposed material and social constraints that ‘forced’ her to stay focused and not become distracted by talking, eating or drinking. Others noted the need to be at home to write since this space was less social than the institutional spaces (e.g., when writing, Kadya wanted quiet and Fred a place to pace up and down).

The need for focus was shared by others, though leading to different decisions: TDB preferred his computer and “comfortable desk” in his institutional office in order to be more focused than at home. Rumi, on the other hand, preferred to work at home because it gave her the flexibility to continue to work as long as she wanted. SA worked at home when she needed to do mundane, repetitive tasks for which the home environment was more comfortable and relaxed (she could listen to music while working) while Sophie worked equally at home in addition to his departmental office because of the ability to work remotely, using his laptop. RP preferred jumping into the shower when thinking about new ideas.

Institutional spaces and social resources

Despite choosing non-institutional spaces for some work, all the students worked in institutional workplaces which incorporated distinct material resources, thus, e.g., in the lab, specialized equipment; in the office, desks, chairs and computers. Further, these spaces were inherently social which carried both strengths and weaknesses. In some cases, the social environment was seen as enhancing learning substantially. Tom, as noted earlier, reported not just enjoying working with his lab mates and his supervisor, but also meeting members of the team socially. Others described social spaces that, while positive, were not productive in furthering their work, as the team did not fully understand the issues (note 13196 earlier). And, the inherently social aspect of the workplace could be experienced negatively due to the interactions and practices within that space. Tom reported that training a particular new student who required repetitive instructions and an unusually high degree of supervision was a “time sink”, taking time away from his own work. Catherine experienced negative feelings from spending much of her time in the lab without achieving much success. Recognizing the need for positive social interactions to sustain her motivation, she organized weekly informal coffee sessions to discuss both personal life and academic progress. Similarly, 13196, who also acknowledged being socially isolated, offset the isolation by, for instance, having weekly Skype meetings with his supervisors to follow up on his written reports, and also participating virtually in the journal club organized by his supervisors.

As well, the work students reported doing did not necessarily involve a team, though Sophie and Fred, like Tom, considered their teams and/or supervisors very supportive and important. Many others (e.g., Apollo, Fred, and RP) were engaged in solitary computational work which involved them modelling and testing simulations and debugging software routines. Several in teams noted that their work was not connected to that of others in a team (e.g., Apollo, Catherine and Fred). In fact, five of the 12 had chosen their own projects so had not taken on a part of their supervisors’ research program for their own research. This finding suggests that the prevailing view of science practices as revolving around a research team (Delamont and Atkinson, 2001) is not always pertinent.

Overall, we concluded that institutional social spaces could be: a) avoided to do work that required solitude; b) viewed negatively due to local practices and interactions; or c) viewed positively and sought out. This awareness of and preference for seeking different types of spaces in relation to different research-related activities provides evidence of the ways in which individuals were agentive in choosing the degree to which they wanted to engage in participatory work practices (Billett, 2001). Further, it suggests that characterizing research-related practices as connected to a specific discipline/field results in a failure to document the richly textured and varied

learning experiences that individuals are actually engaged in (also noted by Leon-Beck & Dodick, 2012) – an issue we take up in more detail in question 4.

Non-institutional spaces, material and social resources – real and virtual

Individuals also often worked in non-institutional spaces, choosing these spaces in relation to what they wished to accomplish. Further, they reported drawing on colleagues beyond any team they were involved in, and beyond the university via conferences, the web, and list serves. Some of these participatory work spaces were created in non-institutional spaces that either did not occur regularly, e.g., Apollo at conferences talking about maths issues, or could be considered by some as tools rather than places, e.g., Sophie communicating online with others about research challenges and solutions. In this regard, Sophie was like the academics studied by Menzies and Newsome (2007) who reported that new technologies created material and social resources that influenced the ways in which individuals engaged in research-related activities. Still, the influences were not always positive (Menzies & Newsome, 2007): a) 13196 fearing opening his email in case there was another note about the impending deadline; b) Tom needing to embargo his use of the internet since it was a procrastination strategy; and c) Rumi worrying about emails that “take too much time ... I am often distracted”.

These virtual material and social resources, often supported by the institution, can open up new opportunities, but at the same time can lead to less need or desire to draw on institutional spaces, and less face-to-face interaction with local colleagues. Overall, the sense was that physical proximity was less influential in the learning process than previously reported in the literature (e.g., Deem & Brehony, 2000; Walsh, 2010), at least for some students. In other words, individuals were agentive in: a) choosing particular sites to do particular kinds of research-related practices; b) avoiding some institutional spaces because they are not socially conducive; and c) using extended and virtual social networks to manage challenges and develop participatory research practices.

In our view, the fact that everyone drew on the material resources offered by computers (and through them a vast set of social resources) suggests reasons why institutional spaces were not consistently used. Many research-related practices no longer require institutional locations since new technologies make it easy to have a virtual set of resources including access to extended academic relationships (Kuntz, 2012). Further, new technologies are expanding the range of research-related practices, e.g., modelling capacities exist that did not earlier. In other words, like those in non-academic organizations (Engstrom, 2004), to an increasing degree, work practices are moving beyond organizational and geographical boundaries. Nevertheless, institutional workplaces still played a role: a) some practices required special tools only available in the institution, e.g., lab equipment, super-computers; and b) face-to-face access to some institutional affordances, e.g., supervisor, research team, invited institutional work.

Question 4: What was the Relationship, if any, between Students’ Research-Related Practices and their Discipline/Field?

On the whole, we concluded that those in computing sciences, theoretical physics, engineering, inorganic chemistry, materials and zoology, engaged in forms of computation, often involving statistical modelling. They were engaged to a considerable extent in what Duffin and Simpson (2005) in their study of mathematics doctoral students, characterized as independent (and isolating) computational work, with the goal to learn to guess in a disciplined way – referred to by experienced mathematicians as ‘disciplined guessing’ (Geraniou, 2010).

At the same time, we do not want to create the impression that computational work constituted all their research-related practices. In fact, our insight was that computational work was only one aspect of their research practices; for instance, TDB used specialized equipment, transition electron microscopy, to see how defects form in a particular material, as well as for ‘editing’ the resulting images (removing noise), before analysing the resulting data computationally, looking for trends to theorize models. And, as SA noted:

When I was younger, I always thought I’d be much more the kind of person who would be out in the field collecting samples, but it really actually doesn’t appeal to me in retrospect. I actually prefer sitting at the computer and coming up with real analyses and seeing graphs and actually identifying the bigger picture’s patterns.

It was evident that the fields individuals were in did not designate their practices. For instance, Catherine and Tulip, both 2nd year and in zoology, engaged in different activities – Catherine testing organisms and Tulip doing statistical modelling. Further, an individual’s research practices could be quite varied; so, Tom, 2nd year biology, reported doing computational and ‘wet’ lab work as well as writing.

The results highlighted the variability in research-related activities within the same discipline/field; they were neither uniform nor consistent. This suggests that we need to be cautious about characterizing the relationship between discipline/field and research-related practices in monolithic ways, as has often been the case (e.g., Delamont & Atkinson, 2001; Hakala, 2009). Leon-Beck and Dodick (2012) are noteworthy in this regard, describing, for instance, three types of ecological experiments: the lab where one can control independent variables but the results are unrealistic; the field which is more realistic but more difficult to control variables; and the natural where there is the most ‘realism’ but no control. We agree with Leon-Beck and Dodick (2012) that methodological differences among different branches of the same science make it impossible to superimpose general learning models.

Conclusion: Institutional and other Sites of Learning – Re-Conceptualizing Workplace Learning

We return now to our starting point. Earlier studies in the sciences (Bowen & Roth, 2007; Cumming, 2009) directed us to look more closely at the day-to-day nature of the research-related practices of science doctoral students. Doctoral students have often been described as apprentices (Enders, 2005): individuals learning research-related practices through observation, experience and interaction in institutionally constituted workplaces such as offices, labs and libraries (Middleton, 2010). Still, there is emerging evidence that suggests this may not consistently be the case (Pearson et al., 2011). We were also interested in how students enacted their agency given the expectation that doctoral experience supports the development of independence as a researcher (Gardner, 2008; Pilbeam & Denyer, 2009).

The results of the study, using multiple data collection points rather than the more common approach of a one-time interview or survey, clearly demonstrated student agency, as individuals often chose where they worked in relation to what they wanted to accomplish – with one individual’s rationales sometimes contrary to another’s. In this manner, they were able to adjust, on a day-to-day basis, the material and social resources on offer in ways that met their own learning needs – though not always completely successfully (McAlpine et al., 2013).

In making these choices, we found them selecting both institutional and non-institutional spaces. They often chose institutional spaces for the social resources on offer related to particular research-related practices – especially when they found these supportive. In choosing to work away from institutional workplaces (though not all had this as a choice), students were often seeking

solitude to accomplish a particular activity. However, solitude was not always the goal in working away from the institution; they sometimes sought out and engaged in virtual social resources during these times.

In other words, there was plentiful evidence that students were not infrequently learning largely in physical isolation from most institutional social and material resources; that is, while engaging in conscious thought in relation to socially derived activities (Billett, 2001), they were doing so *virtually*. Thus, the findings suggest a need to broaden our view of doctoral workplace learning to include non-institutional sites of learning, and material and social resources that are available virtually. (We acknowledge that there are programs that intentionally seek out partnerships or internships for doctoral students outside the academy, but these are institutional pedagogies, not the individual choices we are referring to here.)

While access to virtual resources expands the range of learning opportunities, absence from the physical workplace shuts out unpredictable and occasional observations, or spontaneous but sometimes powerful interactions that have traditionally been conceived as part of the doctoral learning environment. This raises interesting questions about how engagement in socially derived activities that are physically distant may significantly impact on what is learned and not learned. For instance, we wonder in what ways absences from the institutional workplace may lead to gaps in learning given the reduced opportunity to participate in research-related practices that are occasional in nature, e.g., on-the-spot ethical decisions-making (de Vries, Anderson, & Martinson, 2006). Still, we acknowledge that being in the institution does not guarantee such opportunities either (Holley, 2009).

We conclude that we can no longer assume that ‘workplace learning’ is situated in institutional spaces – new technologies are disrupting earlier forms of learning as they create new (Currie & Eveline, 2011). This expansion of learning beyond traditional institutional workplaces calls us to re-think how to better represent doctoral ‘learning-to-work’ as co-constituted by both institutional and non-institutional sites of learning with the agency expected of emerging researchers evident in their choices as to where and how to work.

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Biographies



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Appendix: Overview of 12 doctoral students

Individual/gender/age/ # participant documents	Field/Year PhD/Source of project/Principal workplaces/ Own work	Personal/ UK or International/EI st L or EOL	Part of a lab group?	Research project
13196/M/47/15	Comp.Sci., computing security/5 th yr/Self/Home office, base- ment, and hotel lobbies//Certification and accreditation of cross domain systems, programming and accreditation, field work interviewing people in different organizations, grounded theo- ry, reading (on-line and paper), writing, editing, drawing fig- ures in Inkscape, coding, email, filling out paperwork	Family/Interntl/ EI st L	No	Own
Apollo/M/24/12	Theor.Physics, string theory/1 st yr/Self/home, office, confer- ences (discussing maths issues)//Connecting string theoretical models (enigmatic) to high-energy particle physics - studying its symmetries, maths formulations, concepts and calculations to create and test theoretical models; pen and paper a nice change	Girlfriend and par- ents/Interntl/ EI st L	Yes*	Own
Catherine/F/23/10	Zoology/2 nd yr/Supervisor/Lab//Applied evolutionary biology, controlling spread of disease, immune effects of bacterium on mosquitoes, feeding mosquitoes, harvesting and injecting eggs, completing RNA extractions, re-running experiments where they went wrong, muddling with a lot of techniques, ½ day pro- tocols, waiting for replacement batches of mosquitoes	Partner and fami- ly/UK/ EI st L	Yes*	Supervisor's
Fred/M/45/11	Comp.Sci., business applications of Artificial Intelli- gence/1 st yr/Self/Office (proximity to supervisor, students, li- brary), home (pacing, thinking, conference calls, quieter), col- lege (teaching commitments)//Applying logical reasoning tech- niques (artificial intelligence), using computers in business de- cision making through OWL (web ontology language), writing progress report, proof derivation, developing new knowledge representation techniques and proving their correctness.	Partner and par- ents/UK/EI st L	Yes*	Own

Appendix (continued)

Individuals/gender/age/ # participant documents	Field/Year PhD/Principal workplaces/Own work	Personal/ UK or International/EI st L or EOL	Part of a lab group?	Research project
Kadyna/F/34/12	Eng./2 nd yr/Supervisor/Office (students and research group meetings) and home (writing as office is noisy)//civil and environmental, hydrological modelling to predict water movement, testing and amending hydrological model, writing documentation and software routines, making calculations, debugging computer program	Family/Interntl/EOL	Yes	Supervisors
Rumi/M/25/12	Comp.Sci./1 st yr/Supervisor/Office, home (flexibility of time) and lab//Concurrency theory and distributed communication, language design, extension of the sessions type theory, reading research papers, writing collaborative paper, developing benchmarks, coding, writing algorithms, discussions with industry partner, company internship.	Partner, parents & sister/Interntl/EOL	Yes	Supervisors
RP/M/26/9	Eng., Robotics/4 th yr/Self/Office, lab, conferences, coffee conversations and the shower (for new ideas) //Mobile robotics, software, assistive devices, machine learning, computer vision, running experiments, data collection, reading papers, meeting with industry partner, writing collaborative paper.	Family & close friends/Interntl/EOL	Yes*	Own
SA/F/25/11	Biology; Ecology/3 rd yr/Supervisor/Office (computer codes, statistical analysis, proximity to supervisor) and home (repetitive, mundane tasks, more comfortable, music)//Computational Biology; modelling road networks in South America, epidemiological approach, biodiversity, programming model – writing codes; generating GIS data layers, analysing data (PCA, correlation, DCA using R) and graphing, writing thesis chapters, drawing figures.	Partner, pets and family/UK/ EI st L	Yes	Supervisors
Sophie/M/25/11	Chem., Inorganic/1 st yr/Supervisor/Office (computer lab, productive environment) and home (can work remotely as well, thus more progress made)//Computational Chemistry, nanoelectronics, extended metal atom chains as alternatives to silicon based microchips, computational calculations, analysis, record-keeping, reading literature, working with Linux, charting results.	Girlfriend, family & friends/Interntl/EOL	Yes	Supervisors

Appendix (continued)

Individuals/gender/age/ /# participant documents	Field/Year PhD/Principal workplaces/Own work	Personal/ UK or International/EI st L or EOL	Part of a lab group?	Research project
TDB/M/25/12	Materials/3 rd yr/Supervisor/Office (computer to analyse, write; focus better than home// Applied aspects of physics, synthesis and characterization of graphene, a novel non-material, transition electron microscopy to see how defects form, analysing TEM data, processing microscopy images (removing noise), looking for trends to theorize models	Family and friends/UK/ EI st L	Yes	Supervisors
Tom/M/25/15	Zoo., Invertebrate evolutionary development biology /2 nd yr/Self/Office, lab, home, other lab// using development as a tool to understand evolution, manipulating embryos, molecular cloning, antibody staining, fixing animals, reading, writing a draft article, assembling sequence data, made phylogenetic trees, data 'wrangling' in Excel, doing molecular cloning, and antibody staining	Girlfriend and lab mates/Interntl/ EI st L	Yes	Own
Tulip/F/25/8	Zoo., Epidemiology/3 rd yr/Supervisor//Office, home (moved cities, higher capability to get things done at home), British library and bus (while traveling between cities)//Infectious diseases, dynamics of disease transmission, sociological influences on tick infection, ecology of tick infections, statistical modelling, creating datasets, data extraction, results verification.	Boyfriend, family & postdoc/UK/EI st L	Yes	Supervisors

*These students were part of lab groups/teams but reported as working primarily independently, with some to substantial interaction with the supervisor only.

Cite as: Littlefield, C. M., Taddei, L. M., & Radosh, M. E. (2015). Organic collaborative teams: The role of collaboration and peer to peer support for part-time doctoral completion. *International Journal of Doctoral Studies*, 10, 129-142. Retrieved from <http://ijds.org/Volume10/IJDSv10p129-142Littlefield0790.pdf>

Organic Collaborative Teams: The Role of Collaboration and Peer to Peer Support for Part-Time Doctoral Completion

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Abstract

With doctoral completion rates hovering around 50%, students, faculty and institutions are seeking methods for improvement. This narrative inquiry examined the impact of collaboration and peer to peer experiences on doctoral completion of three peers in a part-time doctoral program. Prior to this inquiry, minimal research existed on the impact of peer to peer support and collaboration on doctoral completion; therefore, the three peer authors defined, described, and recommended ways to encourage organic collaboration. The authors' defined organic collaboration as a naturally-formed dynamic peer to peer support group, built on individual strengths and differences, while focused on a common goal. Themes found during the narrative inquiry included the identification of a common goal, amicable group dynamics, peer to peer support, and intentional relational learning. The peer authors provided practical knowledge on ways students, faculty and higher education institutions can benefit from encouraging and supporting organic collaboration. This narrative inquiry demonstrated the long-term benefits of peer to peer support and collaboration that led to scholarly, professional, and personal support.

Keywords: Peer to peer support, part-time doctoral completion, organic collaboration, intentional relational learning, narrative inquiry, group dynamics

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Introduction

Completion rates among doctoral students remain an ongoing issue in higher education institutions (Gardner, 2010; Holley & Caldwell, 2012; Holloway & Alexandre, 2012; Jairam & Kahl, 2012; Jaschik, 2007; Kania-Gosche, Leavitt, & Wisdom, 2011; Lahenius, 2012; Mullen & Tuten, 2010). Research has shown

Editor: Michael Jones

Submitted: August 3, 2014; Revised: January 27, 2015; Accepted: January 29, 2015

that, within the United States, there are a staggering 100,000 individuals working to complete their doctoral degree, but an alarming 50% of those individuals will not succeed (Jairam & Kahl, 2012). Much of the research on doctoral completion rates link various factors to student failure or success. For example, Jairam and Kahl (2012) found that doctoral students face many stressors, such as “relative poverty, anxiety, sleeplessness, academic demands, fear of failure, examinations, and time constraints” (p. 312) but, on the contrary, a relevant stress release may be attributed to socialization among doctoral students striving for degree completion. Jairam and Kahl (2012) revealed doctoral student socialization generates various types of relationships that help to relieve stress and anxiety while providing academic support.

While previous research has focused on the completion rates of doctoral students, very little has been done regarding the role of peers in doctoral programs (Flores-Scott & Nerad, 2012), as well as the doctoral students as adult learners (Mullen & Tuten, 2010). Many factors can contribute to the successful completion of doctoral students, including the pedagogical use of student teams. Beyond the scope of higher education, teamwork has been defined as “a cooperative process that allows ordinary people to achieve extraordinary results” (Scarnati, 2001, p. 5). In the realm of higher education, specifically doctoral education, student-based teams are often created or identified by faculty for the purposes of completion of an assignment, then disbanded at the conclusion of the course (Macke & Tapp, 2012). While the value of a student-based team seems logical, minimal research exists illustrating the long term benefits of these student teams on the completion of a doctoral program. This lack of literary support prompts two questions: at what point does an instructor-identified team formed for a single course project, transcend into a collaborative team that fosters and supports doctoral completion? And, is it possible the prospect of this collaborative team is what could improve the progression of doctoral students through the often isolating dissertation phase, and subsequently positively impact completion rates? The peer authors experienced this type of collaboration during their doctoral program, which occurred in a naturally evolving, rather organic way. Consequently, the purpose of this narrative study is to define and examine the role of organic collaboration and peer to peer support on part-time doctoral student completion.

Background

The authors are three peers, Meghan, Laura, and Cathy, each balancing work, family, and busy lives, while participating in a part-time, non-cohort higher education leadership doctoral program. The resulting narrative study was designed to capture the organic collaborative experiences of these three peers in their doctoral program which ultimately led to their degree completion. Throughout this experience, the peers contributed to these collaborative efforts by creating intentional peer relationships during the comprehensive exam preparation, dissertation process, and post-doctorate scholarly practices. This narrative is the story of an organic collaboration among three peers who were united by their instructor in one course, but remained intact to this day by choice. While each of these peers was strong academically and would have completed the program in due time, each peer’s strength, when combined with the others, contributed to the strength of the organic collaborative team.

The organic collaborative team consisted of Meghan, Laura, and Cathy. Provided below is a short description of each member:

Meghan started her doctoral career during her tenure as a higher education administrator in her institution’s alumni engagement department. She started the doctoral program in the Fall of 2006 taking one course at a time to balance classroom, work, and life. Several semesters after starting the doctoral program, Meghan increased her course load to two classes each semester, got married, purchased a home and moved, all while working full-time. Even though she started the program enrolling in one course at a time, leading to a

longer program projection than her other peers in this article, this varied path serendipitously placed her on the same program projection, time-wise, as Laura and Cathy. Meghan successfully completed her doctorate in Spring of 2013.

Laura was working part-time as an adjunct professor teaching early childhood courses in higher education and decided to pursue her doctoral degree on a part-time basis. Laura began her program in Fall of 2008, taking two courses every semester including summer. Her oldest child was 16 at the time and her twins were 6 and in first grade. Within the first year of her doctoral program, Laura began a full time position at a two-year private higher education institution. Laura's goal was to complete her doctorate before her oldest son graduated college with his bachelor's degree. Laura successfully completed her doctorate in March 2012 and her oldest son completed his bachelor's degree in May 2014.

Cathy, an entrepreneur with no prior higher education work experience, aspired for a career in higher education as a full-time faculty member. She began her doctoral program in January 2008 on a part-time basis while she balanced owning and operating a business with her husband, and raising two young children under the age of six. Her dream was always to combine her educational knowledge with years of business experience in a college classroom. By her second semester in the doctoral program, she increased her course pace by enrolling in two courses at a time. In addition, within her first year in the program, Cathy began as an adjunct professor in the continuing studies division of the university in which she was enrolled. She continued working full-time for herself, teaching part-time for the university, raising a family, and taking courses until the completion of her program. In August, 2012, Cathy successfully completed her doctorate.

In Fall 2009, Meghan, Laura, and Cathy were placed on their first instructor-identified team for a team-based project. The chemistry among the three peers formed a lasting bond, resulting in the organic collaborative team as defined below.

Definition

For the purpose of this study, the peers defined organic collaboration as a naturally formed dynamic peer to peer support group, built on individual strengths and differences, while focused on a common goal. As a team of peers, the common goal started as the completion of a team-based assignment; progressed as support and collaborative study sessions in preparation for the comprehensive exams; followed by the completion of their individual dissertations and program completion. This common goal continues beyond program completion as they pursue scholarly research together. When asked independently of one another to define organic collaboration, Meghan described organic collaboration as a group of individuals that come together on their own accord to work together to meet a common goal; Laura characterized an organic collaborative team as a peer group which is not forced or predetermined, and one in which all team members want to be a part of this collaboration; and Cathy identified it as a self-selection of peers that occurs by trial and error, while blending various personality types and leadership styles, all for a common purpose. Even though portions of each of the peer's definition emerged during the study, the literature was void of any reference to organic collaboration; therefore, Meghan, Laura, and Cathy defined themselves as an organic collaborative team.

Literature Review

The Council of Graduate Schools (2014) is in the midst of a multi-phase seven-year project researching Ph.D. completion and attrition rates. Findings thus far found an unfavorable prospect for doctoral students with less than 75% of students entering a Ph.D. program persist to completion (Council of Graduate Schools, 2014). Furthermore, the Ph.D. Completion Project found 80%

of the participants identified financial support as the top incentive toward timely completion, 63% cited mentoring/advising as incentive, but only 39% identified peer support as a motivating factor leading toward degree completion. Kania-Gosche et al. (2011) asserted that earlier phases of the Ph.D. Completion Project emphasized the need for “more support for students during the dissertation writing phase” (p.1). However, as the name implies, the Project focused only on Ph.D. students, primarily in the fields of engineering, life sciences, math and physical sciences, social sciences, and humanities. Storms, Prada, and Donahue (2011) addressed doctorate in education (Ed.D.) completion and contend completion rates frequently stall between the points of course completion and dissertation defense. Another distinction in the case of education, the demographics of Ed.D. students often differ from those of Ph.D. students; Ed.D. students are “admittedly a different population than typical Ph.D. students” (Butin, 2010, as cited in Kania-Gosche et al., 2011, p. 2).

Kania-Gosche et al. (2011) identified a gap in the literature dedicated to the study of Ed.D. programs, and found typically that Ed.D. students experience a gap of many years between completion of a masters and the pursuit of a doctorate. Additionally, Ed.D. students are often adult learners who have families, financial obligations, and work full-time. Due to the nontraditional nature of the Ed.D. student, the isolation felt during the dissertation stage and need for support can be more pronounced (Kania-Gosche et al., 2011). As such, nontraditional doctoral programs are designed to meet the needs of the adult learner; specifically, the scholarly practitioner. According to Radda (2012), nontraditional doctoral students bring “15-25 years of professional experience ... [along] with masters degrees and significant knowledge and experience in their current field of practice” (p. 50). Furthermore, these doctoral students need opportunities to interact in a scholarly environment that does not revolve solely around classroom interactions. Radda (2012) identified the need for scholarly learning communities that assist nontraditional doctoral students in connecting beyond the classroom. He described a concept called the Doctoral Community Network, which provides nontraditional doctoral students opportunities to collaborate with peers virtually. The Doctoral Community Network is an online scholarly network which assists with connecting doctoral students with other nontraditional students to facilitate informal discussion and interactions, thus forming a collaborative community of learners.

Collaboration is a key component to academic success and student performance, especially within higher education doctoral programs. Collaboration has been shown to improve the completion rate of students due to an increase in socialization within the academic program. Anderson (1996) noted, “It is important, therefore, for those who would enter academic life, namely doctoral students, to participate in collaborative efforts as part of their education and socialization” (p. 306). Additionally, Pemberton and Akkary (2010) concluded: “Studies on program completion show that peer relationships, in the form of meaningful professional and personal connections, are associated with increased motivation for learning, persistence in the face of challenges, and success in program completion” (p.180). Group work and collaboration can benefit the individual student because it “provides a shared workload, shared ideas, shared deadlines that help to increase momentum on a project” (Anderson, 1996, p. 307).

Collaborative pedagogy has the ability to facilitate learning in a student-centered forum in the context of project-based, case-based, inquiry-based and problem-based scenarios (Oliver, 2001, as cited in Tarricone & Luca, 2002). Furthermore, collaboration “relies upon individuals working together in a cooperative environment to achieve common team goals through sharing knowledge and skills” (Tarricone & Luca, 2002, p 641). Successful teams exude a synergistic energy in which all members contribute and participate, while remaining flexible and adaptable to a cooperative work environment while all striving for a common goal, rather than an individualistic effort and competitive environment. Successful team characteristics among members have the ability to predict collaborative success (Tarricone & Luca, 2002).

It is important to note that while teamwork and collaboration are similar, they are not necessarily synonymous. Silverstein (as cited in McLeod, 2010) emphasized, “Teamwork and collaboration are cousins, but they are not twins” (para. 8). Differences between the two are based on structure and flexibility. Teamwork exists in a hierarchical structure, thereby influenced by an authoritative figure such as a professor or coach. Campbell (2011) identified a team as those grouped by a manager who “work closely together to achieve a joint outcome ... [and act] interdependent, but they are fully committed to a single result” (para. 3). He continued, teams “need to reach joint decisions ... [and] will be cautious about taking unilateral action without checking with each other to make sure there are no negative side effects” (Campbell, 2011, para. 3). Team members may dislike each other, but as long as the authoritative figure has the ability to resolve disputes, the team may be successful (Campbell, 2011). In the realm of academia, a professor designs a team project, sets expectations, timeline, and requirements. All students are aware of expectations and requirements for success and, ultimately, the professor remains the authoritative figure (McLeod, 2010). Collaborators, according to Campbell (2011), share goals, but those goals are “usually only a small part of their responsibilities. Unlike a team, collaborators cannot rely on a leader to resolve differences” (para. 5). A successful collaboration “requires emotional engagement ... and participants have a high respect for each other’s competence on the topic of the collaboration” (Campbell, 2011, para. 8).

When it comes to examining the effects of collaboration and peer impact on graduate/doctoral students, minimal research has been completed within this subject (Devenish et al., 2009; Flores-Scott & Nerad, 2012). Anderson (1996) stated that collaboration, or group work, is beneficial to doctoral students in three ways. First, it provides an outlet in which students will be exposed to “critical secondary expertise” (p. 310) thereby allowing doctoral students to expand their own knowledge and skills. Second, it provides social benefits outside of the classroom and connects peer to peer, and peer to faculty interaction. Lastly, it provides doctoral students with a deeper connection and network within their academic program (Anderson, 1996). The main component of collaboration is a social foundation. Gardner’s (2010) study on the impact of socialization and completion rates in doctoral programs found that successful programs offered the greatest opportunity for students to form such social relationships. Students within Gardner’s study reflected on their academic programs and identified their peers and faculty as “family” (Gardner, 2010, p.69).

Despite the family effect felt by some, collaboration may come with its share of downfalls for other doctoral students. Some doctoral students find collaboration cumbersome when problems arise with a project or within the group (Anderson, 1996). Devenish et al. (2009) stated that within a group setting, students can fear that individual student voice would be diminished over the group voice. Furthermore, group dynamics can suffer when members of the group are not contributing or putting in the same effort as others in the group, or competition might arise with authorship credit, especially when it comes to academic work (Anderson, 1996; Pemberton & Akkary, 2010). While collaboration and group work can foster negative implications for the individual student, the benefits outweigh its drawbacks.

Traditionally, collaboration within doctoral programs is often utilized in disciplines where the work was deemed beneficial to both the student and faculty (Anderson, 1996). Additionally, Anderson (1996) described collaboration as “not only a structural work arrangement but also a means for enhancing students’ socialization to academic life” (p. 321). Many doctoral programs utilize the cohort model in which students enter a program of study and remain intact as a group throughout the progression of coursework (Pemberton & Akkary, 2010). Even though much of the research on graduate and doctoral program collaboration is often focused on examining the impact or development of cohort model programs, Mullen and Tuten (2010) found that, although often rare within academic programs, self-created peer to peer cohorts impacted student progress.

McLeod (2010) defined collaboration as a function of a peer-based, self-directed structure which evolves over time, requires flexibility, and frequently changes based on fluxing situations. Collaboration is “about coming together and putting your best ideas in the service of something bigger than yourself” (McLeod, 2010, para.23). Furthermore, Campbell (2011) identified three attributes of successful collaborations as evidence and commitment of an emotional engagement, high levels of respect among collaborators, and freedom to use creativity as a way to advance the collaborative efforts. Amabile et al. (2001) stated collaborative success also includes the presence of a project-relevant knowledge, and common attitudes and motivation.

Collaboration at the doctoral program level has a specific program focus of education, research, and dissertation completion. Anderson (1996) found that graduate programs that include collaboration have benefits such as preparation towards research and is a “means for enhancing students’ socialization to academic life” (p. 321). Doctoral program collaboration strategies such as intentional relational learning, communities of practice and doctoral student mentoring programs can impact doctoral student success and completion. Intentional relational learning provides opportunities to encourage collaboration and reciprocity among faculty and students and peer to peer where sharing of ideas are encouraged and competition is discouraged.

These distinctions provided the transitional context from what started as an instructor-identified team assembled for a single assignment, to the collaborative relationship that emerged as an organic collaborative team of peers.

Methodology

Narrative inquiry, as a qualitative research method, is focused on examining and categorizing human experience through shared stories (Connelly & Clandinin, 1990; Creswell, 2006). This narrative inquiry, conducted by these three peers, examined their organic collaboration experience in a higher education doctoral program and shows implications for the impact of such collaboration on doctoral student success. By using a narrative inquiry approach it allowed the peers, as researchers, to reflect on their experience, both on a social and personal level, and use their experience to provide practical knowledge for institutions, doctoral programs, and student collaboration (Conle, 2000).

As a means to capture their individual reflections, the peers developed a reflective questionnaire that was used to provide a structure to their stories. Interpreting stories and reflections “is at the heart of narrative analysis” (Patton, 2002, p. 118). The questions were as follows:

Describe your experience as you first became involved in this team?

What kinds of attributes existed among team members?

What impact, if any, did your team members have on your doctoral completion?

Describe the characteristics of your team - what makes the team successful? Were there times when collaboration was difficult? Please be specific and describe.

Describe examples of peer to peer support that you experienced during your team experience?

How did faculty encourage collaboration and networking?

How did the institution support peer collaboration?

What suggestions do you have for the institution, faculty, or other doctoral students regarding organic collaboration?

How would you define organic collaboration?

These reflective questions prompted each peer to reflect on their organic collaboration experience and the impact it had on their doctoral student experience.

The collected peer responses were then reviewed using the constant comparative method allowing the peers to compare their reflections for similarity, consistencies, and themes (Creswell, 2007; Merriam, 1998). By using the constant comparative method, the peers were able to identify four key organic collaboration themes: common purpose, group dynamics, peer to peer support, and intentional relational learning.

Connelly and Clandinin (1990) described narrative inquiry as “a process of collaboration involving mutual storytelling and restorying as the research proceeds” (p. 4). During the data analysis, the three peers met on several occasions to discuss the data, share personal insights and discoveries allowing for additional reflection, and the peers to expand upon the narrative inquiry.

Findings

The collaborative experience of the three peers, Meghan, Laura, and Cathy, illustrated that such peer to peer collaboration provides key characteristics that helped each member to doctoral program completion. Gardner (2010) stated that collaboration provides peer support that can prove to be beneficial in helping doctoral students reach their completion goal. While this organic collaborative team’s experience echoed the literature, four distinct themes emerged: uniting for a common purpose, possessing amicable group dynamics, providing peer to peer support, and creating intentional relational practices.

Theme One – Common Purpose

In the early days of the peers’ collaborative activity, the three peers were assigned to a team by the instructor. At that time, the common purpose was simply successful completion of the assignment. Since the peers were participating in a non-cohort program, this was the first time they were enrolled in the same course. Within a few weeks, the assignment was presented to the remainder of the class and the peers received positive feedback from the instructor. A bond was formed and continued to strengthen as the peers were occasionally classmates in future courses.

In non-cohort learning environments, use of team projects is an effective pedagogical approach that fosters this socialization among students (Mullen & Tuten, 2010). Although Meghan, Laura, and Cathy worked together on the instructor-identified team within the class environment, the continuation of the collaborative interactions occurred voluntarily beyond the scope of the classroom and was not centered solely on classroom interactions, as echoed by Radda (2012). Coincidentally, despite their varied course trajectories, the three peers reached course completion at the same time, and the preparation for comprehensive exams united them for a common goal.

Similar to the research of Amabile et al. (2001) on the need for common attitude and motivation, these peers found that their common goal of doctoral completion was a key factor in their team coming together organically. For Meghan, having a common goal made her organic collaborative team experience, and all that work and effort, that much more special. She described that doctoral programs can be such an individual process; however, by forming our organic collaborative team it enhanced the shared experience, often felt in a classroom setting, throughout the whole program. Meghan felt that her team helped to keep her focused on the end goal, motivated to do her best, and assurance in knowing that there is always someone to turn to who will understand her struggles. She added that getting a doctorate is hard work, and having peer support makes all the academic challenges that much easier to conquer. Meghan described this team as having a shared goal, “to completing our degrees”, and she continued: “Sure, this goal was also an individual goal, and we had our own ways of getting there at times, but the connection kept us going.”

As Tarricone and Luca (2002) alluded, collaboration can be the impetus for common goal achievement. Laura agreed when she stated: “We all wanted to succeed. Everyone was willing to provide a helping hand when needed and there was never a feeling of competition.” Although all peers had different personalities, the diverse personalities seemed to work well together.

Theme Two – Group Dynamics

Campbell (2011) described the attributes necessary for successful collaborative efforts as respect, creativity, mutual encouragement, and support. Pemberton and Akkary (2010) asserted the absence of competition is necessary for collaborative success. Essentially, group dynamics are effective when all members contribute fully and equally. Cathy acknowledged:

I would have completed my degree regardless, but the impact of our organic collaboration gave me the strength of a study group for comps, as well as being a sounding board, shoulder to lean on, and source of encouragement and support, but most importantly, I had an opportunity to help them in return. This experience was not about ME completing the program, it was about getting all three of us completing the program.

For Meghan, the group dynamics provided her with a level of comfort, similar to that of a family, and provided a sense of familiarity. “The first time we worked together it just clicked. We were able to come together and share ideas openly. We were open to each other, the way we worked, and our ideas.” She continued: “It was apparent that we were a group that had energy, which helped to keep motivation going. It turned what could have been an assignment to complete into something that was an enjoyable learning experience.”

The group dynamics Meghan, Laura, and Cathy experienced illustrated Gardner’s (2010) “family” characteristic through their lasting friendship and support. Prior to each of them completing their dissertations, the support was in the form of encouragement, advice for how to approach various situations, and being a cheerleader for each other. Cathy explained: “Post dissertation, the support is still amazing, but more in a friendship context. Each of us has great respect for the others and that in itself is support.”

The peer’s organic collaborative team displayed diverse group dynamics such as providing support, encouragement, strength, intelligence, focus, determination, commitment, accountability, and socialization. The peers were three different people who were each strong individually, but when working together, the team was even stronger while complementing each other’s style in a powerful way. Meghan, Laura, and Cathy’s group dynamics allowed for a level of openness to each other’s ideas and concepts which provided an environment in which to share their individual voices without fear of being unheard. Devenish et.al. (2009) found that students working in a team or group setting feared a loss of voice. This notion was not evident among the organic collaborative team of Meghan, Laura, and Cathy.

Theme Three – Peer to Peer Support

Peer to peer support was an emergent theme from this narrative study. As stated previously, minimal research has been completed on the role of peers in doctoral education (Devenish et al., 2009; Flores-Scott & Nerad, 2012). Meghan, Laura, and Cathy depended on each other for support and encouragement throughout their journey. Cathy provided an example of this support as follows:

The entire comprehensive exam experience provided opportunities for major support at all times. If any of us felt as though we were struggling to grasp a concept, the whole team would focus on that area until it was understood. At the same time, the review helped to reinforce each of our understanding of the particular concept.

Although each was self-directed and motivated, the peer to peer support provided a place to turn if in need of encouragement and advice. Beyond comprehensive exams, the peers provided support as each reached the dissertation proposal defense, and later dissertation defense stages of the program. Meghan agreed:

We cheered each other on and checked in often to make sure we were moving along. I took the longest in getting this date, but they were behind me to keep my spirits up. We were there for each other through each step, celebrating each small victory, leading to the greatest victory of all; the successful dissertation defense.

The peers' mutual support was a common occurrence, being present for each other to wish each other good luck prior to, and congratulations after, the successful defense. Essentially, each successful defense was a victory for the team.

Meghan, Laura, and Cathy have continued to learn and work together through writing publications and presentations. Although each peer has a separate career path, they continue to collaborate on academic and scholarly interests. When working together, the peers remained enthusiastic, flexible, and supportive of each other. Laura described the impact of peer to peer support as being "imperative for preparing for comprehensive exams." She continued: "Everyone contributed equally when having questions regarding research-specific questions. I received peer to peer support when working on my dissertation, and even while writing this paper, all team members did their share and contributed equally." Meghan, Laura, and Cathy's experience was similar to a community of practice. Lahenius (2012) asserted that students' experiences in communities of practice may be illustrated the following themes: "belonging to a scientific community, academic development, and the experience of support from student peers" (p. 35). Furthermore, these communities of practice encompass multiple relationships that take place within social environments and among peers with shared scholarly interests (Lahenius, 2012). In this study, Meghan, Laura, and Cathy experienced a community of practice that was developed around scholarly and academic goals. They felt a belonging to a group where each could develop academically, professionally, and personally. Not only did this community of practice provide support through the comprehensive exam and dissertation stage, but support continued as peers collaborated on scholarly publications, presentations, and professional goals. The peers' professional backgrounds varied; however, their shared scholarly interests provided ways for their organic collaborative efforts to continue.

Theme Four – Intentional Relational Learning

Previous efforts have been made to use intentional relational learning to increase doctoral student success. Intentional relational learning includes opportunities for faculty and students to interact and learn with one another in settings that are collaborative and may not only occur in an academic setting. For example, faculty can create intentional opportunities for social and collaborative interaction between faculty and students and peer to peer. Relational learning is based on the theory of social constructivism where learning is reciprocal and ideas are freely shared (The Taos Institute, n.d.). "Evidence demonstrates that a primary focus on student learning that incorporates intentional relational practice has increased student persistence and graduation and enriched faculty work lives" (Holloway & Alexandre, 2012, p. 85). Through inclusion of these intentional relational practices, students and faculty "interact with and empower each other" to create communities that consist of "mutually beneficial and respectful learning as opposed to programs based on peer competition and isolation" (Holloway & Alexandre, 2012, p. 89).

In the peers' narrative study of organic collaboration, intentional relational practices became a part of the process, but were not initially intentional. After the instructor-identified team experience previously described, the peers continued collaborating while studying for their comprehen-

sive exams. The beginning of the study period took place in a purely academic setting. The study sessions then moved to more informal settings, such as restaurants and houses. This was described by Laura as: “Since the days on the fourth floor of the University library, we have met countless times to study, discuss, research, and have fun. So glad to be part of this team.” After successful completion of comprehensive exams, Meghan, Laura, and Cathy continued to collaborate and created intentional relational practices throughout the dissertation process. As peers, they provided support, assistance, and encouragement to one another throughout the process which resembled the intentional relational practices as described above (Holloway & Alexandre, 2012). Even though, the three peers were on different timelines toward completion of their dissertations, they were able to celebrate and derive encouragement from each other’s previous successes.

An unintentional outcome of the organic collaboration was that as a team, the collaboration and support went beyond the comprehensive exams; it continued into the dissertation phase with a great deal of informal interaction. Laura alluded to the social aspect of the team:

The team was supportive, understanding, and flexible; at times, funny. Although we differed in a variety of ways, we all enjoyed each other’s company. We began to create informal relational opportunities where we could get together, drink some wine, eat some food, and collaborate.

The group members provided support, encouragement, and flexibility to each other. Each member of the group remained highly motivated and self-directed, while also understanding of the need for work/life balance. In addition to the support, the organic collaborative team provided opportunities for socialization, which ultimately strengthened their bond and commitment to each other. When the peers collaborated socially, this helped to relieve stress and anxiety while they worked towards scholarly and academic interests (Jairam & Kahl, 2012). These social opportunities occurred at local restaurants, the three peers’ homes, and on social media. Most of the social occasions involved the three peers, but some included other peers, faculty, and the peers’ families as well. The peers found that each theme is not independent of each other. In order for organic collaboration to occur, each theme needed to be present and cumulatively build upon each other (Figure 1).

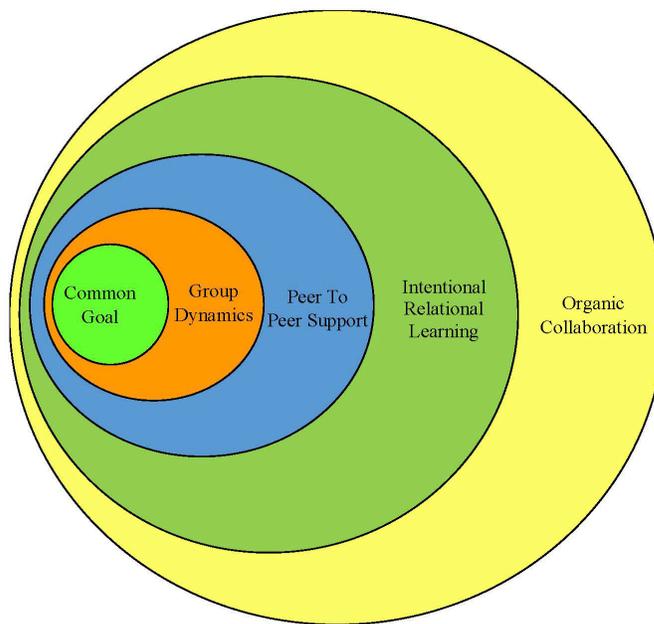


Figure 1: Nested Venn of Organic Collaboration

As depicted in Figure 1, the common goal serves as the underpinning of the team and the key component to forming an organic collaborative team. As organic collaboration teams develop, they build on the foundation of common goal by identifying and recognizing their group dynamics. Amicable group dynamics of an organic collaborative team will help foster and enhance peer to peer support, which will transcend into practices of intentional relational learning. These themes provide the architecture of an organic collaborative team. This organic collaboration was an important factor in the three peers successfully completing their doctoral degrees, and also why they continue to work together as colleagues and friends.

Implications

Students, faculty, and higher education institutions can benefit from encouraging and supporting organic collaboration. As defined in this study, organic collaboration consists of four key themes: uniting for a common purpose, possessing amicable group dynamics, providing peer to peer support, and creating intentional relational learning. Given the statistics that less than 50% of students who enter a doctoral program persist to completion, leaders in higher education are compelled to find ways to improve these statistics.

To encourage organic collaboration, faculty have the ability to utilize team projects within the classroom environment. Meghan suggested: “As students progress through the program, faculty should provide the opportunity to self-select teams for some classes. This provides the students the opportunity to self-select peers as team mates.” It is important to note, not all collaborations will be successful. As noted previously, successful collaborations consist of mutual respect, emotional engagement, and the ability to be creative and innovative (Campbell, 2011). Faculty and students can be encouraged to experiment and take risks when it comes to collaboration. In addition, since socialization has proven to be a significant factor in whether students persist in a doctoral program, students should be provided more opportunities to socialize both inside and outside the classroom. This socialization can occur by supporting program events, providing online platforms, and social media as ways for students to communicate and connect with peers.

Institutions can create a culture of collaboration where faculty and students are encouraged and supported in collaboration efforts. Laura suggested to “[p]rovide opportunities for students and faculty to come together and collaborate. Reward faculty for encouraging collaboration and creating collaborative environments for their students.” Although faculty and institutions need to be supportive of organic collaboration, there also needs to be a balance and understanding of differing student needs.

Cathy suggested: “Faculty keep an eye out for groups that are forming organically, to hear their successes, and to think about how to guide other students to find possible groups.” Although, Cathy advised: “for some doctoral students, independent learning is more their style. Faculty should be aware of those not forming an organic collaboration, because those individuals might need the extra support to make it through the program.”

Peer to peer support should be recognized as an important factor that can positively impact doctoral completion. Devenish et al. (2009) recapped the experiences of a doctoral study group and how these positive experiences were not considered by the institution as a measure of postgraduate success. Devenish et al. (2009) proposed institutions recognize the value and application of peer to peer. Although Devenish et al. (2009) claimed the study group felt their experience was vital to their success, this was not recognized by the institution.

Consistent with Devenish et al. (2009), Meghan, Laura, and Cathy found their organic collaborative experience was a positive factor in their doctoral degree completion. Another consistency between the experience of Meghan, Laura, and Cathy when compared to the study as presented by Devenish et al. (2009), was that each other “remained engaged and enthusiastic with learning

and with progress along the doctoral journey” (p. 60). Likewise, Flores-Scott and Nerad (2012) claimed peers were important to a doctoral learning program and had a positive impact on student learning, retention, and even the socioemotional development of students. Peers learned from each other and taught each other “what it means to be a student, a researcher, and an academic” (Flores-Scott & Nerad, 2012, p. 77).

Conclusion

Through this narrative inquiry, Meghan, Laura, and Cathy learned the value of organic collaborative efforts went beyond expectations, and developed into a lifelong partnership to this day. Initially, they were placed on an instructor-identified team for the purpose of assignment completion. As the peers started their organic collaboration as a comprehensive exam study group, their original goal was to study together and prepare for the exams, and ultimately pass the comprehensive exams. However, the goal transformed to keep each member motivated, focused, and completing their doctorates. Meghan, Laura, and Cathy gained so much more than a study group and a doctorate.

As stated previously throughout this narrative inquiry, doctoral completion rates are around 50% (Jairam & Kahl, 2012) and research is lacking on the impact of peer to peer support on completion rates (Flores-Scott & Nerad, 2012). This narrative inquiry illustrated the impact of organic collaboration and peer to peer experiences of three peers as they successfully completed their part-time doctoral program. Further, the three peers defined, described, and recommended ways to encourage organic collaboration, which consisted of coming together for a common goal, having amicable group dynamics, providing peer to peer support, and creating intentional relational learning as illustrated in Figure 1. This organic collaborative team is an example of the long-term impact of collaboration and peer to peer support that continues through scholarly, professional, and personal experiences beyond doctoral program completion.

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Cite as: Boadu, M., & Sorour, M. K. (2015). Utilizing grounded theory in business doctoral research: Guidance on the research design, procedures, and challenges. *International Journal of Doctoral Studies*, 10, 143-166. Retrieved from <http://ijds.org/Volume10/IJDSv10p143-166Boadu0680.pdf>

On Utilizing Grounded Theory in Business Doctoral Research: Guidance on the Research Design, Procedures, and Challenges

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Abstract

Grounded theory is a powerful and rigorous theory building methodology that has attracted considerable interest in business research; however, it is a challenging endeavour especially for novice researchers and in particular at the doctoral level. Although several researchers have attempted to clarify the canons of various grounded theory approaches, still there is a shortage in guidance for doctoral students who wish to apply grounded theory for their studies. Using an example from a grounded theory business doctoral thesis, this paper provides a guide on the research design and utilisation of the Straussian grounded theory at doctoral level. In doing so, the paper discusses the rationale, features, and benefits of grounded theory. Using an example from corporate governance research, the paper illustrates how the procedures of data analysis (coding), theoretical memoing, and theoretical sampling are applied to systematically generate a grounded theory. Finally, the paper discusses major challenges to utilising grounded theory and how these can be addressed by doctoral researchers. This paper provides a clear and pragmatic exposition that can be useful to guide doctoral researchers who are interested in utilizing the Straussian approach of grounded theory in their studies.

Keywords: Research methodology, Qualitative Research, Grounded Theory, corporate governance, Doctoral research

Introduction

Research design refers to the “plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis” (Creswell, 2009, p. 3).

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Moreover, research design indicates how the research is conceptualized as well as the type of contribution it will achieve (Cheek, 2008). Qualitative research has evolved during the last century, through complex processes of successive stages of “epistemological theorizing” (Denzin & Lincoln, 2008, p. 311). As such, the term qualitative research has been confusing because it “means different things to different peo-

Editor: Michael Jones

Submitted: April 29, 2014; Revised: April 1, 2015; Accepted: May 5, 2015

ple” (Lockyer, 2008; Strauss & Corbin, 1990, p.18). However, qualitative research can be defined broadly as:

a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self... involves an interpretive naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meaning people bring to them (Denzin & Lincoln, 2008, pp. 311-312).

Indeed, selection of a qualitative research design will affect other decisions such as the research methodology and methods (Trauth, 2001). The former refers to the “overall approach to the research process” (Collis & Hussey, 2003). It also reflects the ontology and epistemology of the chosen paradigm of inquiry (Schensul, 2008), while the latter refers to the approaches by which data is collected by the researcher (Collis & Hussey, 2003). Grounded Theory is one of the principal methodologies for doing qualitative research (Creswell, 2003) and is acknowledged to offer unique experience and benefits to new researchers. As such, developing business research and more precisely corporate governance research (as the case discussed in this paper) requires more qualitative investigation as “Qualitative research can assist policy-makers and practitioners to develop more efficient governance mechanisms, by shedding light on the efficacy of policy prescription. “Qualitative research provides a basis for rethinking and challenging some of the dominant assumptions and meanings about how governance actors and institutions actually function” (McNulty, Zattoni, & Douglas, 2013, p.183). In an extensive review of published corporate governance research over the last two decades, McNulty et al. (2013) have concluded that “qualitative studies in governance have grown in number since the 1990s, but remain a small fraction of the published work on corporate governance” (p.183).

Towards this end, doctoral researchers must be encouraged to undertake qualitative research and grounded theory in particular. However, the use of “grounded theory” is said to be overly generic and confusing regarding alternative epistemological approaches to qualitative research (M.Jones & Alony, 2011; Suddaby, 2006). This highlights the need for further guidance and clarification of the methodology and how it can be applied. As such, the following sections of the paper attempt to provide a useful practical guide that helps understanding not only how to apply grounded theory – as a qualitative methodology- but also how it fits within the overall research design of the doctoral thesis. In doing this, it is equally important to clarify what grounded is and is not, in order to help doctoral students make the right decision when designing their research. This is discussed in the following sections.

What is Grounded Theory?

Grounded Theory was first developed by two sociologists, Barney Glaser and Anselm Strauss in 1967 as an action against the extreme positivism that had permeated most social research. Glaser & Strauss (1967) argued that researchers needed a method that would allow them to move from data to theory, so that new theories could emerge. Such theories would be specific to the context in which they had been developed and ‘grounded’ in the data from which they had emerged, i.e., substantive theory. That said, the substantive theory developed can be subsequently compared with existing more formal theories as advocated by Glaser and Strauss (1967) and as such linked to the existing body of knowledge. It is through this comparison with existing formal theories a substantive theory may “become a spring-board or stepping stone to the development of a grounded formal theory” (Glaser & Strauss, 1967, p. 79). The aim of grounded theory is to understand “how social circumstances could account for the interactions, behaviours and experiences of the people being studied” (Benoliel, 1996, p. 413). Grounded theory is discovered, developed,

and provisionally verified through systematic collection and analysis of data pertaining to a particular phenomenon (Strauss & Corbin, 1990). This facilitates the move from a description of what is happening to an understanding of the process by which it is happening (Corbin & Strauss, 2008; Strauss & Corbin, 1998). As such, grounded theory is acknowledged as a rigorous approach that doctoral business students can utilise to build a substantive theory grounded and faithful to the reality and based on studying the phenomenon in its original settings (Bourmistrov & Mellembvik, 2002; Locke, 2001). Grounded theory is particularly well suited to “uncover and understand what lies behind any phenomenon about which little is yet known” (Strauss & Corbin, 1990, p. 19). It specifies a phenomenon “in terms of the conditions that give rise to it; the context in which it is embedded; the actions/interactions strategies by which it is handled; and the consequences of those strategies” (Strauss & Corbin, 1990, p. 91). Clearly, this entails creation of new knowledge through identification of the factors shaping a particular phenomenon (and their interactions), thus offering an in-depth understanding that can inform the practice and policy making. Elharidy, Nicholson, and Scapens (2008, p. 139) investigated whether grounded theory can be utilised in accounting research and concluded that it offers a balance between the expediency of the research findings and the rigor in theory development. Many other examples from different business disciplines have also confirmed Elharidy et al.’s (2008) contention. For instance, Palka, Pousttchi, and Wiedemann (2009) have investigated mobile viral marketing from the marketers’ perspective, where little was known about the motivations, attitudes, and behaviours of consumers. The grounded theory created has helped researchers and marketers to understand how to devise effective mobile marketing strategies. Another example is Sorour and Howell (2013) who investigated the corporate governance phenomenon within the Egyptian banking sector, which was not explored before. Here, the application of grounded theory identified the drivers, barriers, context, and consequences of this phenomenon and how it is handled by different actors involved. Hence, the outcome of this study has offered practitioners and policy makers an in-depth understanding of the phenomenon needed to enact successful reforms. At the same time, grounded theory can open venues for future research that can take the form of hypotheses testing studies. The objective of these studies is to statistically examine the relationship between the variables identified within the theory.

While this section clarified what is grounded theory, it is equally important for a doctoral researcher to recognise what grounded theory is not; Appendix A discusses this issue.

Approaches to Grounded Theory

Before, we illustrate the application of grounded theory, it must be noted that there are two main approaches that have emerged since the original grounded theory was introduced (Graham & Thomas, 2008; Hunter, Hari, Egbu, & Kelly, 2005). These are the Glaserian and Straussian grounded theory approaches (See Appendix B which briefly discusses the philosophical underpinnings of various grounded theory versions. This can be very useful to doctoral researchers who are considering using grounded theory). The former is the extension of the original grounded theory approach by Glaser (1992) while the latter is the ‘full conceptual description’ approach advanced by Strauss & Corbin (Hunter et al., 2005, p. 58). Here, the description emphasises a more detail explanation of concepts such as theoretical sampling, theoretical coding, and use of theoretical memos in generating grounded theory. Glaser is viewed as remaining more faithful to the original version of grounded theory in his approach to data analysis, while Strauss (with Corbin) is considered to have reformulated the original version (Glaser, 1992; Heath & Cowley, 2004). While Glaser (1978) emphasized the “interpretive nature of theory development”, primarily using constant comparison method, Strauss (with Corbin) focused on a “systematic coding techniques incorporating analytical techniques” (Goulding, 1999, p. 7). Thus, the differences between the two approaches have focused on methodological procedures for coding data and developing categories, emergence, researcher distance, and theory development (Graham & Thomas, 2008;

Heath & Cowley, 2004; Parker & Roffey, 1997). Although the Strauss & Corbin (1990) data analysis process was criticised for being “programmatically and over formulaic and rigid” (Melia, 1996, p. 370), the critics admit that the suggested guidelines and procedures allow greater latitude for ingenuity and are an aid to creativity (Strauss & Corbin, 1994; Corbin & Strauss, 2008). Having more than one version of grounded theory, it is quite important that doctoral students state and justify in their theses which version has been used and why? This paper will answer this question in relation to a real grounded theory thesis example. The following section gives the background of this study.

Background to the Study of the Ethical Dimensions of Corporate Governance Practice in Ghana

Having dominated the policy agenda in developed economies for well over two decades, corporate governance is now getting to the top of the policy agenda in developing countries (Abor & Adjasi, 2007). The growing attention at both the national and international levels has been attributed to the increasing levels of international corporate financial scandals and the growing acknowledgement that improved corporate governance is crucial for economic growth and development (Arjoon, 2005; Clarke, 2004; Mulili & Wong, 2010). However, the issues of corporate governance have focused mainly on listed companies and large public companies (Abor & Adjasi, 2007; Kyereboah-Coleman & Biekpe, 2005; Tsamenyi, Enninful-Adu, & Onumah, 2007) while little or no attention has been paid to public sector organisations (state owned enterprises and state institutions). Corporate governance is equally important in the public sector organisations as well as public limited companies.

Meanwhile, the public sector organisations and the informal sector comprise over 70% of the labour force in Ghana (Baah, 2007; Ofori, 2009). To Prempeh (2002) most state owned enterprises in Ghana continue to operate like sole proprietorship. Thus, shareholder accountability and minority shareholder-protection systems in most companies can appear to exist only on paper, leaving room for much self-dealing by organisational management and insiders. It is interesting to note that the nature of the Ghanaian business environment allows traditional cultural values to permeate the governance practice (Odotei & Aweodoba, 2006). Thus, business practices in Ghana still fall short of promoting an ethical, responsible, and transparent corporate governance environment. To this end, the study investigates the ethical dimensions of corporate governance practice in Ghana. It aims to understand the phenomena of governance practices in this context and examine its implications for good corporate governance systems in Ghana. A study into the ethical dimensions of corporate governance practice in state owned enterprises is crucial; particularly in a developing country like Ghana where the issues of corruption and mismanagement of public sector financial systems remain a major concern. Towards this end, a qualitative study was deemed suitable to achieve the required understanding of the corporate governance phenomenon in the context of the public sector, which has been ignored in the literature.

Corporate Governance is concerned with the relationship between the internal governance mechanisms of corporations and society’s conception of the scope of corporate accountability (Deakin & Hughes, 1997). This includes the structures, processes, cultures, and systems that engender the successful operations of the organizations. Thus, corporate governance systems vary widely across nations due to the differences in economic conditions, legal systems, and cultural and political environments (Mensah, 2003; Mulili & Wong, 2010). Adding to the complexity, research highlights a conflict between the traditional cultural values and the theoretical propositions of the Anglo-American model of corporate governance (Adu-Amoah, Tsamenyi, & Onumah, 2008). This has consequently led to compliance, enforcement, and ethical concerns in developing countries corporate governance systems (Giurca-Vasilescu, 2008; Prempeh, 2002).

Research Methods

The choice of appropriate method of data collection is influenced by the nature of the research questions and objectives; and the methodology (Kumar, 2005; Robson, 2002). The main methods of data collection used in this study are semi-structured interviews and focus group discussions, supplemented by a survey questionnaire which the researcher used to gain access and inform the formulation of the interviews. The researcher has used semi-structured interviews and group discussion to gather qualitative data from board of directors and senior managers of public sector organisations. These data collection methods are suitable for the qualitative grounded theory method of data collection which relied on understanding processes, behaviours, and conditions to provide the necessary insights into ethical corporate governance practice in Ghana. The semi-structured interviews are used “not only to reveal and understand the ‘what’ and the ‘how’ but also to place more emphasis on exploring the ‘why’” (Saunders, Lewis, & Thornhill, 2003, p. 248). This means that there is an opportunity to probe and understand the meaning, attitudes, opinions, and personal experiences of board of directors and senior managers of public sector organisations. Thus, this research benefited from their insider views of the state of corporate governance (Aguilera, Filatotchev, Gospel, & Jackson, 2008; Filatotchev, Jackson, Gospel, & Allcock, 2007; Hendry, Sanderson, Barker & Roberts, 2006, 2007).

Using the constant comparative process in open coding of interviews and group discussion, open categories emerged. These were subsumed into main categories during the axial coding. The researcher utilized the paradigm model to establish the relationship among these main categories. It must be noted that the paradigm model is a tool which provides a framework to identify the phenomenon and links it with sub-categories, namely, conditions, context, action/interactional strategies, and consequences (Strauss & Corbin, 1990). This formed the basis for the selective coding, by which the core category and its relationships with the sub-categories have been verified. The study developed a substantive theory of ethical corporate governance practice through the process of coding, categorization, and analysis of qualitative data. The data collected reflected the views of board of directors and senior managers of public sector organisations. Thus, the substantive theory is grounded on data. The theory reveals that corporate governance practice in the public sector organisations is influenced by traditional cultural values and norms which have implications for ethical business environment.

The Rationale for Adopting Grounded Theory

A number of the basic features of grounded theory make it an appropriate method for this study:

- (i) Grounded theory methodology includes analysis of processes. Within grounded theory methodology, the term ‘process’ is used to describe “the linking of sequences of action/interaction as they pertain to the management of, control over or response to, a phenomenon” (Strauss & Corbin, 1990, p. 143).
- (ii) Grounded theory methodology directly links macroscopic issues to the phenomenon under investigation and allows the generation of a substantive theory that “offers insight, enhances understanding, and provides a meaningful guide to action” (Strauss & Corbin, 1998, p. 12). Moreover, grounded theory is “more likely to resemble the reality” (Strauss & Corbin, 1998). This is because it builds theory faithful to the situation investigated (Collis & Hussey, 2003) which is grounded in data from the substantive area (Strauss & Corbin, 1998). Therefore, it can provide an understanding of the corporate governance phenomenon taking into consideration the particular characteristics of the context where it is embedded. This qualifies grounded theory to offer the understanding of corporate governance phenomenon within Ghana, identify its critical aspects and how it is shaped within this context.

(iii) Grounded theory makes its greatest contribution in areas where little research has been undertaken (Howell, 2000, 2004, 2013; Nwanji, 2005). The nature of grounded theory is such that the theory that emerges “will be abstract enough and include sufficient variation to make it applicable to a variety of contexts related to the phenomenon” (Strauss & Corbin, 1990, p. 23). In other words, the substantive theory developed from this research can be used as a precursor for further investigation of this phenomenon and related issues.

(iv) Grounded theory is based on the canons of the comparative method, the systematic analysis and concurrent data collection, in addition to being acknowledged as a rigorous approach that “forces the researcher to look beyond the superficial, to apply every possible interpretation before developing final concepts, and to demonstrate these concepts through explication and data supported evidence” (Goulding, 2002, p. 297). It provides a faithful attempt to develop substantive theory that reflects socially constructed reality.

(v) Grounded theory has been selected by many researchers in numerous empirical studies where the emphasis has been on studying the phenomenon within a particular social construct (Bourmistrov & Mellempvik, 2002; Locke, 2001). This includes in the area of Accounting (Gurd, 2008), in Management Accounting (Elharidy et al., 2008), in Management Research (Locke, 2001). Also, in Corporate Governance (Goddard & Assad, 2006; Nwanji, 2006; Sorour & Howell, 2013); and in Political Sciences and specifically in studying of European integration in financial institutions (Howell, 1998, 2000, 2004) have used the grounded theory methodology. This confirms the suitability of grounded theory for this study.

That said, there are some constraints of using grounded theory method especially in terms of generalizability and reliability of the substantive grounded theory. Also there are many other grounds on which grounded theory can be criticized as discussed later in this paper (also see M. Jones & Alony, 2011, for further discussion of limitations). Notwithstanding, grounded theory is the most appropriate methodology for this research, taking into consideration its limitations. The researcher has used the grounded theory method to empirically investigate governance practice in Ghanaian public sector organizations to develop a substantive theory of corporate governance.

Rationale for Adopting the Straussian Version of Grounded Theory

In this study, the researchers adopted the Strauss & Corbin version of the grounded theory methodology. This approach provides a more structured and practically oriented method for generating theory, which can be helpful to understand large volume of data collected “yet they are not restrictively prescriptive”; this practicality is crucial especially in the case of time constrained studies (Parker & Roffey, 1997, p. 223) such as doctoral studies. Moreover, the Strauss and Corbin approach has been used in many business studies, for instance, Gurd (2008) reviews grounded theory research in the discipline of accounting and concludes that Strauss and Corbin procedures to grounded theory have been adopted in most of these studies. The following section provides a guide on how grounded theory can be utilised in doctoral business studies.

Developing the Corporate Governance Grounded Theory

The aim of grounded theory is to generate new substantive theory grounded in data where little is already known or to provide a fresh slant on existing knowledge about a particular social phenomenon (Dick, 2002; Goulding, 1999; Strauss & Corbin, 1990). The theory to emerge reveals contextual explanation of a phenomenon rather than descriptions of complex social processes

(Glaser, 2001; Strauss & Corbin, 1990). Martin and Turner (1986) advocate that grounded theory is proficient in examining complexities due to its ability to generate a comprehensive account of organizational action in context. In a similar vein, Locke (2001, p. 95) argues that grounded theory is “particularly appropriate to researching managerial behaviour” as it captures the complexity of the managerial process.

Glaser & Strauss (1967) contended that theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his/ her data, and decides what data to collect next and where to find them, in order to develop theory as it emerges. Theoretical sampling is inherent in the grounded theory method of “data gathering driven by concepts derived from the evolving theory from constant comparisons to pinpoint places, people, information or events that will help discover concept variations and density of categories” (Strauss & Corbin, 1998, p. 201). Indeed, in this study, the researcher followed the theoretical sampling logic to gather additional data during and after the interviews; and from other sources, which was dictated by this method until categories were saturated. After saturation of categories was achieved leading to the emergence of a near core category, a process was coded. The grounded theory method provided the development of a relevant model to represent the theory that emerged. Here, the researcher adopted a combination of data collection methods to generate further data to confirm and refute original categories, offer detailed understanding of the categories in terms of their properties and dimensions, and establish the relationships between categories.

Theoretical sampling works by systematically “selecting subsequent participants or data based on the information which emerges from the data already coded” (Sarantakos, 2005, p. 66) as the theory emerges and the investigation focuses. The new data guides the researcher to select data samples which are most salient for the research being undertaken. Each of the data collection methods is associated with a type of theoretical sampling. The researcher utilised the questionnaire as a pre-cursive introduction to the interviews and to inform subsequent interviews. Still, the semi-structured interviews and the focus group discussion were the primary data collection methods used during the open and axial coding stages of the grounded theory process to identify categories and determine relationship between the categories.

The grounded theory process is based on theoretical sensitivity. Theoretical sensitivity is one of the numerous fundamental practices of grounded theory process which Glaser and Strauss, (1967) described as “the conceptual ability of the researcher to have theoretical insight into his area of research and make something of his insights” (p.46). It is a process where a researcher becomes aware of the subtleties of the data in order to understand and give meaning to the data (Strauss & Corbin, 1998). This conceptual awareness of the researcher is increased by a number of sources including disciplinary training and associated general ideas from outside of the researchers disciplinary domain (own experience) and being steeped in the literature (Nwanji, 2006; Schreiber, 2001; Weed, 2009). Indeed, it is necessary to “challenge our assumptions, delve beneath our experience, and look beyond the literature if we are to uncover phenomena and arrive at new theoretical formulations” (Strauss & Corbin, 1990, p. 76). It is expected that researchers approach the research situation with some background knowledge of the phenomena under investigation. This must be bracketed or set aside during the research process (Goulding 2002; Ng & Haze, 2008; Nwanji, 2006; Weed, 2009).

In order to conceptualise and formulate a theory, grounded theory requires that the researcher avoid preconceptions and be open minded as this enables the researcher to be “theoretically sensitive” (Glaser & Strauss, 1967, p. 46). Thus, Strauss, (1987) argued that pre-conceptions are inevitable, otherwise how could a researcher decide what particular fields were of interest to him or her? However, Glaser and Strauss (1967) point to the researcher’s own subjective experience as a dimension of credibility achieving a sense of conviction about theorising. They argued that the result of this conviction is not only the researcher’s presence in the setting. The researcher ap-

proached the problem situation with an open mindedness and allowed the evidence accumulate to dictate the emerging theoretical agenda. This provided the necessary theoretical sensitivity to conceptualise, formulate, and discover substantive grounded core categories (Glaser & Strauss, 1967; Ng & Haze, 2008). This serves as the basic requirement to undergo transition from description to higher levels of abstraction in the substantive theory building process.

The Coding Process

In grounded theory research, data collection and data analysis occur concurrently. As such Qualitative interview data was systematically collected and analysed in an attempt to understand both the structure (why) and process (how) inherent with the corporate governance practice in Ghanaian public sector organisations.

Stage One: Open coding

During open coding, “data are broken down into discrete parts, closely examined, and compared for similarities and differences” (Strauss & Corbin, 1998, p. 102). This process exposes data and uncovers the thoughts, ideas, and meanings attached to yield concepts. Here, open coding was based on semi-structured interviews and focus group discussion of executives, directors, and senior managers from public sector organisations. Following each interview the researcher generated the interview transcript from the audio-tape recordings along with the written notes, which were subsequently microscopically coded sentence-by-sentence to allow concepts to emerge. A number of concepts emerged as the interview process progressed alongside writing theoretical memos.

At this stage of the investigation, the researcher remained open in terms of the structure and direction of the interviews to allow concepts to emerge naturally without *forcing* them into predefined categories (Glaser, 1992, p. 51). Concepts that accurately capture thoughts and meanings of participants in relation to the phenomenon were developed. A concept is described as an “abstract representation of an event, object, or action or interaction that a researcher identifies as being significant in the data” (Strauss & Corbin 1998, p. 103). Data collection and data analysis proceeded until the data were saturated and no new concepts emerged.

The objective of open coding is to break down data into concepts by using theoretical coding procedures and constant comparison method. Incoming data was constantly compared, concept with concept to identify similarities and differences (Strauss & Corbin, 1998). Emerging codes were subject to theoretical relevance criterion and only concepts that show persistent occurrence in data collected, form open categories. Strauss and Corbin (1998, p. 103) define a category as concepts that stand for a phenomenon and drive conceptualisation to a higher level of abstraction. As part of the open coding process, categories are further specified in terms of their properties and dimensions of the properties. Properties are attributes or characteristics pertaining to a category whereas dimensions are location of properties along a continuum (Corbin & Strauss, 2008).

Through the process of simultaneously comparing concepts to identify similarities and differences, eight (8) open categories emerged in terms of its properties and dimensions. They are ***Cultural Influence, Board Ineffectiveness, Ethical Concerns, Board Accountability, Government Interference, Regulations, Training and Education, and Weak Institutions***. The open codes emerged from the responses to the interview questions which overlap as the interview progresses. The researcher identified the substantive codes in the manuscripts using the participants own words as much as possible. Subsequently, a list of codes were compiled and compared against the original transcripts to make sure that a code is used constantly throughout all the transcripts. The quotes and Table 1 illustrate how the process of coding progressed throughout the interviews and emergent concepts and the categories based on the interview questions presented. For example, in response to interview question 1, “How does your organisation’s governance regulation reflect

Ghanaian cultural perspective?” and the focus group discussion, the following are a sample of views expressed by participants to illustrate how the concepts and category, national cultural Influence emerged through the process of coding:

“For instance the **culture of respect for elderly people influences** a lot of things in that you can’t just go to the board demanding **answers to questions**, this **respect for authority** thing is really an issue but that is **our culture**” (Senior Manager, State Institution)

“many people would like to have their **family members and friends**, ..., their **own children** and **relatives working** in the company. So you will see this significant amount of **paternalistic sort of character** within the company”, You know, the other thing is the **family values, our practices are influenced by these values**” (Board member, State Owned Enterprise)

“we all **give and accept gifts** but if somebody bring you a **gift**, at what **time** is the person bringing you that **gift**, and what is the **value of the gift** and under what **circumstances do you bring a gift?**”. It can be good or bad for business (Board member, State Institution)

“I know some organizations which actually **give gifts out** and [pause] I... we don’t encourage **giving gifts** to other people, organization itself **gives the board gift** fine but I **don’t know** of any **gift they send outside**” (Deputy Director, State Owned Enterprise)

The incidents identified here are **culture influence, respect for elderly, respect for authority, family and friends, paternalistic character, unquestioned authority, give gift, receive gift, network relationships, interpersonal connections, practices influenced, value of gift, circumstances, family ties and relations, family values, family business**. These were further compared with other interviews in relation to interview question 2 and those identified to relate to a common theme to be grouped together to form concepts and subsequently the category.

Table 1: Example of concepts and category that emerged through analysis of coding responses to interview question 1

Category		Culture Influence	
Concepts included in the Category			
Culture Influence	Board Practices		
Respect For Directors Authority Not Questioned		Culture of Gift Giving	
Family Ties and Relations	Accept Gift		Authority Respected
Interpersonal Connections	Family Values Influence		
Business Practices	Give Gifts		
Properties	Dimensions		
<i>Gift</i>	<i>Positive</i>		<i>Negative</i>
<i>Respect for Authority</i>	<i>Positive</i>		<i>Negative</i>
<i>Family Influence</i>	<i>Positive</i>		<i>Negative</i>

Source: (Author, 2013)

The coding process is followed for all interview questions to identify the emergent concepts and categories based on the responses from the interview questions which sometimes overlap.

National culture influence emerged as an open category expressed through its properties: **gift, respect for authority, and family influence**. The views referenced the reflection of Ghanaian culture values on corporate governance practice. The majority of the participants believed that there is a dominant influence of *Ghanaian cultural* values on corporate governance practice. To conclude, Figure 1 provides useful tips that can guide the open coding stage.

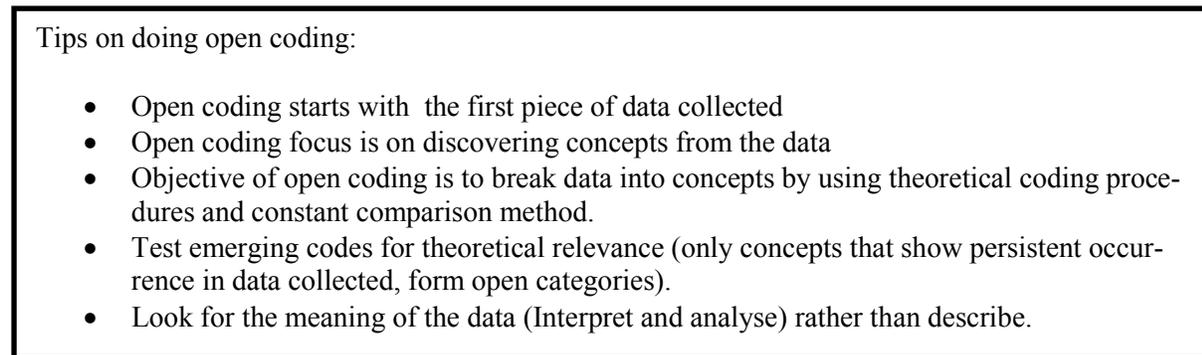


Figure 1: Tips for open coding

Source: authors based on Strauss & Corbin (1990, 1998).

Stage Two: Axial coding

Having successfully ‘open coded’ the data, the analysis proceeded to the second stage which is axial coding. The primary purpose of axial coding “is to begin the process of reassembling data that were fractured during the open coding” (Strauss & Corbin, 1998, p. 124). This is the stage where the relationships between categories and their properties (Strauss & Corbin, 1990) are identified to “form more precise and complete explanation about the phenomenon” (Strauss & Corbin, 1998, p. 124). This is accomplished by making connections between categories along the lines of their properties and dimensions. The underlying assumption of the grounded theory methodology is that each category has links with other open categories. Also, it is at this stage that the open codes are grouped into categories and subcategories, and indeed some open codes become categories in their own right.

Using axial coding recommended by Strauss and Corbin (1998), the researcher has completed four primary tasks: (a) laying out the categories in terms of their properties and dimensions, (b) identifying the conditions, actions and interactions among the actors, strategies and tactics, and consequences associated with the phenomenon, (c) relating categories to their sub-categories by analysing statements of relationship, and (d) identifying how the major categories relate to each other. Here, the researcher has utilised the paradigm model (Strauss & Corbin, 1990) to establish the relationships between codes/categories/concepts that emerged during the open coding. Table 2 displays the relationship between the open categories and the main categories based on the paradigm model.

Table 2: Sub categories and their paradigm component.

	Sub Category	Category	Paradigm Component
1	Cultural influence	National Cultural influence	Phenomenon
2	Weak Institutions / Government Interference	Institutional factors	Causal Conditions
3	Board Ineffectiveness/ Board Accountability / Regulations	Board Practices	Context
4	Ethical Concerns	Stakeholder Ethical Concerns	Intervening conditions
5	Training and Awareness	Strategies	Action/Interaction Strategies
6		<i>Improved governance practices</i>	Consequences

Source: (Author, 2013)

During the axial coding, the open categories were subsumed into five main categories, namely, *national culture influences*, *stakeholder ethical values*, *board practices*, *strategies*, and *institutional factors* which formed the basis for the selective coding. To summarise, Figure 2 provides useful tips that can guide the axial coding stage.

Tips on doing axial coding:

- Focus is still at development of categories but in terms of their relationships to bring the analysis started in opened coding together.
- It goes concurrently with open coding, each developing categories but with different focus.
- The paradigm model is a useful tool that can help clarify the relationships between categories
- Relationships developed during this stage must be considered provisional till evidence; incidents and events confirm or refute these relationships.

Figure 2: Tips for axial coding

Source: authors based on Strauss & Corbin (1990; 1998).

Stage Three: Selective coding

Axial coding was followed by selective coding which integrated, interpreted, and refined the major categories and their sub categories to form a story line that described what happened in the phenomenon. Corbin and Strauss (2008) assert that the fundamental objective of selective coding is to identify the core category and explain the story line. According to Glaser (1978) the core category is a more highly abstracted category but must remain grounded in the data.

Central to the paradigm model is the core category which needs to be explained in relation to causal conditions, context, intervening conditions, action/interaction strategies, and consequences. A core category was identified as the central category used to connect all other sub-categories (Howell, 2000, p. 184). Selective coding describes the interrelationships among the categories and explores the complexities of the relationships among the concepts that emerged to ensure consistency with the data (Creswell, 2005). During the process of identification and verification of relations between the emerging categories of open coding, the researcher has identified "*National Culture influence*" as the category which best enables and facilitates the creation of orderly systematic relationships (Strauss & Corbin, 1990, p. 124) to be established according to the para-

digm model. Thus, this process demands that each category be evaluated individually in relation to the core category, namely, “*National Culture influence*”. To illustrate the process, the researcher has asked some questions to ascertain where each category fits in the paradigm model. For example: Is it an intervening or a causal condition? Is the category action oriented or does it apply to the context? Asking additional questions was helpful to establish these relationships. The core category was selected and systematically related to the main categories which stand for sub categories. The relationship between the core category and the sub categories *governance practices*; *Stakeholder ethical values*; *Institutional factors*; and *strategies* were verified using the views and opinions of participants from the focus group discussion. Through the application of the paradigm model, the core category is linked with the other sub-categories.

The development of propositions is an iterative process aimed at validating relationships among categories that were integrated in the paradigm model and its fit in the paradigm model were verified through recurring systematic analysis. Construct validity as well as relational validity of the paradigm model was established in the process of generating and testing propositions. To Howell (2013), propositions indicate generalised relationships between a category and its concepts and between discrete categories. Through constant comparison of the interview and focus group data, theoretical propositions were generated, refined and validated to describe the interrelationship among categories (Strauss & Corbin, 1998). These propositions may also be referred to as the “*generalized relationships*” of the paradigm model in the development of the preliminary framework with storyline. The following are the propositions:

1. The dominant cultural influence on corporate governance practice in Ghanaian public sector organisations depends on the context of board practices. The board practices include the board ineffectiveness, board accountability and compliance and enforcement environment.
2. Stakeholder ethical values facilitate and mitigate the impact of cultural influences on corporate governance practice. This occurs through code of ethics and corporate social responsibility.
3. Strategies address board practices in response to the influence of national culture on corporate governance practice. This is done through training and awareness. The strategies aim to enhance board effectiveness, board accountability and compliance and enforcement.
4. The consequence of the strategies leads to improved board practices such as improved board effectiveness, improved board accountability and enhanced compliance and enforcement environment. This further minimises the impact of the influence of the Ghanaian culture on corporate governance practice.

These propositions were generated using the interview and focus group data and link concepts and categories including the core category of the paradigm model. They indicate how the categories developed in open coding are related to the key phenomenon “*influence of National Level Culture*”. One of the propositions developed from the interview and focus group data indicates that the impact of the dominant cultural influence on governance practice in Ghanaian public sector organisations depends on the context of board practices. This shows that influence of national level culture can have both positive and negative impact on governance practices depending on board ineffectiveness, board accountability and compliance and enforcement environment. A visual model of the relationship among core category and the sub-categories is in Appendix C.

The set of propositions that describe relationships between categories guide how categories relate to components of the paradigm model. Thus, these relationships impact on the interpretation of relationships between categories guided by and inductively derived from the propositions of the

paradigm model. The paradigm model and set of propositions developed enable the core category, *“Influence of National Cultural Values”* to be interpreted as follows:

There is a dominant influence of national level culture on corporate governance practice. The conditions of Weak Institutions, Poor Leadership and Management of public sector institutions and Government Interference encourage the dominant ‘influence of national level culture.’ The activities that will improve “corporate governance practice” are influenced and conditioned by factors such as:

- Code of Ethics
- Corporate Social Responsibility
- Board Responsiveness

Due to the above intervening conditions and strategies, separately or together, activities introduced to improve corporate governance practice will only be successful where the ‘influence of national level culture’ is positive. As a consequence, ‘improved corporate governance practice’ may not be achieved satisfactorily.

The storyline of the study formulates and describes the link between the categories and the central category as follows.

The ethical dimensions of corporate governance practice in Ghana highlight the dominant ‘influence of national level culture’ (include gift giving and gift receiving, respect for authority/elderly and close family system). Factors that encourage the dominant ‘influence of national level culture’ include other governance practices such as weak institutions, poor leadership and management of public institutions, and government interference (including political interference and government intervention). These factors serve as conditions that encourage and enable the negative ‘influence of national level culture’ on governance practice. The governance practice of ‘board training, minority shareholder awareness, and education’ improve and better the negative ‘influence of national level culture’ to achieve ‘improved governance practice’. The intervening conditions of the phenomenon consist of the ‘code of ethics, board responsiveness, and corporate social responsibility’ that mitigate and support the governance practice of ‘board training, minority shareholder awareness and education’ to be effective and efficient. Consequently, the outcome of effective and efficient governance practice of ‘board training, minority shareholder awareness and education’ should enable and enhance corporate governance practice of ‘improved corporate governance practice’ to be achieved.

The central explanatory concept of the research defined as “Influence of National Culture” enabled the categories to be organized around the central phenomenon in the preliminary framework. The narrative explanation of the paradigm model, consisting of eight categories, formed the basis for developing the preliminary framework around the phenomenon of corporate governance practice in Ghanaian public sector organisations.

The study established a relationship between the substantive theory and the formal theories of culture relativism and universalism and teleological and deontological ethical theories and meso theories of shareholding and stakeholding. This facilitates the development of the substantive theory of corporate governance grounded in data which demonstrates that corporate governance systems are socially constructed and as such understanding the behaviour of board of directors is vital for understanding how governance systems operate. Figure 3 shows some tips on doing selective coding.

Tips on doing Selective coding:

- *This stage is about selection of the central phenomenon of the study (core category)*
- *Core category will pull together other categories that will explain its context, related action/interactional strategies of various entities and the consequences.*
- Core category is also developed here in terms of its properties and dimensions
- Applying the paradigm model can also be useful to explicate the core category in relation to other categories.
- The relationships between the core category and other category can eventually form the substantive theory

Figure 3: Tips for selective coding

Source: authors based on Strauss & Corbin (1990; 1998).

Limitations of Grounded Theory

There is no one methodology without its own limitations. Recognizing and acknowledging these limitations is very useful for further development of research and demonstrating the critical thinking ability of the researcher. Grounded theory methodology is criticised for the following reasons: extensive focus on middle-range theories and not really producing theories which are more general (Bryman, 2001); the context and narrative flow loss due to the coding process (Coffey & Atkinson, 1996); and over emphasis on analysis at the expense of the respondents' description of their experience which constraints clarity of understanding (Riessman, 1990). Regardless, grounded theory is heralded as the most influential methodology for interpretive research and for making qualitative social science research method systematic and scientific (Denzin & Lincoln, 2005). This is because of its iterative and analytical process of data analysis and the subsequent development of a new theory grounded in data (Bryman, 2001; Charmaz, 2006) which cannot be divorced from the process by which it is developed". Grounded theory uses mainly inductive logic; however, Strauss & Corbin (1998) argue that since it uses conceptualisation or interpretation, it is also deductive. In grounded theory the researcher is encouraged to develop some level of abstraction, objectivity and sensitive to words and statements throughout the research process (Patton, 1990). It is therefore worth considering grounded theory methodology for examining managerial phenomena, what Locke (2001, p. 95) labels as "linking well with practice". The choice of grounded theory as a methodology for this research is appropriate, relevant, and suitable to develop a substantive theory corporate governance practice in Ghanaian corporate governance system.

Surviving the Grounded Theory Research: A Personal Reflection

As indicated earlier, surviving the grounded theory research starts with good research design. This essentially starts with the appreciation that grounded theory aims to understand the nature of phenomenon rather than investigating the relationship between the phenomenon and other variables (being the objective of theory verification studies rather than theory generation). Moreover, grounded theory can offer a number of benefits that are usually known at the end of the research rather than from the outset; however, knowing these benefits earlier at the planning stage can help better make an informed decision. For instance in this study, the benefits included the following. Firstly, the method allowed the researchers to enter the field to help the discovery of the phenomena which is of greatest importance to the participants. Through the application of the method, we were able to conceive appropriate research questions which subsequently allowed the execution

of more conventional research. As such, this gives an indication that although we have a particular research question before entering the field, the precision of such question(s) can be enhanced as part of the grounded theory research. Secondly, the method enabled us to provide a more logical and practical research. The researcher begins with only an idea of the area under investigation, but as the research gains direction, focus, and momentum, the researcher commences a gradual sensitization with extant literature (M. Jones & Alony, 2011; Suddaby, 2006, p.634). Thirdly, following the guiding principles prescribed by Strauss and Corbin (1990), the use of the constant comparison and the principle of theoretical sampling became practical and useful throughout the entire research process and they truly represent the core of the grounded theory method. These two cannons helped to achieve the aim of the study: to gain an in-depth understanding of the phenomenon and to build a substantive theory (Glaser & Strauss, 1967). Another important aspect in designing the grounded theory research is to be explicit about the philosophical underpinnings of the research and whether they match the selected grounded theory philosophical aspects, as this will safeguard against the danger of making “the focus of the researcher ... on how to verify the emerging codes rather than on how to understand the nature of the phenomenon being studied” (Elharidy et al., 2008, p.148).

Doing grounded theory research is a learning curve, to understand conceptualisation and hence coding can take time, but will eventually happen by following the cannons of grounded theory and by listening to the data and look deeper at its meaning. A grounded theorist needs to appreciate that theory is different from description. While the earlier refers to answering the question of what, the latter proceed further to answer other questions of why and how. However, theorising cannot happen without (first) describing (Punch, 2009). Also, the literature can be part of the data itself, especially in terms of labelling of categories.

Although, the Straussian approach advocates three distinct stages of coding, in practice these coding stages cannot be totally separated. For instance, open and axial coding can happen concurrently, but they have a different focus. The earlier focus is to develop categories in terms of their properties and dimensions, while the latter focus on developing categories in terms of their inter-relationships. Similarly, selective coding aims at the selection of the core category; however, this does not mean that the researcher has to stop thinking about the core category during earlier coding stages, rather it is the selective coding stage where the category is fully discovered in terms of its properties, dimensions and how it links with other main categories from axial coding. Grounded theory is not a linear process; rather it requires patience, creativity and revisiting data when needed.

Conclusion

This paper demonstrates the application of grounded theory to corporate governance research and aims to provide the rationale, challenges and benefits of using qualitative grounded theory in business research. The paper explains the various philosophical and methodological considerations for the two main approaches of grounded theory (Glaserian and Straussian). The major focus of the discussion is its provision of detail illustration of using grounded theory in doctoral research, how the procedures of data analysis (coding), theoretical memoing and theoretical sampling are applied to systematically generate a grounded theory. Generally, the application of grounded theory research into the field of corporate governance can provide “richer and hopefully more authentic, accounts of reality” (M. Jones & Alony, 2011, p. 110) as it can in other disciplines. But more specifically it can be the basis for “rethinking and challenging some of the dominant assumptions and meanings about how governance actors and institutions actually function” (McNulty et al., 2013, p. 183). Although, it has been criticised especially for Glaser’s notion of “forcing”, the Straussian approach for grounded theory offers a more structured approach to theory generation that might be more suitable to time constrained studies such as doctoral studies.

Although, grounded theory is a challenging methodology, careful thinking and planning of the research, understanding what the methodology is designed to offer and what it does not; following the canons of the method including concurrent data collection and analysis, constant comparison of method, and theoretical sampling would make the research much manageable, fruitful, and enjoyable. Meantime, writing-up a grounded theory thesis might also be challenging because of the different logic that grounded theory follows in comparison to traditional positivistic research. However, one important aspect to address this challenge is by writing transparently to show how the theory has been generated, giving supporting evidence to concept derivation and integration as appropriate.

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Appendix A: What Grounded Theory is Not

Recognising the major grounded theory misconceptions is an equally important step to knowing what grounded theory is. Suddaby (2006) offers an excellent discussion of this in a widely cited paper that groups these misconceptions into six groups that any doctoral student considering using the methodology has to know. These can be summarised in the following. First, grounded theory is not an excuse to ignore the literature. On the contrary doing grounded theory does not require the researcher to be a “blank sheet devoid of experience or knowledge” (Suddaby, 2006, p. 634) nor to enter the field without having a research question in mind. This can be particularly manifested when researchers are researching a well-established topic, with abundant previous literature, which they have simply decided to ignore (Suddaby, 2006). Second, some researchers believe that grounded theory is about presentation of raw data. Although, grounded theory pays attention to the lived experiences of research subjects, the focus is on the substantive area or the phenomenon under investigation and how and why it is happening. As such grounded theory aims at not only describing what is going on, but also at analysing why and how it is happening. Third, grounded theory is not theory testing/content analysis or word counts. Obviously, as a qualitative research methodology, grounded theory aims at inductively generating theories (Glaser & Strauss, 1967) rather than testing them. As such it can be contrasted to the logico-deductive theory which aims at verifying deductibility driven hypotheses (Howell, 2000). Moreover, grounded theory is different from content analysis (both quantitative and qualitative versions) being a methodology for data reduction and description rather than theorising (see Krippendorff, 2013, and Schreier, 2012 for more details on content analysis). Fourth, grounded theory is not simply routine application of formulaic technique to data. Grounded theory is not about applying rigid rules, for instance, it does not require a particular number of interviews to achieve saturation. Similarly it does not endorse using coding software blindly, by which theory can magically be driven. Here it is particularly important to note that grounded theory is a methodology to interpret the data, as such software can help but cannot do the interpretation. Fundamentally, it is the researchers’ responsibility to interpret the data towards generating theory. Fifth, grounded theory is not perfect. This refers to the need to appreciate the pragmatic element of grounded theory (sometimes messy), this includes decisions that the researchers need to make including deciding the philosophical underpinnings of the work, knowing the point of saturation and the need to go back and forth between induction and deduction within grounded theory (Howell, 2000; Suddaby, 2006). Finally, grounded theory is not easy. Grounded theory is rather “the product of considerable experience, hard work, creativity and occasionally, a healthy dose of good luck” (Suddaby, 2006, p.639).

Appendix B: Philosophical Underpinnings of Various Versions of the Grounded Theory Methodology

Perhaps, knowing the philosophical underpinnings of various grounded theory versions can be quite useful at the research design stage. This would be the case to appreciate the somewhat unusual history of grounded theory and how the epistemological and ontological aspects of various versions have developed, and thus, better design the research project in terms of matching the research philosophical beliefs and that of the grounded theory method selected. The original grounded theory methodology was developed by Glaser and Strauss (1967) during their study on Awareness of dying and Time for dying. It is a qualitative research method for the study of complex social behaviour from a sociological point of view. Since the introduction of grounded theory by Glaser and Strauss (1967), it has evolved as its originators have further articulated and adopted the very method of grounded theory (K. D, Locke, 2003). Moreover, their students have also contributed to its evolution and though these students have tried to stick to the core concepts

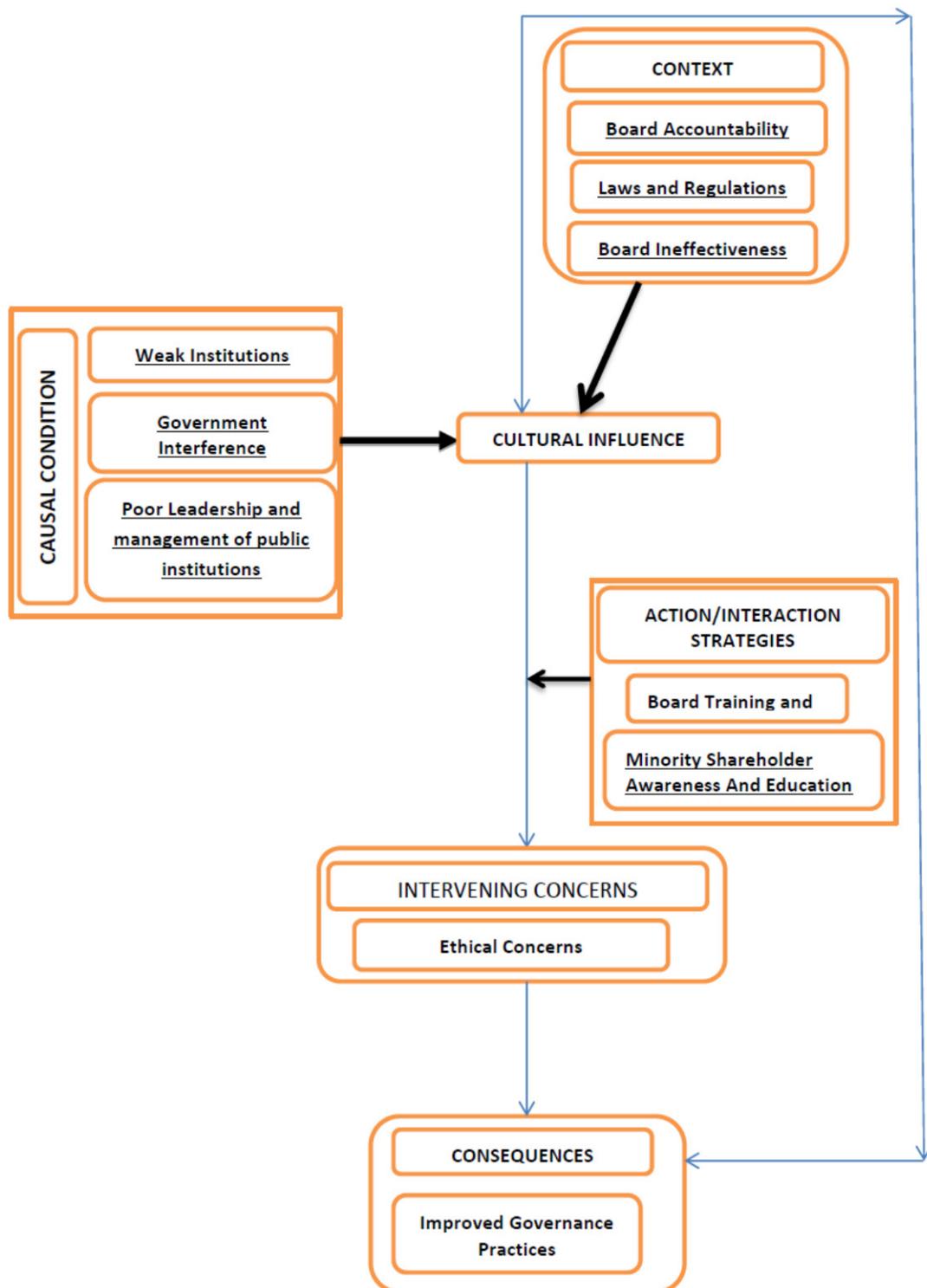
and tenets of grounded theory, they have developed their own style of grounded theory (Gurd, 2008; Locke, 2003). One example is Kathy Charmaz a student of Glaser and Strauss, who developed her own style of constructivist grounded theory (Charmaz, 2006; Gurd, 2008; Mills, Bonner, & Francis, 2006a). Additionally, substantive researchers who learned and utilized grounded theory and incorporated it in their work have also “further interpreted its research practices” (Locke, 2003, p. 2).

Indeed, this has created some confusion in relation to the variety of methodological stances of various models labelled grounded theory (Elharidy et al., 2008; Gurd, 2008; Heath & Cowley, 2004; R. Jones & Noble, 2007; Mills, Bonner & Francis, 2006b; Parker & Roffey, 1997; Tan, 2010).

Notably, various grounded theory models or versions have taken various philosophical /paradigmatic stances, for instance the original Glaser and Strauss grounded theory has its roots lying in American pragmatism and the symbolic interactionism school, which indicates that grounded theory could be located within the interpretive paradigm (Gurd, 2008; Heath & Cowley, 2004; Howell, 1998, 2000; Locke, 2001, 2003). As such, it assumes a relativist ontology and objectivist epistemology. However, Denzin and Lincoln (1994) consider that the classic grounded theory has realist ontology and objectivist epistemology and thus belongs to post-positivist paradigm (Annells, 1996; Locke, 2003). Later variations of grounded theory, such as Glaser (1978, 1992) can also be related to post-positivism orientation (Moghaddam, 2006), while Strauss and Corbin’s versions (1990, 1994, 1998) are more associated with the interpretive paradigm tradition (Locke, 2003). It should be noted that the literature includes somewhat confusing opinions about the paradigmatic orientation of Strauss and Corbin version of the grounded theory (Mills et al., 2006a). However, their acknowledgement of the importance of multiple realities and truth locates them in the interpretive paradigm (Mills et al., 2006a), especially that they assume the objectivity of the researcher (Moghaddam, 2006). Finally, Charmaz (2003, 2006, 2011) has developed another variant of grounded theory: constructivist grounded theory. Charmaz addressed the position of the researcher as a co-producer of data jointly with participants; as such she acknowledges that grounded theory should maintain a relativist ontology (Mills et al., 2006a); but with a subjectivist epistemology, because “theory depends on the researcher's view; it does not and cannot stand outside of it” (Charmaz, 2006, p. 130). Obviously, this locates Charmaz’s grounded theory in the constructivist paradigm (Charmaz, 2006).

In conclusion, the above discussion clarifies that in grounded theory “paradigm lines are not always clearly drawn ... they are determined more by the commitments of individual researchers than by the operational practices of a research approach” (Locke, 2001, p. 13). However, researchers who identify clearly their ontological and epistemological stances can then “choose a point on the methodological spiral of grounded theory” (Mills et al, 2006b, p. 7). Grounded theory as such “transcends a simple categorization of methods and involves deeper assumptions about the philosophical basis of doing research” (Elharidy et al, 2008, p. 148).

Appendix C: A Visual Model of the Relationship among Core Category and the Subcategories



Biographies



Dr Mark Boadu holds a PhD in Corporate Governance from Plymouth University, UK. Mark is a Doctoral Fellow of Institute of Professional Managers and is currently a lecturer at University of Education, Winneba-Ghana. His research examines the Ethical Dimensions of Corporate Governance Practice in Ghana. He has worked on the influence of national culture on corporate governance practices and currently investigating the ethical dimensions of governance actions and practices in developing countries.



Dr. M. Karim Sorour is a Senior Lecturer in Accounting and Financial Management and the PhD programme leader at the Faculty of Business & Law, Northumbria University, UK. He has more than 13 years' experience in the fields of consultancy, research and executive training. Karim has an extensive experience in qualitative research and grounded theory in particular. His research interests include corporate governance, corporate social responsibility and management accounting. Karim holds a Ph.D. in Corporate Governance from the University of Plymouth, UK and is also a Certified Management Accountant (CMA). He is a member of the British Accounting & Finance Association, the Institute of Management Accountants (USA) and the editorial board member of the Journal of Economic and Administrative Sciences (JEAS) and Cogent Business and Management Journal.

Cite as: Nethsinghe, R., & Southcott, J. (2015). A juggling act: Supervisor/candidate partnership in a doctoral thesis by publication. *International Journal of Doctoral Studies*, 10, 167-185. Retrieved from <http://ijds.org/Volume10/IJDSv10p167-185Nethsinghe0877.pdf>

A Juggling Act: Supervisor/Candidate Partnership in a Doctoral Thesis by Publication

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Abstract

Increasingly doctoral candidates are attempting to complete a thesis by publication. This format varies between universities but there are common issues particularly in terms of progression, planning and timing. There are both advantages and difficulties involved in undertaking a thesis in this format. Our discussion of the supervisor/candidate partnership is framed within the requirements of a tight journal publishing agenda. Different universities have different requirements about the number of published papers to be included, the extent of candidate's contribution as sole or joint author, the framing of the research as a unified thesis, presentation, and examination. The decision to attempt a thesis by publication must be taken early and data collection may need to be completed early. Articles then need to be written, polished, submitted, reviewed, revised and, hopefully, accepted. The thesis by publication is a juggling act between maintaining coherence and focusing on publishable segments. It is also a dialogue between supervisor and candidate involving the resolution of sometimes conflicting demands. Employing Cognitive Apprenticeship theory we present a shared autophenomenography that chronicles our doctoral journey that led to a successful thesis by publication. The findings are discussed under thematic headings: Logistics, Cognitive Apprenticeship in Action, and Building Trust.

Keywords: Doctoral supervision, thesis with publication, cognitive apprenticeship, mentoring, building trust, shared autophenomenography.

Introduction

Over the past decade there has been increasing interest in the “processes, educational strategies, outcomes, and cultural and methodological dimensions of postgraduate supervision ... [and] a growing number of potential and neophyte research students and supervisors who seek information about the nature of supervision” (Holbrook & Johnston, 1999, p. 3). There is international

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demand for a sustainable supply of researchers and a “throughput of productive doctoral students is vital to the health of academic disciplines” (Park, 2007b, p. 13). Pursuing a doctorate by publication is advocated in a number of disciplines as an effective alternative to the ‘traditional’ PhD that allows candidates the “opportunity for academic, professional, and personal development” (Davies & Rolfe, 2009, p. 593). It is im-

Editor: Allyson Kelley

Submitted September 25, 2014; Revised May 14, 2015; Accepted May 15, 2015

perative for doctoral candidates to build a track record of publication to enhance their employment potential (Jackson, 2013; Knight & Steinbach, 2008; Paré, 2010; Robins & Kanowski, 2008). This article explores the logistics and processes involved in undertaking a thesis by publication in the field of music education at Monash University, Australia by the first author (Rohan) under the supervision of the second (Jane). We have used the model of Cognitive Apprenticeship (Collins, Brown, & Newman, 1989) to scaffold our phenomenological research and focused on the nature of the supervisor/supervisee relationship.

Doctoral supervision is becoming increasingly complex and challenging (Melin Emilsson & Johnsson, 2007). There has been an “explosion of interest and innovation in higher degree research processes and practices” (Aitchison, Kamler, & Lee, 2010, p. 1) and doctoral provision has been the subject of “increasing scrutiny across the higher education sector” (Lee, 2009, p. 641). The route to attaining a doctoral qualification is rapidly metamorphosing into diverse forms and pathways (Park, 2007a). Undertaking a doctorate by publication is not new but was first adopted in the UK in 1966 by the University of Cambridge (Wilson, 2002). There has been a rapid growth in demand for PhDs by publication in the UK that may be understood as a response to institutional pressure for research productivity (‘publish or perish’) (Jackson, 2013). This pressure is also felt in Australia and it could be expected that the PhD by publication would be a more popular option, but the vagueness and inconsistency of university guidelines makes selecting this option problematic. Concerning the lack of clarity, Bradley (2009, p. 336) notes “a need for more harmonization of policy and guidelines amongst institutions”. This coupled with a relative paucity of supervisory experience in completing PhDs by this method “means the process continues to be treated with considerable caution in Australia (Jackson, 2013, p. 356).

The supervision of research degrees *per se* is of considerable interest (Clegg & Gall, 1998; Melin Emilsson & Johnsson, 2007). Postgraduate research itself is a complex and constantly changing process and for some time “researchers, practitioners, and professionals have attempted to understand and make sense of the world ... with research supervision noted as particularly challenging” (Grant, Hackney & Edgar, 2014, p. 43). There is a “need to explore issues of quality in postgraduate supervision in education” (Johnson, 1999, p. 18) but it is widely acknowledged that successful candidature relies on the supervisor-candidate relationship (Holbrook & Johnston, 1999; Johnston, 1999) in which trust is central (Melin Emilsson & Johnsson, 2007). A supervisor should have the qualities of a mentor who supports and encourages candidates to develop their skills in every aspect of academic endeavour. A mentor should be consistent, trusting and trustworthy, fair, and expert (Erdem & Aytemur 2008; Wadee, Keane, Dietz, & Hay, 2010). Aspirationally, Sambunjak, Straus, & Marusic (2009) identify desired characteristics of mentors within three dimensions – the personal, the relational and the professional. Personal characteristics include understanding, patience, honesty, responsiveness, trustworthiness, reliability, active listening, and being a motivator. Bibby (1999) considers honesty as a requisite of the maintenance of trust. Relational characteristics include accessibility, commitment to the collegial relationship, and a determination to assist mentees achieve to their highest level (Sambunjak et al., 2009). Professionalism implies that the mentor should be senior, well respected, knowledgeable, and experienced. The mentoring relationship evolves over time with honesty, trust, mutual respect, open communication and confidentiality (Sambunjak et al., 2009). A strong mentoring relationship builds a safe environment for intellectual exploration both of self as researcher and of the issues being researched. It is part of the role of the mentor to “provide emotional support ... such as developing, encouraging, and maturing their protégés’ self-esteem and self-motivation” (Erdem & Aytemur, 2008, p. 56).

Trust is considered the core component in the mentor/mentee relationship. Trust can be defined as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the abil-

ity to monitor or control that other party” (Mayer, Davis, & Schoorman, 1995, p. 712). Elements of trust include ability, benevolence, and integrity. These are all important in varying degrees and independent of each other (Mayer et al., 1995). Initially a mentor may trust a protégé because of a perception of these qualities (Leck & Orser, 2013) but over time a more equitable working process should be built in which protégés feel they could take initiative and participate in decision making. Trust by both partners is essential and is initially bestowed then confirmed and extended. Trust incorporates the concept of benevolence that includes the determination to do good and implies attachment. Corollary to this is the “relationship between integrity and trust [that] involves the trustor’s perception that the trustee adheres to a set of principles that the trustor finds acceptable” (Mayer et al., 1995, p. 719). Attaining trust involves risk in that the protagonists must be willing to be vulnerable and open.

Postgraduate research has been identified as a process of learning in context that possesses qualities of master-apprenticeship training “where the established ‘master’ inducts the new apprentice into the ‘mysteries’ of the craft” (Yeatman, 1995, p. 9). Our personal experience of this doctoral candidature (as supervisor and candidate) aligns in some ways with the master-apprenticeship model. Paré (2010) asserts that the PhD by publication requires supervisors who are already expert and successful in “the genres of the profession ... *and* who are also able to induct students into their discipline’s discourse practices” (p. 36). Erdem and Aytemur (2008) point out that “as a vital element of academic culture, mentoring is a one-to-one learning relationship between senior and junior academics based on dialogue and provision of a role model” (p. 56). It is important to mention that prior to engaging in academia we were both trained as musicians. Traditionally instrumental music education adopts a master-apprenticeship model, so the positions of both master and apprentice were very familiar to both supervisor and supervisee. Both Rohan and Jane recognise that the master holds knowledge, skills and the expertise that is shared with the apprentice, in this case as part of a doctoral candidature (Wadee et al., 2010). The building of a mentoring relationship occurs within a co-constructed learning space that permits uncertainty and exploration, provides safety and a collaborative ethos, allows difference and openness, and is in some ways open-ended (Andreotti, 2011).

Theoretical Underpinning: Cognitive Apprenticeship

We employ Cognitive Apprenticeship theory (Collins et al., 1989) as the most appropriate theoretical underpinning to understand the teaching and learning experiences of both participants. Developed on constructivist approaches to learning and supported by situated cognition theory and the theory of modeling (Bandura, 1997), the cognitive apprenticeship model (Collins et al., 1989) is a combination of two terms from different areas. Cognition is understood as the process of knowledge acquisition and apprenticeship is the interaction between an expert and a novice learner, in which the expert assists the learner to become a master of skills through “modeling, scaffolding, fading and coaching” (Collins, Brown, & Holum, 1991, p. 2). Collins et al. (1991) explain fading as “the notion of slowly removing the support, giving the apprentice more and more responsibility” (p. 2). Simply put, cognitive apprenticeship theorises the process of learning by doing having emerged from the study of what occurs when people work and study simultaneously (Collins et al., 1991). In a higher degree research training program the candidate works on a research project while learning the process of becoming a researcher (doing research and disseminating results) from an experienced research supervisor. Explaining the significance of cognitive apprenticeship Collins et al. (1991) advise that in this approach “one needs to deliberately bring the thinking to the surface, to make it visible, whether it’s in reading, writing, [or] problem solving”, simply put “the teacher’s thinking must be made visible to the student and the student’s thinking must be made visible to the teacher” (p. 3). To value thinking it is essential to unpack and identify just what it entails (Ritchhart, Church, & Morrison, 2011). We believe that transparent discussion of thinking and writing is essential to achieving a successful doctoral completion.

Park (2007b, p. 29) asserts that supervision should become “more transparent and more accountable”. We have used Cognitive Apprenticeship theory to scaffold our thinking.

According to Collins et al. (1989), there are different types of knowledge required for an expert to retain expertise. They are knowledge of the domain (concepts, facts, and procedures), heuristic strategies (effective techniques and approaches for accomplishing tasks), and control and learning strategies. Instructional strategies encompassed in the notion of cognitive apprenticeship (Collins et al., 1989) are:

Modelling in which an expert carries out a task while the student observes and builds a conceptual model of the requisite processes;

Coaching where the expert observes the student’s performance, offers hints, and suggests new tasks;

Scaffolding whereby the teacher helps the student accomplish a task;

Articulation when the student can articulate their knowledge, reasoning, or problem-solving processes in a domain;

Reflection that enables students to compare their own problem-solving processes with those of an expert, peer, and a growing of an internal cognitive model of expertise;

Exploration where the teacher sets general goals encouraging students to focus on particular sub-goals.

Of these strategies, modeling, coaching, scaffolding and exploration are initiated by the supervisor. Articulation and reflection begin with the supervisee, but all involve a dialogue and the shifting of roles as the learner becomes more adept and more of a junior colleague. All these forms of knowledge and instructional strategies were evident in the doctoral candidature discussed and examples of such will be presented below. We understood our shared experience as a learning journey. There are twists and turns in any journey but, it could be argued, the thesis by publication brings particular hurdles, detours and crossroads. Given that the doctoral journey we undertook was for both of us uncharted territory we decided to conduct an autophenomenographical study of our experiences in our different roles and present this as a research paper that may offer guidelines for others contemplating such a pathway.

Methodological Approach

Autoethnography is a rigorous qualitative phenomenological methodology that promotes self-reflection (Chang, 2008; Duncan, 2004; Ellis, 2009; Ellis & Bochner, 2000; Mallet, 2011; Nash, 2004). This research approach “can radically alter an individual’s perception of the past, inform their present and reshape their future if they are aware and open to the transformative effects” (Custer, 2014, p. 2). Autoethnographers combine autobiography and ethnography, and seek to describe and analyse systematically personal experience in order to explore cultural experience (Ellis, Adams, & Bochner, 2011; Morse, 1994; Van Maanen, 1988, 2006). Antikainen, Houtsonen, Houtelin, & Kauppila (1996) emphasise the importance of autobiographical awareness, a person’s understandings of his or her experiences and background. This approach can be employed in a variety of disciplines and it “entails writing about oneself as a researcher-practitioner ... it is a specific form of critical enquiry that is embedded in theory and practice” (McIlveen, 2008, p. 14). Autoethnographers frame their understanding of their own personal and subjective ‘truth’ within cultural contexts (Custer, 2014; McIlveen, 2008). Autoethnographers may approach their self-analysis as either ethnography or phenomenology. In taking a phenomenological stance, if the researcher “were to study a phenomenon rather than a ‘cultural place’ it would be autophenomenographical rather than autoethnographical” (Gruppetta, 2004, p. 1). Autophenomenography is thus an offshoot of autoethnography and is an autobiographical genre in which the phenomenological researcher is both researcher and participant in her/his study of a particular phenomenon, subjecting her/his own lived experience to sustained and rigorous phenomenological analysis (Al-

len-Collinson, 2011). In constructing this Allen-Collinson (2012, p. 123) uses the term “‘graphy’ to ‘delineate the research process as well as the written or other representational product of that process’”. The research reported here was conducted as an educational process, to improve self-knowledge and understanding, and share the experiences of the participants with others. We recognised that we were undertaking a “complex, nuanced process of sense- and meaning-making” (Smith, Flowers, & Larkin, 2009, p. 191).

We interviewed each other on several occasions specifically for the purpose of data generation. In this process we share the roles of “author and focus of the story ... the observer and the observed, the creator and the created” (Ellis, 2009, p. 13). We used ourselves as co-participants as we investigated our individual and shared experiences (Chang, 2008). Our research is a shared autophenomenography in which we present a duality that can be understood as two sides of the same phenomenon (the supervisor and the supervisee). As the authors we are both subjects/participants and researchers, and our research strategy can be understood as a double hermeneutic approach. Smith and Osborn (2009) described this as a process of interpretative activity that involves two stages in which, “the participants are trying to make sense of their world; the researcher is trying to make sense of participants trying to make sense of their world” (p. 53). As mentioned before, in this case both the participants and researchers are the same people thus data will be presented as a “double hermeneutic spiral” (McKemmish et al. 2012, p. 1107). The value of the spiral lies in its recognition that the researcher and participants can look at the same phenomena from different perspectives (Wagstaff et al., 2014). Although uncommon, this approach is not unique. Exploring issues in teaching McMillan and Price (2010) used their dual autoethnographies and Learmonth and Humphreys (2012) explored issues of contemporary academic identity similarly employing dual autoethnography. Each of these studies presented the experiences of the author researchers as the objects of research. Similarly Carillo and Baguley (2011) exchanged, reviewed and co-constructed their shared narratives about transition from school teacher to university lecturer. This current study used interviews as a method of data generation. According to Chang (2008) interviews are useful for stimulating memory, filling gaps in information, validating personal data, and to acquire other peoples’ perspectives on us. Confirming this, Tenni, Smyth, & Boucher (2003, p. 2) pointed out that “research questions pertaining to one's own professional practice or personal experience clearly require the researcher to study themselves” to explore the reasons behind such professional practice.

To gather “personal memory data, self-observational and self-reflective data” both participants prepared semi-structured interview questions (Chang, 2008, p. 10) and, having agreed on a master list of questions, we both wrote about particular events that encapsulated our understandings before we spoke to each other on this matter. For example, we both wrote about the day we agreed that Rohan could change from a ‘traditional’ thesis to a thesis by publication. Van Maanen (1988) termed such self-narratives as confessional tales. Chang (2008) pointed out that “studying and writing of self narratives is an extremely valuable activity in understanding self and others connected to self” (p. 33). Such a process of recall and self-interrogation might equate to an internal dialogue. Having devised questions and written reflectively, we interviewed each other in a semi-structured conversational manner. The interviews were recorded electronically and transcribed for analysis using Interpretative Phenomenological Analysis (IPA) that we considered the most suitable approach to analysing our lived experiences (Smith & Osborn, 2009; Wagstaff et al., 2014). IPA is a research approach that has been informed by concepts of phenomenology, hermeneutics and ideography. Smith et al. (2009) explain that in line with its phenomenological underpinning IPA attempts to understand how participants make sense of their personal and social world but recognizes that this involves a process of interpretation by the researcher (Eatough & Smith, 2006; Reid, Flowers, & Larkin, 2005; Shaw, 2001; Smith, 2004; Smith et al., 2009). We independently read and re-read our narratives and the interview transcripts. Before conferring, both authors noted emergent themes (Smith & Osborn, 2009). Van Manen (2006) explains that once

identified by the researcher(s) themes can become objects of reflection in follow-up hermeneutic conversations between the researcher and interviewee (or in this case between the two researcher participants). Participant feedback or ‘member checking’ is a key feature of phenomenology (Bradbury-Jones et al., 2010). In this study member checking was integral to the analytic process and developed into a deep reflexive process that continued after the initial thematic analysis into the writing up of the research. From the emergent themes hypothetical groupings are generated that are then prioritised to form overarching themes that are reported thematically illustrated by direct quotations from the transcripts (Larkin, Watts, & Clifton, 2006; Smith & Osborn, 2009).

One of the criteria for estimating fairness in research processes is that there is no imbalance of power between the participants. Aguinis et al. (1996) point out that students are more likely to be successful if their relationship with their supervisor is founded on expert rather than coercive power. We decided to undertake this study after Rohan’s successful completion of his thesis by which time we were “equally skilled bargainers” (Lincoln & Guba, 1986, p. 79). Although we brought different perspectives to our shared endeavour, we were careful to explicate our thinking to each other. To extend to the reader the ability to determine the credibility and trustworthiness of our description of our experiences we have gathered data that will be presented as a blend of both voices, describing different stages in the candidature and exploring the overarching themes: Logistics, Cognitive Apprenticeship in action, and Building Trust. It should be noted that we have decided that these are the most important themes but many other issues were touched on during our conversations.

The Context

In Australia it has been the tradition that doctoral awards were mainly a single cohesive written thesis “reporting the results of a three to four year research program. An oral defence of the thesis is only available at a few Australian universities” (Mullins & Kiley, 2002, p. 369). Until recently the submission of a thesis by publication has only been available to academic staff members of universities. In some Australian universities a thesis by publication can be undertaken by all doctoral (PhD) and Master of Philosophy (MPhil) candidates. Such theses include academic papers that have been published, accepted and/or prepared for publication. The exact requirements vary from one institution to another although globally there is a general understanding that a thesis by publication will include at least three journal articles in peer-refereed journals compiled for examination with a framing exegesis that “gives an account of the collection, the research that informed the production of the articles, and the ‘doctoralness’ of the body of work” (Lee, 2010, pp. 12-13). In 2013 Rohan successfully completed a PhD by publication taking two years and eight months (Nethsinghe, 2013a). The thesis, entitled *Attaining proximal simulation in multicultural music education*, explored multicultural musicking practices and contained seven articles; three were published by the time of submission, one was accepted for publication and the remainder has been published since that time (Nethsinghe, 2011, 2012a, 2012c, 2012d, 2013b, 2013c, 2015). The term ‘musicking’ was coined by Small (1998, p. 9) who argued that the word ‘music’ should be considered a verb as to music is “to take part, in any capacity, in a musical performance, whether by performing, by listening, by rehearsing or practicing, by providing material for performance ... or by dancing”. An earlier article was included as an appendix to provide contextualising data (Nethsinghe, 2012b) as it could not be included as it had been written and published before the commencement of candidature. Rohan explained that, “each article was to be the centre of a chapter. The chapters were preceded and succeeded by framing papers to introduce the research field, contentions and underpinning philosophy”. The international examiners were receptive and intrigued by the format. The doctoral thesis was considered by one of the examiners to be a substantive scholarly work that provided a “smooth-sailing read of a critical and timely issue”. Jane has continued to supervise doctoral students with increasing numbers electing the

thesis by publication format. The university guidelines have now changed with their being less insistence on the actual publication.

In 2010 the guidelines for a thesis by publication were comparatively vague. The thesis must reflect a sustained and cohesive theme, and framing papers were usually required. Whether the papers had to be published or only submitted varied across faculties and it was our understanding that in our faculty a minimum of four papers should be published or accepted. It was expected that the candidate be responsible for the initiation, key ideas, development and writing up of each of the included works. Overall, the material presented for examination was expected to equate with the traditional thesis format. Papers did not have to be rewritten but could be inserted in their published form. It is expected that all journals selected will be of a scholarly standard that meets the criteria as set out in the Australian Government Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) 2014 Higher Education Research Data Collection Specifications. To get a better idea of what was expected we sought examples of theses by publication on similar topics from other universities (Latukeyu, 2010; Lebler, 2007). Jackson (2013, p. 355) commented that in Australia the “institutional guidelines in universities nationwide are inadequate for producing theses of comparable quality to conventional dissertations”. We found the guidelines unhelpful. Recently the thesis by publication has been retitled a PhD thesis including Published works in which students may present “a thesis comprised in part or in full of published or unpublished papers” (Monash Institute of Graduate Research, 2015). Although Rohan’s doctoral studies were undertaken under the earlier framework, the centrality of the supervisor/supervisee relationship that is the focus of this study has not changed.

The Conversation

To contextualise the data, an introduction to the authors’ prior relationship is offered. Before commencing the thesis by publication, we worked together for several years. Jane was in charge of the music methodology subjects in the Graduate Diploma of Education (Secondary) and Rohan joined the class in 2008. This was a very successful year and we came to know each other well, particularly in the end-of-year original music theatre production that is an integral component of the subjects. The following year Rohan undertook an Honours degree and Jane supervised his research project. Rohan was the first recipient of the Monash University conjoined Honours PhD Scholarship from the Faculty of Education. From the beginning Jane encouraged Rohan to publish his research and he published three refereed journal articles from his initial Honours study. This was an important precursor to the thesis by publication and is a common strategy adopted by many research mentors who “emphasise the importance of considering a publication plan as part of project design” (Green & Bowden, 2010, p. 121).

The Decision to Undertake the Thesis by Publication

In a mentoring relationship trust is built over time (Leck & Orser, 2013). The development of a trusting rapport was pivotal in the decision to undertake the thesis by publication. Ultimately supervisors need to be adaptable and engender confidence in their postgraduate students (Mullins & Kiley, 2002). Adaptability is exemplified here by our conversation about making the decision to undertake the thesis by publication. We both expected that Rohan would proceed to a doctorate – he asked Jane if she would supervise his doctorate at their first meeting. Initially the degree was to be undertaken in the more usual ‘traditional’ seven or eight chapter format. As in many doctoral programs, students enrolled in Higher Degree Research (HDR) courses are considered to be probationary candidates until they have successfully completed a Confirmation of Candidature which involves defending their research project.

After successful confirmation of candidature, Rohan asked if he could do the thesis by publication. Initially Jane was resistant as the following exchange demonstrates:

Rohan: Why did you allow me to use this format?

Jane: Well the first time as you remember I said ‘no’. The second time I said ‘no’. And then the third time you came armed with about three pages of reasons why you should be allowed to try a doctorate by publication. Can you recall what you said?

Rohan: Even before I started my PhD (during my Honours studies) I attended two seminars/workshops presented by the Faculties of Engineering, Health and Nursing about Thesis by Publication. At this time in the Faculty of Education HDR, students were not allowed to present a thesis by publication. Attending these seminars I understood that this would be the most suitable approach for me, as I wanted to become an academic and to build a track record of publishing, presenting, and accumulating research funding. Most importantly as an experienced multicultural musician, artist and teacher, I wanted my voice to be heard and I thought that this was the best option for me, to publish my work and establish myself. Fortunately in 2010, the year I commenced my doctoral candidature, the Faculty of Education introduced Thesis by publication for HDR students. My candidature was confirmed after eight months. It took me those first eight months and three attempts to convince you that Thesis by Publications was the best way for me.

Jane added that she had a further reason for agreeing:

I knew that you wanted to become an academic, and having a track record of publication is a very valuable thing. The second thing was that you were going to be writing and publishing from the research as you went along, whether or not you did the classic version of the thesis. So I finally thought that it seemed a little unreasonable to suggest that you then write the same set of data twice in both thesis writing style and journal writing style.

Having made the decision there were two logistical concerns that had to be dealt with immediately. These were the preparation and submission of articles for publication and having a fallback position in mind if the articles were not accepted or the review process took too long to be accommodated within the time frame of a doctorate.

Logistics: Timing, Failsafe, and Examination

The drive to submit articles and the potential time that journals’ review processes can take means that the conventional order of planning, theorising, reading the literature, and then beginning data collection is altered. From our experience, few journals in our field will accept an article that does not contain original data from a novice writer. Knight and Steinbach (2008) noted that manuscripts that deal with theoretical thinking are less likely to be published. However Rohan did submit an article that explored theoretical concepts which was published. We did not make the decision to complete the thesis by publication until after confirmation. With hindsight it might have been easier to make this decision earlier. Jane explained, “I now think the earlier the decision is made the better. We still had enough time for you to prepare the journal articles and submit them to journals and for us to then settle in to the waiting for reviews to come back which can be very lengthy. That is part of the risk in doing a thesis by publication”. If a paper received a positive review, we still needed to make changes to the text and prepare the response to the reviewers which added to the overall time from submission to publication (Robins & Kanowski, 2008). Jane was effectively working as a ‘publication broker’ who modelled the explication and mediation of the reviewers’ comments (Kamler, 2010). While waiting for journal responses, Rohan used this time for further theorising, reading and planning. He described that during this time he “conducted literature reviews, library research, and organised the next stages of my research project because as a phenomenologist I am aware that we must remain open to the unexpected

finding which proved to be the case”. As well, Rohan attended conferences and presented his findings to experts in his field to refine his writing and enrich his research.

We discussed a range of strategies involved in submitting journal articles as the following exchange demonstrates:

Rohan: I still remember you wanted me to submit my first articles to top ranked journals.

Jane: I use the same strategies with you that I use with my own publications – I submit to the highest quality appropriate journal possible. They may reject it, which is OK, particularly if they do so with useful critique so I can modify the paper and enhance my writing. The paper can then be sent to another journal.

Rohan: One of the two papers that I first wrote and submitted to a top ranked journal got rejected.

Jane: Yes, one article got in with revision and the other one was rejected but you received good feedback. Both articles were modified. The rejected one was revised considerably and then sent to a different journal where it was accepted.

Klinger, Scanlon, & Pressley (2005, p. 16) agree that, “[e]ven if your manuscript is not accepted, one reason to favour the best journals is that they tend to provide feedback of the highest quality, which can be quite helpful”. We also discussed the submission and review process at length so that when an article was criticised or rejected, Rohan understood that this could be a very positive experience and ultimately improve the quality of his work. Lee (2010, p. 18) offers a list of essential planning elements relating to the production of articles that included “researching and selecting journals to target; ... responding to reviewers, [and] resubmitting the article for publication”. For us, it was paramount that we design a research project that as “amenable to progressive publication as discrete articles” (Robins & Kanowski, 2008, p. 20).

As all researchers are aware, some journals can take a very long time to review articles (Knight & Steinbach, 2008). Consequently we were selective about where we sent articles, using those that Jane knew to be timelier in responding. She explained that, “I have had some articles where you wait well over a year for reviewers’ comments and that is just untenable within a thesis by publication”. We decided that it was worth writing to the editor prior to submission. Rohan adopted this as his usual practice. He would send abstracts to journals and enquire if his article was suitable for the targeted journal and ask how long it might take to complete the publication process if accepted. Fairly often Rohan received a sympathetic response where an editor offered to be expeditious which was appreciated.

From the outset, we were very aware that it might not be possible to have enough articles accepted or published within the time frame. For this reason we discussed having a fallback plan whereby we could convert the research into a more conventional format. We were aware of the element of risk at all times:

Jane: One of the major problems with thesis by publication is what do you do if the journal articles are not forthcoming? It is a gamble where you think to yourself “is it worth the effort and the time to write these journal articles, send them off then to wait for three months” which is usually the minimum time to get a reviewer’s response and then depending on what you have to do to improve your article, respond to that.

Rohan: Yes, you have to have a backup plan if things go wrong.

Jane: Absolutely. I always discuss an alternative plan with all the people I supervise.

For Rohan's thesis, the failsafe was to convert the articles into a chaptered thesis format, which would have worked just as well.

The final logistical issue that we discussed as unique to a thesis by publication concerned the selection of examiners, which can be a complex undertaking (Francis, Mills, Chapman, & Birks, 2009). Jane discusses possible examiners with all candidates before she contacts examiners to see if they are available and interested. Normally she seeks someone who is expert, conscientious, fair, and not driven by a sense of his or her own self-importance. Examiners of conventional theses believe that they are responsible for making an independent judgment about the work (Mullins & Kiley, 2002). We were worried that some examiners might be concerned that, as Rohan's papers had already been reviewed and published internationally, there was less room for their personal judgment. In a thesis by publication, examiners focus on the quality, cohesion and rigour of the framing exegesis and conclusions. Submitting a doctorate by publication did not guarantee that examiners would be assured as the quality of the thesis (Robins & Kanowski, 2008). Examiners who acknowledged the influence of publications that accompany traditional theses varied in how they were affected. Some saw publications as a confirmation of ability; others thought it could lighten the examiner's load as the decision had already been made that the candidate's work was worthy of publication in a peer reviewed journal (Mullins & Kiley, 2002). For Rohan's research, prospective examiners were approached and the nature of the thesis was explained. Both examiners were comfortable with examining a thesis by publication.

Cognitive Apprenticeship in Action

With hindsight, Rohan and Jane recognise that all elements of the cognitive apprenticeship model were present in their ongoing exchanges and relationship. Of these modelling, scaffolding, coaching, and fading seemed the most significant. Surrounding all these activities was the acclimatisation and socialisation of the apprentice into the academic world that he sought to enter, the first of which was the acquisition of academic English language that is considered essential (Duff, 2010, p. 174). As will be evident, trust was pivotal to this process.

Modelling involves the student observing the expert as she carries out a task. By doing so, the apprentice can develop a conceptual model of the requisite processes. Modeling occurred in a number of ways during Rohan's candidature but as he was very much concerned with article preparation and the acquisition of academic language, we will first describe this. In shaping and refining articles for publication, initially Rohan observed as Jane made changes to his first drafts. He preferred to observe rather than have Jane return corrected texts amended in his absence. Jane continually explained how she went about the process and why she made the decisions that she did. For example, Rohan recalled that Jane stressed that an article needed to flow and themes needed to be carefully sequenced so that the reader would be led through the story that he wished to unfold. Jane explained other strategies such as reading the paper out loud which made repetitions very easy to identify (particularly for musicians). Rohan also pointed out that he learnt a lot when he watched Jane give papers at conferences. Initially his own presentations were modelled on Jane's that used a PowerPoint presentation with a clear sequence of events, not too many words on each slide as they distract the audience, and usually included powerful images. Although it is common practice in a doctorate by publication for the supervisor to be a co-author on some of the papers (Francis et al., 2009) we did not follow this practice.

Scaffolding is a process in which the expert helps the apprentice accomplish a task. Again, as writing and publishing scholarly articles in quality, peer reviewed publications is quintessential to academic life, after modelling, Jane worked with Rohan to scaffold his writing. Rohan recalled that one of the first articles he wrote had to be almost completely re-written as the journal considered his voice too passive. He explained that,

As I learnt during the candidature there are many different writing styles in academia. To become an academic with a good publishing track record one must acquire the art of writing for academic publications. Different journals have different styles depending on the discipline area, journal style, and the country of publishing. In my experience, compared to journals published in the UK, American journals prefer a more relaxed approach allowing the use of first person in case studies and preferring simple grammar that avoids passive voice.

We discussed the preparation of a ‘master’ article that could be modified to match different journal styles until a successful publication had been attained. Some of these variations were initially hard for Rohan to comprehend, for example one important journal in music education research prefers author family names in the references to be in capital letters for no discernable reason. More than cosmetic changes Rohan also recognised that

there are different journals dedicated to different methodological approaches. When you submit articles for these journals it is vital to use their preferred methodological approaches and use appropriate academic language accordingly.

Rohan explained that his doctorate allowed him to purposely use different methodologies for different papers to broaden his research skills and explained that, “I employed historical research, library research, autoethnography, case study, online survey and phenomenology including IPA. I could learn different research methodologies that I see as another important advantage of undertaking a thesis by publication.” Ultimately Rohan has become skilled at recognising different styles, using a range of methodological approaches and is able to analyse what is required and prepare articles accordingly. Occasionally he returns to Jane for advice but this is becoming increasingly less common as he has acquired mastery of the domain. Rohan added that he recognised that it was additionally challenging for someone who comes from a multilingual background to write in academic English. Jane responded that he had done particularly well in mastering the genre. Duff (2010) noted that students from all backgrounds might have problems with academic discourse regardless of whether their first language is the language of the institution. Pang (1999) noted that it was only through practice and learning by doing that it was possible to acquire skills in reading, writing, listening and speaking English.

Coaching was a continual process during Rohan’s candidature. As Jane monitored and managed his progress there were times when she modeled, other times when she offered encouragement and advice, occasionally suggesting new tasks and strategies, and always helping him develop his self-confidence in this new milieu. Jane told Rohan that:

Your articles evolved. As we understood a Thesis by Publications has to be divisible into sections that can turn into something the right sized for a journal article, remembering that most journals want five to seven thousand words not the normal ten thousand words you can get in a chapter. You really have to be able to compress and to focus in on the one issue. For example the online survey that you did provided considerable data that was perfectly adequate for a journal article. And then from that you had the unexpected finding that then gave rise to an additional case study which again was about the right size for another journal article.

Rohan described additional strategies that “we used for example I only wrote abstracts for conferences (before preparing a full paper) and I became quite good at writing abstracts to try my ideas”. Jane described the writing of abstracts as “an art in itself” and agreed that presenting at a conference was a good way to try things out. Presenting in national and international forums was another opportunity for Rohan to review his work and formed another stepping-stone to publication. Jane added that Rohan’s progressive development of his writing style was very evident across his candidature as she could see his academic writing style developing. Demonstrably, Ro-

han became increasingly able to articulate his knowledge, understanding and skill and to reflect on how he has developed these abilities. By the end of his candidature, Rohan asserted that, “my writing has been improved a lot when I compare my initial work”. As Wade et al. (2010) point out:

Coaching is about discovering and walking different paths. It is a process, formally set up to help student researchers clarify their life purpose, values and goals, and to help them attain these goals in a creative and conscious way. Coaching is not about diagnosis or pathology. Coaching assumes the student researcher to be capable and creative (p. 51).

This statement very much described how we understood this aspect of supervision that resonates with the assertion by Kamler (2008, p. 284) that doctoral publication relies on “skilled support from knowledgeable supervisors and others who understand academic writing”.

Another telling example of coaching was when Jane encouraged Rohan to write an autoethnography to introduce his research. Writing an autoethnography can be a difficult and soul-searching exercise. Jane suggested that Rohan prepare his story about being “Mr multi-everything” in that he embodied his research topic, as he is multicultural, multi-musical, multilingual, multi-faith, and multi-ethnic person. Rohan was born in Sri Lanka with a Sinhalese, Dutch, English and Portuguese cultural and linguistic heritage. He later undertook musical studies in the former USSR before eventually migrating to Australia. He speaks several languages, performs in different musical genres and comes from a rich multi-faith background (Nethsinghe, 2012). Despite all this variety Rohan found writing about himself very difficult and he continually refers to that article as “the longest one I wrote and the hardest one I wrote”. Jane kept encouraging or ignoring (when she was overseas) the emails from Rohan saying he could not write his autoethnography. In reality, he could not work out how to start the paper because it felt like boasting to him. Rohan knew that Jane had confidence in his ability to complete this task. Ultimately he was running out of time, so with quite some inner struggle, he did manage to complete his autoethnography which was published internationally (Nethsinghe, 2012) much to his and Jane’s satisfaction. Although research has identified that doctoral writing and publications can be a site of anxiety and struggle (Kamler, 2008), Rohan found that this was only the case for this one particular article.

As stated, **Fading** involves the slow but intentional removal of support, counterbalanced by the candidate’s assumption of increasing responsibility. This was evident in the introduction and development of Rohan’s skills as a conference presenter. Initially Rohan watched Jane give papers at a number of conferences as a form of Modelling. Subsequently we gave joint papers, taking turns to talk to the PowerPoint presentation slides we had co-constructed. Next Rohan gave his own papers with Jane in the audience as a surety and finally Jane did not need to attend even though she preferred to do so. The thesis by publication format encouraged the presentation of various sections of the research at conferences. Rohan considered such presentations as an advantage because it gave him the “opportunity to present my work to experts and academics in my field at national and international conferences and use the feedback received to develop ideas, improve research papers and plan the next stages”. As Rohan’s candidature progressed, so did his independence. He described using an immersion approach to acclimatize himself to the complex concepts and processes of academic research. Rohan did everything that an academic might do – he wrote papers, gave presentations, marked academic work, lectured, applied for research funding, and presented symposia. Wade et al. (2010, p. 48) advise that “[a]fter some time emerging experts need to find their own voice, make their own decisions, be prepared to take risks, extend the conventions and eventually outgrow their supervisors”.

Building Trust

Underpinning all these processes of modeling, scaffolding, coaching, and fading was trust. This had been established almost from the first moment that Jane and Rohan met. There was a mutual but unspoken understanding of trust and beneficence. On the part of both there was the desire to do good, to be responsible and be reliable. We are not sure how we understood this from the outset. It was never articulated in these terms. It may have grown in that first year of teacher education. Jane remembers relying on Rohan in the musical theatre production and Rohan remembers Jane's calm, assurance and sometimes brave belief that "all would be well". She repeated this mantra to the cast, musicians and crew throughout the rehearsal process. Later Rohan stated that he doubted that the performance would be a success but he was proved wrong as Jane's faith was rewarded.

With hindsight Jane asked Rohan, "Why did you think of convincing me to supervise your thesis by publication?" Rohan replied that with his prior success:

completing a small scale piece of research for my Honours degree and publishing a number of journal articles from it, I was confident that you will be the best mentor to help me with this approach and I felt that as a supervisor you also had reliance in my abilities, such as my work ethic. I think that we had a good mutual understanding of each other's capabilities when we made the decision.

A strong work ethic and a persevering attitude are essential in a successful candidature, particularly when there is a comparatively tight timeframe as in a thesis by publication. Rohan asked Jane to explain what she thought was necessary. She replied:

I think you need a student who is conscientious, diligent and prepared to put in the hard work. With you I had a great deal of faith in your ability to get things done. Therefore I thought that this was a reasonable possibility. If you were a student that I had to chase for work, and the work did not show a lot of effort then I would be hesitant to go for thesis by publication because it will just not get done in time.

Rohan noted that some of Jane's work ethic also contributed, as she was "keen to read everything that I wrote and always gave me constructive and detailed feedback". Jane notes that overtime the nature of this feedback changed as Rohan's writing abilities developed. Now Rohan is an independent academic and researcher but he and Jane continue to write together, undertake research together, present papers together and Jane continues to be his mentor in his new role as an academic in a university.

For Rohan this is a lifelong relationship and Wade et al. (2010) concur that mentoring "has huge potential to become a lifelong relationship" (p. 33). In some ways, Jane is envious of Rohan because when she first began teaching in a university there was little support and no mentoring. According to Wade et al. (2010):

Everybody needs a mentor! This may not be applicable all of the time, but throughout life, and particularly in academic life, a mentor of some sort is necessary. Most, if not all, individuals have had role models but not all have had the privilege of a personal mentor who guided them through some maze, difficulty or challenge at some time (p. 34).

To a certain extent, Jane is trying to provide Rohan with what she would have liked herself. Jane explained that as a supervisor she enacts a Pedagogy of Commitment and Responsibility that draws on social justice theory in which teachers recognize the importance of relationships between individuals (Martusewicz & Edmundson, 2004). In an ethically responsible pedagogy there is respect and engagement between different cultures, understandings, and languages that deepens and enriches the doctoral journey. Rohan added that the commitment works both ways, "as a stu-

dent it is also highly important to commit to the learning process especially when undertaking a thesis by publications". He found that the list of elements of commitment provided by Wade et al. (2010) exactly matched the processes he followed during his candidature. These begin with a commitment to the mentoring relationship that involves, initially time – specifically maintaining a schedule, meeting regularly, allocating time and space for focused reflection, and completing tasks when needed (or sometimes earlier). Further the mentoring relationship requires an openness to constructive criticism, the development of ideas and often-repeated review of writing, having clear goals in mind and finding a way to achieve them. There are many further factors such as "raising issues of concern (academic and non-academic) in a timely fashion" and being "unafraid to ask for assistance" (Wadee et al., 2010, p. 43).

Discussion and Conclusion

Rohan and Jane have found researching together in writing this article enjoyable and fascinating. This has given us the opportunity to reflect and understand just what it was that we were doing often intuitively. Reflecting on our shared experience informs and enriches our approaches to the supervision of other students. Rohan is now an established academic beginning to supervise his own students. Much of what he has experienced now gives him a model for his own work. We continue to talk about what is important in a supervisory relationship. Grant et al. (2014, p. 57) agree that, "the most important ingredient in successful postgraduate supervision was ... building an effective professional relationship" that includes strategies in which masters assist apprentices to become masters themselves through "modeling, scaffolding, fading and coaching" (Collins et al., 1991, p. 2). In our experience, the model of cognitive apprenticeship offers a useful structure to explore teaching and learning in higher degree research. Interestingly Rohan believes that scaffolding is the most important of these strategies as it involves both modeling and coaching. Jane believes that fading is the most important as it involves observing her students becoming independent confident academics who change from being students to colleagues. Maher, Gilmore, Feldon, & Davis (2013) argue that the efficacy of cognitive apprenticeship relies on both supervisor and supervisee making a commitment to making this work. We both feel that there was a clear and ongoing intention to facilitate this particular doctoral journey.

The logistical hurdles encountered throughout the candidature were surmounted but at all times we were very aware of the inbuilt risks in a thesis by publication. Lee (2012, p.13) confirms the "risky yet productive experience of undertaking a PhD by publication". If asked to give advice to candidates considering thesis by publication, we assert the need to decide early, be strategic in journal selection, always have a back-up plan, keep the overall frame of the topic and the methodology in mind, and work hard. Most importantly we remained cognizant of the risks. For this reason we maintained one (if not several) back-up plans. The importance of planning cannot be overstated (Francis et al., 2009). This was a frequent topic of conversation and occasionally we would make changes to both the research and the publishing schedule to allow for the unexpected findings that occurred. We found that flexibility, patience and at times a sense of humour were key strategies in dealing with all the logistical issues we encountered. With hindsight we agree that essential to the successful doctorate by publication was an open-minded flexible approach that occasionally required steady nerves. This was most evident waiting for decisions from editors about articles – should we contact the editor or should we be patient? If we are too bothersome, we might be rejected prematurely or put to the end of the queue. As we needed more than one article for the thesis, we might simultaneously be at different stages of researching, writing, submitting, and revising different papers. Rohan encapsulated this when he described this process as "a juggling act". Andreotti (2011) refers to this 'dissensus' as giving supervisors the opportunity to "to support learners in the development of their ability to hold paradoxes and not be overwhelmed by complexity, ambiguity, conflict, uncertainty, and difference" (p. 395). Underpinning all this was the trust in our relationship.

There remains a lack of commonality in higher education about the nature of the PhD by published work (Bradley, 2009, p. 331). With the increasing prevalence of doctorates by publication by student candidates and the need to disseminate their research (Kamler, 2008), exploring one successful relationship can offer insights for other supervisors and candidates. Lee (2010, p.13) argues that, “a close examination of one doctoral graduate’s experience is a useful way to make visible and articulate some of the often conflicting positions taken within the field of doctoral education”. We hope that our paper might inform stakeholders and impact on the learning experience of PhD candidates, committees, and supervisors as they work toward publishing theses. As is evident there are many aspects to the supervisory relationship. Duff (2010) identifies these as a “social, cognitive, and rhetorical process and an accomplishment, a form of enculturation, social practice, positioning, representation, and stance-taking” (p. 170). Reflective, insightful and purposeful practice is “the bedrock of being a good supervisor [and] is one of the defining attributes of being a modern academic” (Grant et al. 2014, p. 57). We argue that this is also true for the candidate who is becoming an academic. Both supervisor and supervisee must be reflective, committed to the process, be prepared to take risks, be brave, trust and respect each other at all times.

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Cite as: Painter, S. R., & Clark, C. M. (2015). Leading change: Faculty development through structured collaboration. *International Journal of Doctoral Studies*, 10, 187-198. Retrieved from <http://ijds.org/Volume10/IJDSv10p187-198Painter0954.pdf>

Leading Change: Faculty Development through Structured Collaboration

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Abstract

There are relentless calls for innovation in higher education programs in response to media and policy-makers attention to such concerns as instructional quality, relevance to employment, costs, and time-to-degree. At the same time, the individual course remains the primary unit of instruction and there is little evidence of faculty development strategies to assist with changing core instructional practices. We faced that dilemma when we led an innovative doctoral program in educational leadership. Soon after beginning, we implemented a regular meeting of all faculty members teaching and advising in the program to address upcoming events and review student progress. Our retrospective analysis indicates that these meetings evolved as a practical and sustainable framework for faculty development in support of deep change for instructional practices. Here we describe the challenge of faculty development for change and draw lessons learned from our four years of leadership centered on experiential learning and community sense-making. We hope that program leaders who aspire to promote faculty development in conjunction with graduate program implementation will find these lessons useful.

Keywords: Faculty development, doctoral programs, reform, innovation, leadership

Leading Change: Faculty Development through Structured Collaboration

It is no easy task to change instructional practices in institutions of higher education (IHEs). Problems generally include cultures that are change averse, unnecessary processes, inefficient decision-making, contradictory accountability and reward systems, implementation strategies that are “unproductive or nonexistent,” and inconsistent quality in the delivery of the core activities of learning, research and engagement (Fullan & Scott, 2009, p. 33). At the department level, norms favor individualized construction of course syllabi, and there are few faculty rewards for adapting

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programs and curricula to meet external needs (Fullan & Scott, 2009; Hokka & Etelapelto, 2014). Despite some broad outlines of skills and strategies needed to lead change (Fullan & Scott, 2009; Hokka & Etelapelto, 2014), academic leadership at the program level, including initiating, supporting and maintaining changes in instruction, is an understudied area (Scott, Coates, & Anderson, 2008). Reports on new and exemplary

Editor: Allyson Kelley

Submitted: November 24, 2014; Revised March 13, 2015; Accepted May 12, 2015

practices abound but there is little guidance on how to engage all faculty members in changing their teaching practices over sustained periods.

We can draw some lessons from the extensive literature on the implementation of change in K-12 settings. This scholarship demonstrates that innovation is surprisingly complex. To enable success, change agents must address the behaviors, assumptions and beliefs of teachers in classrooms who are expected to change their practices. Teachers bring mental models (that is, internal representations of the concepts built from prior experience and knowledge) of teaching and learning to interpret and make sense of their teaching. These mental models filter perceptions and subsequent classroom actions (Elmore, 1996). When reformers try to implement their theory-based programs in K-12 classrooms, teachers implement the reform based on their previously developed mental models or theories-in-use, which are likely to be different than those of the reform developers (Coburn, 2003; Elmore, 1996; Hall & Hord, 2014; McLaughlin & Mitra, 2001). Reformers must recognize that deep change involving a substantive shift in teaching practices is not successful unless teachers understand how to live the theory behind the proposed change - the “first principles” - so that when they adapt the strategies to local micro-contexts they do so with fidelity to the theory (McLaughlin & Mitra, 2001).

This article describes the early years of implementation of an innovative doctoral program that required significant changes in how faculty members taught and advised doctoral students. During the implementation, we realized that a meeting structure that we adopted primarily for communication became a vehicle for faculty development and support. To explain this outcome, we first address the literature on change, and then we describe how these meetings worked including a) our innovation implementation challenge, b) our actions, and c) results of our implementation efforts. Finally, we share our conclusions and implications.

Changing Instructional Practices in Higher Education

As noted above, teachers use their prior conceptions of teaching and learning to interpret and make sense of their teaching (Elmore, 1996). Often, they are unaware that the theories-in-use are not compatible with their espoused theories of teaching and learning (Argyris, 1980). This means, for example, that faculty members may be aware of and endorse social-cultural theories of learning and situated cognition, but unaware that their practices are not aligned with these theories. The challenge of faculty development is that of implementing new teaching practices and simultaneously engaging faculty in a re-examination of the assumptions, beliefs and traditions that have shaped their instructional and advising practices.

Two aspects of faculty learning appear to be critical: experiences and subsequent sense-making in community. To learn new ways of teaching, faculty members must act and reflect on their experiences. Rather than viewing learning as something transmitted through discourse alone, Kolb (1984) writes:

Experiential learning theory... proceeds from a different set of assumptions. Ideas are not fixed and immutable elements of thought but are formed and re-formed through experience... learning is described as a process whereby concepts are derived from and continuously modified by experience (p. 26).

Fullan and Scott (2009) say: “well-analyzed new experience precedes insight; behavioral change feeds into change in belief” (p. 52). Or more prosaically: “It’s easier to act your way into a new way of thinking than think your way into a new way of acting” (Pascale, Sterrin, & Sternin, 2010, p. 38). Creating conditions for faculty to act in new ways is a primary task of leadership.

Making meaning of the experience is a critical aspect of learning. All learning is socially and culturally mediated (Vygotsky, 1978; Wenger, 1998; Wenger, McDermott, & Snyder, 2002). Within

organizations, individuals engaged in similar tasks develop informal communities to tell stories that make sense of their work and assist each other with craft knowledge to solve problems that require application of knowledge and judgment (Brown & Duguid, 1991; Wenger, 1998).

Workplace learning is best understood, then, in terms of the communities being formed or joined and personal identities being changed. The central issue in learning is becoming a practitioner, not learning about practice. This approach draws attention away from abstract knowledge and cranial processes and situates it in the practices and communities in which knowledge takes on significance (Brown & Duguid, 1991, p. 48).

Faculty members' beliefs about teaching and learning are socially constructed from their local workplaces (the particular academic programs, departments and universities of which they are a part), as well as the workplaces of their particular disciplines - the research communities that hold particular norms about scholarly productivity, research methods and so forth. Their individual conceptions are built through interactions with others around the socially mediated cultural practices of their work. Thus the concepts of "doctoral study," "dissertation" or "rigor" are individually held, yet socially constructed. As Olson and Clark (2009), relying on Wenger (1998), put it:

... people construct and develop their identities and transform their thinking through their active participation and engagement with others in cultural-historical practices that are situated in social communities. Thus members of a community of practice interact, share and participate in the creation and re-creation of the practice and, through that engagement, develop, reify, and transform their identities (p. 217).

Learning, then, is both organizational and individual (Datnow, 2002; Hall & Hord, 2014).

Our Innovation and Implementation Challenge

For four years, as faculty members in the Mary Lou Fulton Teachers College at Arizona State University, one or both of us served as academic program leaders for the doctorate of education (EdD) program. The program was the first approved to be delivered at the West campus of the University, and there was intense interest from the campus and university administrators in ensuring the program would be innovative and successful. A year of traditional planning processes had resulted in an approved curriculum and courses developed by individual faculty and approved through the curriculum process. The first cohort had been admitted but midway through the first semester, a number of these students met with the Dean and reported finding a lack of the innovation the program had promised. At that point, the Dean called on us to take over the leadership although we had not worked together previously. Our paramount considerations were: (a) what was the substance of the innovation that should be in place? (b) how could we engage faculty to enact innovation within a short time frame? We believe these challenges apply to many attempts to innovate and will resonate with program leaders who face similar challenges for quick action to implement deep change.

The doctoral students had been recruited for a program that would meet their needs as working professionals with both rigor and innovation. This commitment was aligned with our institution's stated principles describing "A New American University" including: (a) a focus on leveraging place (using and contributing to local knowledge); (b) transforming society; (c) conducting use-inspired research; (d) enabling student success; and (e) being socially embedded with partners in our local community (Arizona State University, n.d.). Similarly, Sullivan and Rosin (2008) have called for universities to prepare doctoral students for "lives of significance and responsibility" and to assist students to "develop a life of the mind for *practice*" (p. xv). Critical analysis is not enough – practical reasoning leading to strategic action is needed. As Sullivan and Rosin (2008) put it:

... a life of the mind for practice means the cultivation of reflection and criticism, such as advocates of critical thinking promote, but not for the sake of reflecting and criticizing alone. Rather, the point of such cultivation is that students must learn to deliberate about their possibilities for a life well-lived, including their responsibility to contribute to the life of their times. . . for practical reason the focus is on thinking that is oriented toward decision and action (p. xvi).

We benefitted from participating in the Carnegie Project for the Education Doctorate (CPED), initiated by Lee Shulman, to reinterpret and reinvigorate the education doctorate as a professional degree. Our colleagues at other institutions shared our aims and leadership challenges (DeLisi, 2013; Gallagher, 2013; Welch, 2013).

We envisioned a professional doctoral program that would have practitioners initiate and sustain locally led, evidence-informed change, and to sustain this practice after graduation. Our students, with few exceptions, were professional teachers or administrators in K-12 or Higher Education institutions, or working in organizations with an educational component. We sought to take advantage of the students' workplaces as "laboratories of practice" where students could implement and investigate new practices. At the same time, we had to work within the parameters of the approved course list and program requirements. Our key innovations to be implemented were:

1. We planned to engage students in cycles of action research in their workplaces, beginning with their first year of study and culminating with the final cycle reported in the dissertation. The aim was not to create new knowledge but to get into the game themselves, making change, studying it, and always improving, in preparation for a career of implementing and evaluating local change. This contrasted with our faculty's lived experiences of researchers being distanced from, rather than immersed in, the objects of their study.
2. We would embed these cycles in the required coursework each semester, which we reconfigured from two stand-alone three-credit courses to one six-credit team-taught course. Students began acting before they felt ready (and before they completed all courses in research methodology). We relied on social-constructivist and experiential learning. Thus, students would not be expected to learn how to do research in lecture classes, followed years later by application in their dissertation studies. Rather, our plan was to engage first semester doctoral students in clumsy initial pilot studies from which they would discover the shortcomings of methods and become seekers of information and tools to help them do better in the next cycle. These cycles were intended to scaffold their learning so that students could approach the dissertation with confidence rather than as a "sink or swim" test of their abilities.
3. We would group four to six students together with two faculty members who would work with them for the final two years of their three-year program. Collectively these groups would support all members in proposal development and completion of individual dissertations. These Leader-Scholar Communities (LSC's) were supportive environments for learning, group advising, problem-solving and mutual support (Olson & Clark, 2009).

Most of our faculty members earned their doctoral degrees in traditional PhD programs that prepared them for a professional life as research-oriented faculty. These experiences shaped their mental models of doctoral work, including such concepts as:

- Dissertations should contribute new knowledge in a narrowly specialized field.
- Students should be thoroughly knowledgeable about research methodology prior to engaging in their own study.

- The faculty advisor's expertise and interest is the primary criterion for assignment of advisees.
- Candidates demonstrate independence as researchers by conducting the study and writing the dissertation, with occasional feedback from the dissertation advisor.

Our faculty members' personal experiences with these models of doctoral student expectations did not prepare them to engage with doctoral study that differed in fundamental ways. Our changes asked faculty to abandon the traditional concept of the lone professor teaching a course and advising doctoral dissertations as he or she chooses and to disrupt the traditional independence of teaching with team planning and implementation. Moreover, doctoral students were full-time working professional educators. Their particular problems-of-practice would drive their research, rather than the research agenda of the professors. Faculty members' research, drawing on their deep and specialized expertise, focused on creating knowledge that could be generalized across contexts and published in academic journals. They were observers rather than direct ongoing participants in schools. In contrast, the students were immersed in the daily workplace demands of K-12, community college, or four-year college institutions and were recognized as leaders within these contexts. As a result, their knowledge of their local organizational context was broad and deep, and they understood practical aspects of educational work through these workplace experiences. Moreover, rather than depart after the study concluded, as researchers do, the students would continue to practice in the same professional context, whether the innovation succeeded or failed. Academic publishing was of interest to some, but not all students and was not a requirement of their leadership positions.

Both researcher and practicing professional are critical education roles, but their interests are not aligned in the same way as it is between a traditional PhD student and advisor. The educational doctorate prepares professional educators to continue their practice as leaders (formal or informal) in educational organizations, deepening and enriching their practice with tools for understanding innovation, change, and action research. Just as medical doctors earn the MD to prepare for clinical practice rather than for a career in laboratory research, the educational doctorate prepares those who engage in the work of education itself and study their own practices in order to improve, rather than traditional scholarly research on education that seeks context-free generalizable findings. In sum, the students were seeking to learn from the professors, but they did not seek to become their academic descendants.

Implementation of Changes

As we began leading the program, we faced immediate and longer term challenges. Immediately, we had to arrange for the teaching of the spring semester courses. We also had to plan for recruitment and admission of the second cohort of students, to staff courses for the summer and ensuing academic year, and find faculty who could implement the LSCs for the first cohort that were scheduled to begin in nine months. No new faculty positions were planned.

The required spring semester courses were combined into one six-hour block, with one of us (Clark) taking a lead role. We recruited four faculty members to serve as co-teachers and advisors to the students in their first round of action research. This was our first action that required reflection and continuous adaptation – the lived experience of mentored co-teaching. This group of faculty met each week to plan for their teaching. During the summer, we found faculty willing to serve as committee chairs (leading an LSC and serving as the dissertation advisor) for five students each, beginning in the fall of the second year. With the dean's approval, this role constituted the workload equivalent of a three-credit class. In selecting these faculty members, we were mindful of Collins' (2001) finding about the importance of "getting the right people on the bus" and were supported in these decisions by the dean.

Once participating faculty were identified, we began holding meetings of all faculty members who were either teaching courses or serving as LSC members. We termed this group the Doctoral Steering Committee (DSC) and it met every three to four weeks. Membership consisted of those teaching the core courses (six faculty members teaching three six-credit courses in two-person teams), and all faculty members leading the Leader-Scholar Communities (up to 16 different faculty members at any given time, some of whom were also course instructors). The original group of faculty was comprised of ten tenured or tenure-track faculty, four men and six women. In subsequent years, the group grew to sixteen faculty members, including up to three clinical (fixed-term) faculty members. All held terminal degrees. Over the years that we led the program, approximately 30 different faculty members participated.

The stated agenda for meetings was usually organized under two headings: first, a check-in time when members reported on students' current work and progress, including identification of any student that seemed to be struggling. The second agenda heading was operational items, e.g., what the requirements of the dissertation proposal would be, how the comprehensive examination would be handled, the format for public display of research, and so forth.

We had looming deadlines that forced action (what will the dissertation proposal look like?). This meant that we planned in real-time. As leaders, we generally prepared a proposed course of action or draft documents as the basis for discussion and action. During committee meetings, faculty members reviewed upcoming deadlines and current practices and made adjustments as necessary to achieve program goals. Having all faculty members present alerted us to possible problems, conflicts and uncertainties that could be addressed as planning occurred. Only after faculty had experienced the major innovations (team-teaching, cycles of research, mixed methods) did we conduct reviews with the expectation of change. Most often, we found that through acting, the faculty became supporters – even vociferous defenders – of the innovations, even where they had previously expressed doubts. It is important to note that the community, as we conceived it, was not a governance structure of selected individuals sanctioned by the organization. It was a committee-of-the-whole. Every faculty member who taught and advised students in the program was included in this community of practice. This was so because it is critical that the faculty members in contact with students are *learning* and this community was, above all, a learning community. It was a place where these faculty members could tell stories to make sense of their work and assist each other to solve problems. Within organizations, individuals engaged in similar tasks develop informal communities to tell stories that make sense of their work and to improve practice with mutually shared knowledge and judgment (Brown & Duguid, 1991; Wenger, 1998).

We also drew on outside knowledge to address areas of concern. We sponsored experts in action research and in mixed methods to meet with faculty and enhance their knowledge. These presentations occurred *after* the faculty had begun to wrestle with the issues – thus presenting them with information after their experiences to help them expand and make sense of the learning.

Results

In evaluating the degree of success of the DSC meetings for faculty development, we present the following evidence. We gathered the evidence from published studies on the program's impact on students and faculty, student performance indicators (graduation rates, dissertation awards), and a review of program documents.

Student Performance and Satisfaction

Our commitment to students was that, with dedicated effort, all would finish in three years and every student in cohort one completed in this time frame. For the first five doctoral cohorts (classes of 2009 through 2013) 91% of students who completed the first year graduated in three years.

The others were enrolled and on track to finish within 2 years of their original anticipated completion, leaving no “all but dissertation” students. (Reasons for delayed graduation included job changes and illness.)

At the end of the first year, faculty reviewed the dissertations and expressed some dissatisfaction with a) the quality of the literature reviews, and b) the relatively weak use of conceptual frameworks. As a result, the advisors and course instructors for Cohort 2 (then beginning their second year) addressed these issues by revising the dissertation guidelines. This emphasis on examining the evidence (dissertation proposals and completed dissertations) continued through the second and third rounds of dissertations until faculty expressed more satisfaction with the quality. External validation supported in this general judgment when the Carnegie Project for the Education Doctorate recognized four ASU dissertations as exemplary in a blind review process open to all project member institutions. In addition, eight of the student-practitioners from the first five cohorts have co-authored articles in peer-reviewed journals and others have presented at national conferences, an outside indicator of quality.

Student evaluations were collected from the first cohort of students and reported in Amrein-Beardsley et al. (2012). Students valued the LSC’s as being supportive of their work, felt their identities had changed, and expressed a need for more structure and support in research methodologies. Subsequent studies of graduates have affirmed their changed identities with respect to action research implementation (Buss, Zambo, Zambo, & Williams, 2014; Zambo, Buss, & Zambo, 2013) and technology use (Ewbank, Foulger, & Wetzel, 2012).

Faculty Change and Satisfaction

Faculty members’ changes were reported by Buss, Zambo, Painter, & Moore (2013). The changes included expanded views of research and changed views of teaching as a participatory, collaborative and student-centered activity. Faculty attributed the changes to the team-teaching, the Leader-Scholar Communities that fostered relationships with and between the students, and they especially noted the importance of the DSC meetings where they wrestled with the “messiness” of the work and mutually supported each other in staying focused on program purposes. Faculty also noted the program leadership in these meetings (we comment on this below) and the Dean’s support.

Not unexpectedly, not all faculty members responded positively. Of the approximately thirty faculty members we involved over five years, we became aware of three who did not shift beliefs or practices during the time of their involvements. In contrast, after several years in the program, one of our respected senior professors said that participating in the program

... admitted me to a refreshingly collaborative community. The EdD faculty members regularly team-taught classes to enliven the exchange of ideas. We publically posted and revised our syllabi to increase coherence in the program’s curriculum. We jointly compared students’ research to inform our mentoring. The imperative during these dealings, unlike any I had experienced, was to respond constructively rather than posture academically. In sum, the intellectual activity and collaborative spirit of the EdD in Leadership and Innovation granted me a welcome second wind as I was ending my career in academia (D. Moore, personal communication, August 24, 2014).

This faculty member had been a participant and later a leader of the faculty group and expressed sentiments that we heard from others. Another professor found that leading LSCs was the highlight of his 25 years in higher education because of the powerful impact of his students’ work on local schools and the professionally enriching relationships he saw forming between and among his students and fellow faculty members (K. Wetzel, personal communication, September 10, 2014).

Discussion

As program leaders, we, too, learned from our lived experience. Weick, Suffield and Obstfeld (2005, p. 419) say “we act our way into belated understanding”. We understand more about our leadership and the program trajectory now that we have handed it off to others. Below we share our retrospective understandings.

Functions of the DSC as a Sense-making and Quality Enhancing Body

The original focus of the DSC was pragmatic – making decisions about implementing the new program and keeping faculty informed. We see now that the DSC was the critical mechanism to insure the program was implemented “consistently, effectively, and sustainably” (Fullan & Scott, 2009, p. 37). As they recommend, we involved the people who were the front-line implementers in this work. Monthly meetings that surfaced student concerns quickly became problem-solving discussions. At least once each year, we scheduled a longer meeting specifically focused on reviewing the syllabi and courses. Faculty research on the program provided data to inform decisions (e.g., Wetzel & Ewbank, 2013) and documented faculty changes (Buss, Zambo, Painter & Moore, 2013; Zambo & Isai, 2013). We worked continuously towards a better alignment of teaching to the end goals of effective action research cycles. We also brought in experts to help us conceptualize and operationalize action research and mixed methods. These activities sustained the program and enhanced its quality.

At the same time, the DSC meetings became places where faculty engaged in discussions about every aspect of the change in practice. Retrospectively, we see these communities as exemplars of the working-learning-innovating communities that, while solving problems of implementation, also serve to recreate and refine the identities of the members individually as faculty members and collectively as a work group (Brown & Duguid, 1991).

Focused Leadership

Leaders influence the meanings that are constructed by groups. Fullan (2008, p. 49) explains: “Leaders have to provide direction, create the conditions for effective peer interaction, and intervene along the way when things are not working as well as they could.” Leaders must be prepared to hold firm when faculty suggestions to return to previous practices are sparked by the struggle to master new skills and strategies, knowing that the impulse for regression will be transient until the skills are mastered – “the implementation dip” (Hall & Hord, 2014). At the same time, some faculty suggestions for change will result from what is learned through implementation, and will result in improved student experiences. Leaders must discern the difference between these two types of faculty suggestions for change. We found that it was critical to ask for and acknowledge faculty thoughts about the innovative practices, and then to frame these issues within the context of our goals to serve practitioners with high expectations for rigor in sustainable action research. In this way, we could help faculty examine how the proposed change would (or would not) contribute to the learning of practitioners seeking terminal degrees. Two examples illustrate our dilemmas. Faculty members who were (understandably) inexperienced with supervising action research and challenged by students’ grappling with problems of their own domains of expertise would occasionally propose that we not require the student to implement innovation, but allow them to conduct (for example) a program evaluation in another organization. Against this, we stood firm, as implementing change is a crucial aspect of practice in schools, whereas conducting external evaluations as “consultants” is not. Our students needed to grapple with the real world messiness of implementing innovation. On the other hand, faculty concerns about rigor of action research methods and weakness of conceptual frameworks could be (and were) addressed with

changes to syllabi and course topics in ways that strengthened the programs' utility and richness for the students and served to further the program principles and aims. Practitioners need strong skills in these areas and we worked to enhance them.

Faculty writing

Faculty generated new streams of research from their participation in the program and developed new collaborations. Writing has inherent sense-making qualities (Weick, Sutcliffe, & Obstfeld, 2005) and tenured and tenure-track faculty members are rewarded for publishing. Therefore, there is a natural alignment between faculty interest in publications as a career-enhancing and writing to further a developing understanding of the content of reform and its theoretical bases. Unexpectedly, we found that our practitioner students were interested in co-authoring publications and faculty members were energized by their involvement.

Participation

As Wenger notes, some participants in a community of practice are peripheral – they do not necessarily fully share all the ideas and commitments of the group, nor take fully participative roles. We noted above that we were aware of three faculty members who we would judge as peripheral members. Fullan (2007) cites Marris' (1975) discussion of what it means to witness the conceptual struggle of those trying to implement an innovation, when change creates cognitive dissonance that precedes the reorganization of schema, "No one can resolve the crisis of [conceptual] reorganization for another" (p. 51). And to do so, he adds, is disrespectful of their agency.

As noted, it is important for leaders to hold fast to innovation principles through the turmoil of implementation, and this may mean that some participants leave voluntarily or involuntarily through re-assignment. We exercised judgment, with the support of the dean, in determining which faculty would participate. Some faculty were simply unsuited to this endeavor, either because they had records of difficulty in acting collaboratively (to use Fullan's (2007) term, they were not "prosocial") or because they were unable to modify their existing concepts of doctoral work (e.g., expressing disdain for action research, insistence on creation of "new disciplinary knowledge," inability to lead a LSC as a cohort). Other faculty members whom we recruited felt, at first, inadequate to the task and were pulled in with some reluctance on their part. They later became strong advocates for the innovations after seeing the effects on students and on themselves.

Impermanence

Finally, we learned to accept impermanence. Faculty members are reassigned to other duties, retire or move away. New people are added who haven't yet experienced the program's collective sense-making processes. New initiatives draw administrative attention and resources. Leaders must recognize that a program is not a series of decisions or documents, but an organic relationship (sometimes strong, sometimes weak) among faculty who are current participants. As with any socially-mediated practice, permanence of practice is an illusory concept. The most sustainable practice is the changed beliefs of faculty members that drive their future practices.

Conclusion

Our analysis indicates that the DSC evolved as a practical and sustainable framework for faculty development in support of deep change of instructional practices and faculty beliefs. The original purpose of establishing the DSC was to enable high fidelity implementation of a new doctoral program design. The early days of the DSC challenged us as leaders to both advocate for the new program design and to persuade faculty of their ability to flourish within it. Through involving them in program practices, before they were entirely committed, and providing a forum for dis-

curring their resulting reactions, we evolved into a learning community. We learned to live out our commitments to experiential learning and community sense-making. The program design in action was subjected to collective scrutiny, analysis in the light of direct experience of doctoral students and faculty, and willingness to make collectively designed adjustments on the fly. Faculty members changed their behavior as instructors and mentors and also continuously fine-tuned program requirements to better achieve overall program goals for their doctoral students.

Today, nearly one decade after the first cohort of students arrived on campus, the doctoral program continues to thrive and evolve, now double in size. The original goal of the program, to equip leaders in education to study and to improve their professional practice in context, is intact. Some faculty members who taught and mentored the early cohorts have retired or moved on to other responsibilities. Others remain in leadership positions and new faculty members have joined the community. The essential spirit of the Doctoral Steering Committee, to transform a program implementation exercise into a collective experiential learning process, served as transformative professional development for faculty and promoted impressive levels of student success and program reputation. We hope that program leaders who aspire to promote faculty development in conjunction with graduate program implementation will find these lessons useful.

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Cite as: Griffin, K. A., & Muñiz, M. (2015). Rethinking the structure of student recruitment and efforts to increase racial and ethnic diversity in doctoral education. *International Journal of Doctoral Studies*, 10, 199-216. Retrieved from <http://ijds.org/Volume10/IJDSv10p199-216Griffin0749.pdf>

Rethinking the Structure of Student Recruitment and Efforts to Increase Racial and Ethnic Diversity in Doctoral Education

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Abstract

While researchers, institutional leaders, and policymakers have made significant progress towards increasing undergraduate student diversity in the United States, diversity in graduate education has been less often studied and a more challenging goal on which to make progress. This qualitative study explores the roles and work of graduate diversity officers (GDOs) in student recruitment activities with a focus on how race and issues of diversity manifest and influence this process. Interviews with fourteen GDOs at 11 different research universities in the United States highlight the phases in the graduate recruitment process, the manner in which diversity is considered at each stage, and GDOs' perceptions of their ability to shape this process. Findings suggest that GDOs are important institutional agents in diversification efforts; however, faculty engagement and broad institutional commitment are required to increase diversity in graduate education due to GDOs' often limited involvement in the admissions stage of the recruitment process, where race becomes the most salient in decision making.

Keywords: diversity, recruitment, administration, graduate education, United States

Introduction

Given demographic shifts in the United States over the past few decades, the population of students entering higher education will be increasingly diverse. However, multiple challenges and barriers have been identified which limit the translation of this diversity to graduate programs, and African American, Latino, and Native American students remain underrepresented in graduate education (Council of Graduate Schools and Educational Testing Service, 2010). The lack of racial and ethnic diversity in graduate education in the United States has widely been identified as problematic (e.g., Council of Graduate Schools, 2009; Tierney, Campbell, & Sanchez, 2004);

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however, empirical work informing efforts to promote change is limited. Specifically, there is little understanding of the process by which African American, Asian American/Pacific Islander, Latina/o, and Native American students are recruited into and encouraged to pursue doctoral programs generally or at specific institutions.

Editor: Victoria Wise

Submitted: July 7, 2014; Revised: March 16, June 4, 2015; Accepted: June 17, 2015

While some researchers have conducted institutional self-studies or documented their scholarly reflections on recruitment strategies to increase graduate diversity (e.g., Aspray & Bernat, 2000; Olson, 1988; Pruitt & Isaac, 1985; Tierney et al., 2004), empirically based studies addressing recruitment are relatively absent from the literature. The limited literature focusing on graduate student recruitment has largely focused on the factors which shape students' enrollment decisions; however, recruitment goes beyond enrollment. Within the context of this study, recruitment is understood as including efforts institutions in the United States make to encourage application (outreach), admissions, and the ultimate decision to enroll (yield).

This study focuses on administrators' perceptions and engagement in the process of implementing various diversity recruitment strategies in graduate education. Rather than identifying which strategies are more or less effective (Griffin & Muniz, 2011) or the influence of internal and external factors on diversity recruitment strategies (Griffin, Muniz, & Espinosa, 2012), this study focuses on defining the recruitment process itself and understanding how diversity is considered within that process. Better understanding of the nuances of the recruitment process, including the challenges and opportunities for influence, is important to promoting greater success as institutions in the United States seek to increase diversity in their graduate student communities.

While faculty have traditionally been charged with recruitment work within the United States system of graduate education due to its decentralized nature (Gumport, 1993; Posselt, 2013), they may not be fully engaged in all of the dimensions of the recruitment process. Student outreach has little connection to traditional faculty reward structures, which emphasize scholarly productivity over student contact, teaching, or service (Tierney & Bensimon, 1996). These factors may make the time intensive process associated with graduate student recruitment, particularly outreach, unappealing to faculty, creating a need for institutions to hire professional administrators to meet diversity goals. Thus, this research addresses the work done by a group of administrators charged with increasing diversity within the graduate student community: Graduate Diversity Officers (GDOs).

Within the context of this study, we define GDOs as the individuals charged with improving the diversity of the graduate student population on their respective campuses, largely through the recruitment and/or retention of those from underrepresented communities. Their titles often vary and graduate student diversity may not be their sole responsibility; however, individuals who identify as GDOs focus on the recruitment and retention of graduate students from underrepresented or underserved populations as a central part of their work. The work, responsibilities, roles, and effectiveness of these administrators have gone unstudied; yet, as those who may be most directly working on initiatives to increase graduate student diversity, GDOs have a valuable insider's view of the ways in which colleges and universities are challenged and successful in their efforts. Further, deeper knowledge on the perspective of administrators implementing diversity recruitment strategies facilitates understandings of the challenges and multiple considerations associated with increasing the number of underrepresented minorities in graduate education.

The purpose of this study is both to explore the role race plays in the graduate student recruitment process and how GDOs perceive their influence on efforts to promote diversity. Based on data collected from 14 GDOs, we develop and present a model of graduate student recruitment within a United States context, particularly attending to the ways in which racial diversity is considered and influences each stage of the process. Participant narratives suggest race and diversity play prominent roles in this process, particularly manifested in the ways in which the qualifications of students of color are perceived, which can ultimately limit efforts to increase graduate diversity. GDOs aim to address these challenges, acknowledging the salience of race at various stages of the recruitment process, and implementing a distinctive set of strategies to overcome barriers within the stages in which they perceive themselves as having the greatest influence.

Background

Recruitment in Graduate Education

An exploration of how issues related to race and diversity can manifest and influence the graduate recruitment process requires an examination of previous literature on this topic. The majority of the literature on higher education recruitment in the United States focuses on undergraduate students. Much of the extant literature on graduate student recruitment can be grouped into three categories, and is organized accordingly below. The first category is composed of articles addressing institutional outreach, or efforts to encourage students to apply to graduate school generally or a specific institution. The second category focuses on admissions policies and practices. The third category addresses yield activities, or strategies to draw students to a specific institution after being admitted.

Outreach

There is a small number of journal articles and reports attending specifically to diversity and outreach at the graduate level, which are largely based on anecdotal evidence and document “best practices” identified by practitioners engaged in this work (e.g., Aspray & Bernat, 2000; Olson, 1988; Tierney et al., 2004). Institutional leaders and faculty are urged to take advantage of the changing demographics in American society and make extra efforts to encourage students from traditionally underrepresented groups to consider attending graduate school broadly, and their respective institutions in particular (Aspray & Bernat, 2000). Suggested strategies include incorporation of innovative undergraduate curricula that highlight problem solving skills and the potential for community contributions through research (Cherwitz, 2005); wide discussion of graduate education, getting a PhD, and what doctoral education is and means (Aspray & Bernat, 2000; Olson, 1988); summer research opportunities (Jonides, von Hippel, Lerner, & Biren Nagda, 1992); and the formation of partnerships with minority serving institutions (MSIs) to gain access to a talented pool of students (Aspray & Bernat, 2000; Pruitt & Isaac, 1985).

Admission

Literatures addressing undergraduate and graduate admissions processes appear to focus on similar themes, describing how applications are reviewed and discussing indicators of “merit.” At the undergraduate level many colleges and universities employ a holistic review process, where various aspects of a student’s application are considered qualitatively. Other institutions – particularly large public universities – employ a more formulaic system of admission, where points are assigned to various components of an application and students exceeding a certain value are accepted (Atkinson, 2004). Graduate admissions committees appear to balance objective (e.g., GRE scores) and subjective (e.g., letters of recommendation) assessments of a student’s file. While many committees rely on more objective indicators, subjective judgments can be made about a student’s potential as a scholar based on their past research experiences, proposed research agenda, or anecdotes from faculty recommendations (Ward, 2007).

As institutional agents aim to make admissions decisions, they must decide what they value and the best indicators of students’ abilities or “merit.” In undergraduate admissions, merit is often broadly defined, including both objective measures of academic merit (high school grades and standardized test scores), coupled with nonacademic measures such as sports, volunteerism, artistic pursuits, and other activities (Killgore, 2009). Scholars arguing for increased diversity in graduate education have also touched on merit and how the objective and subjective aspects of a student’s application are balanced. While articles and guides recommend various strategies for enhancing success, several acknowledge the vagueness of posted graduate admissions criteria and the rarity of clearly articulated guidelines necessary for acceptance (e.g. Appleby & Appleby,

2006; Ward, 2007). Thus, what “merit” in graduate education is and how it is defined is unclear and inconsistent across faculty and programs, at best.

In addition to addressing questions of merit, some have addressed what is considered as admissions decisions are made, suggesting diversity in the graduate student population requires a more holistic recognition of student potential. For example, the GRE scores of underrepresented students, on average, tend to be lower than those of their peers (Pruitt & Isaac, 1985; Tapia, Lanius, & Alexander, 2003). This may lead admissions committee members to perceive underrepresented students as less academically skilled than their peers and unable to handle the rigors of graduate school. However, several scholars (Aspray & Bernat, 2000; Muñoz-Dunbar & Stanton, 1999; Tapia et al. 2003) reiterate that GRE scores are standardized tests and imperfect predictors of student success in graduate school, particularly for students of color. As such, these scholars recommend that admissions committees place greater emphasis on other indicators of student potential, such as research experience and letters of recommendation, if they aim to increase student diversity.

Yield

Few scholars have addressed issues concerning yield or the factors that encourage matriculation in to specific academic programs once students are accepted. Kallio’s (1995) work on the choice process of graduate students in the United States is one of few and notes that age and increased likelihood of having a spouse may influence how graduate students choose an institution. In many ways, however, the forces which draw undergraduates to specific institutions are salient for graduate students as well. For example, similar to the undergraduate literature (e.g., Astone & Nunez-Womack, 1990; Hossler, 1990; Hossler, Braxton, & Coopersmith, 1989; Perna, 2006), several scholars stress the importance of financial support. Ample financial support is critical to promoting access to graduate education, particularly for those from lower income backgrounds who are hesitant to take on more educational debt (Aspray & Bernat, 2000; Muñoz-Dunbar & Stanton, 1999; Olson, 1988; Pruitt & Isaac, 1985).

Conceptual Framework

In addition to the literature on graduate student recruitment, this work is framed by Weick’s (1976, 1991) work on loose coupling and organizational behavior. Weick highlights how the loosely coupled nature of colleges and universities in the United States make organizational change difficult. Specifically, while academic programs, administrative offices, and student services function in direct response to one another, they are only connected through weak, loose ties. As loosely coupled organizations, departments and programs within United States institutions “are responsive, *but* each event also preserves its own identity and some evidence of its physical or logical separateness” (Weick, 1976, p. 3). Loose coupling in higher education in the United States often manifests as decentralization, with each college, department, and program having its own employees with highly specialized skills sets, procedures, and policies. In other words, because departments are connected through weak ties, there is a lower probability that they will develop consistent, comprehensive plans or respond in coordinated ways to institutional pressures and problems.

Loose coupling and decentralization may be particularly salient in the case of graduate education and recruitment. Undergraduate students are admitted to college in the United States by central offices of undergraduate admission, which have trained staffs of admission officers. Alternatively, while many campuses have central offices of Graduate Admission or Graduate Education, graduate admissions decisions are often made at the departmental level. At the undergraduate level, attention tends to be focused on institutional process, climate, and fit, while graduate education admissions decisions more often attend to departmental and program-level decisions, func-

tions, and interactions. For example, Hirt and Muffo (1998) explain that the decentralized nature of graduate education in the United States makes efforts to understand climate difficult; each department and program has its own standards and unique culture. Further, Lovitts and Nelson (2000) note that while graduate students are often drawn to an institution's reputation and prestige when they are deciding where to apply, their campus experiences and likelihood of retention are ultimately more dependent upon departmental-level strengths, weaknesses, and experiences.

It is also important to note that faculty agency and control are particularly important in graduate education and the graduate recruitment process. Professors are central to departmental governance, the key drivers in establishing departmental climate, and engage in the process of reproducing themselves through designing the curricula, policies, and programs (Gumport, 1993; Hirt & Muffo, 1998). Faculty take primary responsibility in the training of graduate students and generating the next wave of professors, engaging students in a training process that involves close apprentice-like relationships (Austin & McDaniels, 2006; Gumport, 1993; Lovitts & Nelson, 2000). As noted above, faculty play a key role in the recruitment process, largely as the primary decision makers in doctoral admissions in the United States. Posselt (2013) posits professors also have valuable roles to play in encouraging the yield of desired populations. In their study of a highly selective American research university, Bersola, Stolzenberg, Fosnacht, and Love (2014) point to the particular importance of faculty contact in the yield of underrepresented minority students.

While central to the recruitment process, it may be difficult to engage faculty in strategies to increase student diversity. Tapia and colleagues (2003) note faculty rarely invest in the diversity of their student body because they perceive it as unrelated to their professional success, which is largely based on scholarly productivity (Tierney & Bensimon, 1996). The time intensive process associated with graduate student recruitment, particularly outreach, may be consequently unappealing to faculty; therefore, they may be unwilling or unenthusiastic about participating in recruitment efforts.

Methods

While generally thin, the extant research on graduate student recruitment and how the recruitment process can be leveraged to increase graduate diversity largely focuses on admissions, with less attention to outreach and yield activities. This work considers efforts to increase graduate student diversity through recruitment efforts, examining the potential barriers and institutional strategies that influence access to graduate education for students from racial and ethnic minority groups. We analyze data collected from 14 GDOs to develop a model of graduate student recruitment, clustering the strategies GDOs engage in to increase diversity into a multi-stage process. We then explore the nature of graduate recruitment and how race and diversity are considered throughout this process. Thus, in addition to generating a conceptual model for graduate student recruitment, this study addressed the following questions:

- How do GDOs describe the nature and various stages of the graduate recruitment process?
- How do GDOs understand their role, influence, and ability to draw attention to issues of race and racial diversity within the graduate recruitment process?

Considering our desire to understand the nuances of the graduate recruitment process and how GDOs perceive the ways in which diversity is considered within this process, we implemented a qualitative multi-case study design, where each GDO serves as her or his own bounded system or case (Merriam, 1998). This strategy is particularly appropriate for addressing how and why questions and for examining the process by which a phenomenon takes place (Merriam, 1998; Yin, 2013), allowing for deeper insights regarding the process of graduate student recruitment, how diversity is considered (or not considered) throughout this process, and how GDOs understand

their roles and try to influence recruitment. Multi-case studies are designed to include data collection and analysis of more than one case, allowing for comparison across cases and enhanced trustworthiness of findings (Bogdan & Biklen, 1998; Merriam, 1998). Thus, we conducted an exploration of each GDO’s organizational context, roles, responsibilities, and experiences with diversity recruitment, and then we engaged in a cross-case comparison. The multi-case study fostered greater analytical insight into how diversity is included and perceived within the context of graduate student recruitment.

Study Participants

Study participants were all employed at 11 Comprehensive Doctoral with Medical/Veterinary or Comprehensive Doctoral (no medical/veterinary) universities, as defined by the Carnegie Classifications for Graduate Instructional Programs (Carnegie Foundation for the Advancement of Teaching, 2008). All institutions were located in the United States. Participants were recruited from these types of institutions considering our interest in understanding racial and ethnic diversity recruitment in graduate education generally, and doctoral education specifically, in a United States context. Many of these institutions are regarded as having the top graduate programs in their respective fields, producing the next generation of faculty leaders. More detailed information on the characteristics of these universities can be found in Table 1.

Table 1. Demographics of Institutional Sites

Institution Pseudonym	Region	Control	Total Enrollment ^a	Graduate Enrollment ^b					
Agriculture University	Midwest	Public	> 35,000	11,000					
Baron University	West	Private	< 35,000	11,000					
Colony University	South	Public	< 35,000	9,000					
Crest University	East	Private	< 35,000	16,000					
Flagship University	Midwest	Public	> 35,000	15,000					
Green University	West	Public	> 35,000	10,000					
Land Grant University	Midwest	Public	> 35,000	8,000					
Mid State University	East	Public	> 35,000	6,000					
Riverdale University	East	Public	< 35,000	3,000					
Seaside University	West	Public	> 35,000	12,000					
Tech University	East	Private	< 35,000	6,000					

a To protect participants’ identities, institutions are characterized as having total enrollments that are either more or less than 35,000 students
 b To protect participants’ identities, the graduate enrollment numbers are rounded to the nearest thousand.

The sample consists of 14 GDOs, and detailed information on participants can be found in Table 2. Eleven participants are women and three are men. In terms of racial and ethnic diversity, 11 participants self-identify as African American, 1 as Latino/Hispanic, and 2 as White (Non-Hispanic). While all participants self-identify as GDOs (albeit each with different job titles), some are responsible for a particular school or division of their university (n = 5), whereas others are responsible for graduate diversity recruitment and/or retention across the entire university (n = 9). The average amount of time that each participant has worked in diversity recruitment and retention is 10.4 years (sd = 7.3). Participants also have considerable experience working with graduate students, averaging 11.36 years (sd = 9.4)

Table 2. Demographic Characteristics of Study Participants

Pseudonym	Institution	Sex	Race/Ethnicity	Highest Degree	Location of Position	Years in Diversity Work	Years at Institution	Years working with Graduate Students
Alex Zapata	Green University	M	Latino/Hispanic	Doctorate	Graduate School	2	18	18
Allison Boyd	Riverdale University	F	African American/Black	Doctorate	Graduate School	5	5	7
Amie Folsom	Agriculture University	F	White	Doctorate	College	21	9	4
Craig Smith	Tech University	M	African American/Black	Masters	Graduate School	5	5	5
Deborah Hardwick	Seaside University	F	African American/Black	Doctorate	Graduate School	1	2	1
Denise Miller	Colony University	F	African American/Black	Masters	Vice President	16	3	30
Dustin Chase	Land Grant University	M	African American/Black	Masters	Graduate School	23	30	23
Elizabeth Stevens	Crest University	F	African American/Black	Bachelors	College	15	25	25
Jessica Hayman	Flagship University	F	African American/Black	Bachelors	Department	6	7	6
Joann Samuelsson	Mid State University	F	African American/Black	Masters	College	19	9	9
Lindsay Danon	Mid State University	F	African American/Black	Doctorate	Graduate School	7	7	1
Malia Lucas	Baron University	F	African American/Black	Masters	Department	11	4	4
Monique Malone	Baron University	F	African American/Black	Doctorate	College	4	4	11
Sam Bailey	Flagship University	F	White	Doctorate	Graduate School	10	15	15

Procedures

Participants were identified using two sampling methods. First, a purposeful sampling method was implemented based on the assumption that discovering, understanding, and gaining insight requires selection of a sample from which the most can be learned (Merriam, 1998). A balance of geographic and institutional characteristics, including both public and private universities as well as universities from the West, the Midwest, the South, and the East coast, was also considered in selecting potential participants. A small initial group of GDOs were identified by the researchers and invited to participate via email based on past professional experiences with these individuals and knowledge of their professional roles. Then, the principal investigators identified other institutions that had at least one individual responsible for graduate diversity recruitment through our preliminary research of existing graduate diversity programs. These individuals were also contacted via email and invited to participate in the study. The second sampling technique used was snowball sampling (Bogdan & Biklen, 1998), which is a subset of purposive sampling. Participants were asked to recommend other potential respondents, who were then contacted by the researchers and invited to participate. Institutions employ different graduate diversity recruitment strategies; some have centralized positions in the Graduate School, while others have multiple positions throughout the institution, located in specific colleges and departments (Griffin & Muñiz, 2011). Thus, some GDOs in our sample are employed at the same institutions, referred as potential participants by their colleagues on the same campus.

All participants met individually with a member of the research team. Most of the interviews were conducted via telephone; six were in person. Participants first completed a brief demographic questionnaire inquiring about their background, work experiences, and current responsibilities. They then took part in a semi-structured interview, allowing for uniform inquiry regarding the key questions guiding this study and providing opportunities for open flow conversation (Hammer & Wildavsky, 1993; Merriam, 1998). The interview protocol addressed a variety of issues, including, but not limited to, their perceptions of the recruitment process at their institutions, their role in recruitment activities, and differences between the undergraduate and graduate recruitment processes. Interviews lasted approximately 60 to 75 minutes, were recorded, and were transcribed verbatim. All participants were assigned pseudonyms to ensure anonymity and were given a \$25 gift card to thank them for participating. After the interviews, participants were asked to share any recruitment materials they used, including flyers, brochures, and websites. Notes were taken on the information included in recruitment materials, how materials were disseminated, and different forms of recruitment events advertised. Further, institutional demographic data (and, when available, departmental or college level data) were collected from GDOs

and the Integrated Postsecondary Education Data System (IPEDS) to better understand the context within which the GDOs worked.

Analyses

Data from the demographic questionnaires were entered into an electronic file using SPSS software. Descriptive statistical analyses were completed to gain a general sense of the sample in terms of their demographic characteristics, level of experience working with graduate students and issues of diversity, and primary work responsibilities. Institutional data and information were reviewed to gain a deeper understanding of campus demographics, graduate student diversity, and organizational structures (e.g., to whom the GDO reported, the college in which the GDO's department was located). Finally, notes on GDO's recruitment materials were reviewed, examining the activities in which GDOs engaged and how these opportunities to learn more about doctoral programs are described.

Institutional, demographic, and recruitment data were used to supplement and triangulate the primary sources of data for this study: the transcripts from participants' interviews. Each member of the research team reviewed interview transcripts to identify recurring patterns and phenomena described by participants in accordance with a grounded theory approach, which allows for the emergence of themes directly from the interview data (Glaser & Strauss, 1967). Interview data were analyzed consistent with strategies outlined by Corbin and Strauss (2008) and focused on identifying the ways in which diversity manifested throughout the graduate recruitment process. First, each member of the research team read the interviews, individually memoing about their observations of key phenomena emerging from the interviews, as well as the other forms of data collected through the study. The research team then met to discuss our observations, aggregating specific observations into a comprehensive list, as well as determining whether the recruitment process could be understood as a series of stages and identifying a series of themes emerging from the data. In addition to providing evidence supporting the salience emerging patterns, team members actively sought disconfirming evidence and discussed any data that did not fit into perceived patterns and challenged their perceptions.

After these discussions, a coding scheme was developed based on our identification of stages in the recruitment process, role and importance of race and diversity, and other specific phenomena participants described. Conceptually similar codes were clustered together into larger categories. Identified code clusters relevant for this study included GDOs roles and responsibilities, recruitment strategies, institutional factors influencing diversity in graduate education, and institutional issues and emphasis on race and diversity. The codes were then used to organize data collected from the interview transcripts. ATLAS.ti software was used to apply the codes to specific quotations and passages from participants' narratives. Once codes were applied, the ATLAS.ti software was useful in aggregating quotations assigned the same code, facilitating a cross-case comparison, where similarities and differences were examined across participants. Individual codes, as well as groups of codes within the same coding cluster were re-read to confirm and challenge our early perceptions of the themes we identified in the preliminary stages of data analysis.

Findings

While this study has much to contribute to understanding efforts to increase graduate diversity in institutions in the United States, we acknowledge several limitations. First, as a qualitative study of fourteen individuals across eleven institutions, this work is not intended to be generalizable. Rather, it offers new insights into how a group of GDOs at different institutions are aiming to influence the recruitment process, and more research must be done to determine whether these findings are applicable to other contexts. Women and African Americans are strongly represented within our dataset; therefore, researchers examining these issues in the future may want to in-

corporate more diverse perspectives to determine whether narratives are consistent for GDOs from other backgrounds. It is also important to note that this study offers only one perspective on efforts to increase diversity through graduate student recruitment; we do not address or include interviews from other institutional leaders or faculty members. Further, we acknowledge this study highlights one way in which institutions aim to increase diversity in their graduate student communities; we do not explore whether and how institutions without GDOs participate in recruitment and cannot attest to whether efforts to increase diversity take a similar form at those institutions. Finally, we acknowledge that this study focuses on diversity and graduate education in the United States context and reflects the organization and governance structure at research universities. While some of the principles may be applicable in other contexts, future work must be done to understand the relationship between systems of governance, administrative roles, and efforts to increase diversity.

Despite these limitations, the data analyzed for this study provide new insights that can inform efforts to increase student diversity within the loosely-coupled system of graduate education. Based on GDOs' accounts, the graduate recruitment process at institutions in the United States appears to follow the three stage process described above, which has yet to be established empirically or formally described in extant literature about graduate education. In the first stage, which we refer to as "outreach," institutional agents encourage students to consider graduate education generally, and their institution specifically. The second stage, "admissions," is when students apply to the institution and their applications are considered by faculty committees. In the final stage, "yield," admitted students are courted by the institution, encouraging them to matriculate to the campus.

Our cross case analysis revealed that there were distinctive aspects to the recruitment process at each individual institution; however much of what GDOs shared in their narratives was consistent. GDOs articulated their perceptions of the ways in which race and diversity were (or were not) considered at various stages of the process, how the nature and organizational structure of graduate education affected their level of influence, as well as variations in their ability to contribute to the different phases of the recruitment process and encourage diversity on their respective campuses, departments, and programs.

Outreach

GDOs described several strategies each of their campuses employed to encourage a larger, and hopefully more diverse, applicant pool to submit applications, including paying for access to lists of students of color who were interested in graduate school; making campus visits and attending graduate school fairs; hosting summer research programs; inviting talented students to visit the campus for a "preview weekend" before the application deadline; tabling at national conferences; and building relationships with faculty and administrators at institutions across the country. Overall, GDOs viewed their role in outreach as absolutely essential to their work and a key opportunity to infuse consideration of race and diversity in the recruitment process. As Elizabeth Stevens from Crest University notes, "the reason they created my job is that they knew that they had to do something extra to recruit minority students. That was very clear, and it's still clear." As university spokespeople for graduate admissions across departments at a university, GDOs communicated their awareness that building a racially diverse applicant pool was a key lever of influence over which they had some control. Monique Malone articulates the importance of outreach in her role, and states that much of her work aims to "make the application pool as full as it could be so they [faculty] have the most options possible for doing their admissions process."

GDOs perceived themselves as often being one of few university representatives engaged in targeted graduate outreach to underrepresented communities. Monique Malone, whose position was actually to work on diversity issues for her college, described herself as the "university face [for]

the graduate school,” noting that there was no one else to do outreach to students of color. Thus, while recruitment was often decentralized, GDOs could stand in as a university representative. GDOs shared narratives of attending events and speaking to students across disciplines and programs, even when they did not have the most specific information on hand. Elizabeth Stevens, remarked that as the only person doing this work for her graduate school: “I do what I need to do, I do what I want to do, and everyone’s happy that I’m doing it, and they [senior administrators] don’t have to pay attention to it.” In addition to highlighting her commitment to drawing diversity students into the applicant pool, Stevens’s comments suggest GDOs saw themselves as providing a needed outreach function to which faculty, departmental representatives, and senior administrators were unlikely to commit time. Few participants could describe concrete, meaningful ways in which faculty or other administrators contributed to efforts to encourage students of color to apply to their programs, instead relying on the work of GDOs to draw these students into the applicant pool.

Admissions

In comparing GDOs narratives, the most common term used to describe the graduate admissions process was “decentralized.” Graduate applications were reviewed by faculty members, and decisions were made at the departmental level. According to GDOs, some departments engaged in a holistic process, considering students’ grades, test scores, research potential, and contributions to the community. More often, however, GDOs observed admissions committees emphasizing students’ grades, undergraduate institutions, and perhaps mostly, their GRE scores as they made decisions. Dustin Chase was one of several GDOs who expressed some frustration with this tendency, describing his work as “meaningless” unless faculty placed value on diversity and saw students in a holistic way:

You know, you can bring in all the applications you want, but until they [faculty] really look at the total application and understand how important diversity is to the overall university, then you know, I’m just working for myself.

Dustin Chase’s comments suggest the work of GDOs like himself is futile unless faculty were really committed to diversity. He could enhance diversity in the applicant pool through his efforts in outreach, but there would be no increases in diversity in the graduate community unless faculty decision-makers were willing to go beyond emphasizing student GRE scores during the admissions phase, which are indicators on which students of color tend to perform less well (Pruitt & Isaac, 1985; Tapia et al., 2003), considering student potential in a more holistic way.

GDOs freely expressed their frustration with their lack of a direct role in the admissions process at the graduate level; no GDO in our sample had decision-making power in the graduate student admissions process. For example, while Malia Lucas understood how the specificity of graduate education and students’ interests in working with a particular professor made graduate admissions hard to centralize and necessitated faculty involvement, she still wished for some “happy medium” between faculty having complete control and trained professionals interceding.

Despite not being able to actually serve on graduate admission committees, the cross-case analysis revealed different strategies GDOs implemented to have more influence on admissions. Six of the GDOs reminded committees of top applicants of color they encountered during outreach activities. Two of these GDOs shared that they appealed directly to admissions committees (Jessica Hayman and Elizabeth Stevens); both were organizationally located at the college and departmental levels of the institution. Jessica Hayman sometimes interjected in the admission process, advocating for candidates with whom she was personally familiar. Elizabeth Stevens did not sit on admission committees, but read applications and would let a department know if she felt a strong minority candidate had been overlooked. She stated, “If there’s a top person that I had

evaluated as someone who's a star, who's not on that list, then I can contact the department and say, 'What's up with this?'" Thus, GDOs, particularly those that were in closer proximity to their faculty organizationally, could take on the role of "advisor" in the admissions process, reminding faculty of the importance of racial diversity and focusing their attention on students of color they may otherwise ignore or overlook.

In addition to advocating for specific students, the remaining four GDOs who worked with faculty had influence by facilitating conversations about best practices in admission and increasing diversity. Malia Lucas and Monique Malone conducted workshops for faculty, discussing the importance of holistic admissions and how to assess student potential beyond what was indicated by standardized test scores. Inquiries from various departments led Craig Smith to bring faculty across campus together for conversations about best practices. Denise Miller was able to provide context for faculty committees as they considered applicants. She noted:

Many times if [applicants] come from a Hispanic Serving Institution or an HBCU [historically Black college or university], the faculty may not be as familiar with that institution, so I try to share with them, how that is viewed in the overall population of graduate schools.

Denise Miller's point highlights her faculty's lack of knowledge about minority serving institutions like Hispanic Serving Institutions and historically Black colleges and universities, which are recognized as producing a disproportionate number of students of color entering graduate school (Lundy-Wagner, Vultaggio, & Gasman, 2013; Redd, 1998; Solorzano, 1995). Their lack of recognition of these schools can put students of color at a disadvantage in the admissions process, despite their potential as young scholars. Thus, by engaging faculty in conversations and workshops, Denise Miller and others provided faculty with opportunities to gain access to information which would hopefully increase the likelihood of seeing the potential in the applications of students of color.

GDOs from seven of the universities aimed to have influence during the admissions phase by informing graduate departments about funding opportunities available for students who brought some form of diversity to the graduate population. In some cases, GDOs oversaw the distribution of these funds, which provided partial or full doctoral fellowships. Monique Malone described a program through which departments could nominate doctoral applicants for a broadly defined diversity fellowship, allowing departments to make a case for how a candidate brought diversity to their graduate program. Fellowship guidelines encouraged faculty to do more to increase racial diversity in their pool of admitted students. Malone elaborated on the complexity of this process, noting that she wanted to avoid having departments simply expecting her office to fund all students of color that they chose to admit:

The trick there is, of course, not allowing the departments to play the game where they push off all their students [to us]. . . we kind of solved that by letting them know that the more diverse your admit pool is, the more likely you are to get more money. If there's no one [underrepresented students] in your admitted cohort, you've got to explain to us why we should give you a fellowship . . .

Alex Zapata described a similar program at his university. Departments could nominate applicants for a diversity fellowship; however, he tried "to remind people, that we are a supplemental service. We don't have the resources, we don't have the capacity to fund as large a percentage of the URM [underrepresented minority] prospective students that become students at the University because of those limitations." Thus, GDOs aimed to not only support students from diverse backgrounds with extra funds, they encouraged faculty to do more in terms of admitting students of color and improving graduate diversity by providing financial incentives.

Yield

GDOs spent less time describing institutional yield activities. Much like outreach, multiple strategies were incorporated into yield efforts, including campus visits and special visitation weekends for admitted students, generous financial aid packages, and correspondence from faculty and current students. Specific combinations of strategies varied across institutions, but most incorporated two types of efforts: exposure to campus and financial support. Some institutions hosted weekends for all admitted students of color to visit campus at one time. These programs were viewed as beneficial because they allowed students to meet individuals across campus, building a sense of “critical mass,” as well as a connection to both the institution and their individual departments. Others were more decentralized with departments planning their own yield events.

Financial aid appears to be particularly critical to yield efforts, and several GDOs discuss the importance of financial packages in drawing students to their campuses. Dustin Chase clearly notes the importance of funding, explaining that it is as important as other outreach strategies:

You’re interested, and you have these visitations, and you have this summer research and you have all this stuff going. But then, when you get admitted, they don’t have any money to bring you there. . . we need to have more money to bring in more students.

Denise Miller also highlighted the importance of funding students at levels competitive with what other campuses offered. Alex Zapata expanded on this idea as he discussed the fellowships offered at Green University, noting they have not kept up with inflation and that they were adding “top-off awards” to be more competitive with other institutions.

Financial and exposure efforts were often combined to encourage matriculation. Joann Samuelsson recounted a yield experience with a student, which she described as almost being like a faculty hire. The faculty on her campus really wanted this student to enroll, inviting the student for two campus visits, complete with faculty meetings and dinners, as well as increasing her financial award. While these efforts were ultimately unsuccessful in getting this student to attend the institution, Samuelsson notes that efforts to get the most talented students of color “take that kind of effort.”

In addition to coordinating campus visits and helping to negotiate financial offers, GDOs often participated in yield by serving as a resource to students as they engaged in their decision-making processes. GDOs frequently found themselves as key liaisons between the university and admitted students. They saw themselves as people that the applicants were familiar with, to whom they could pose questions ranging from quality of life and racial climate to how to navigate the university. Lindsay Danon noted that students of color often inquired about lifestyle questions as they weighed their enrollment options for graduate school:

You know, we’ve got the sort of typical, “Where do I get this? How do I get this done? Who do I need to know?” . . . Everybody who is new deals with that. I just am not sure everybody is clear that people of color have an extra set of acclimation issues. . . “Am I going to need to be the voice . . . for all people of color? Or women?”

Danon spoke with students often about issues related to racial climate and their potential experience on campus and was comfortable in addressing students’ questions, often pointing out their proximity to several metropolitan areas and opportunities to build community with other people of color. Deborah Hardwick also was in a position to offer guidance to students as they made their enrollment decisions. Many students she had met during the recruitment process would contact her and ask for help with making their final decision.

Despite the personal yield efforts and coordination of yield activities, GDOs reported that faculty could make the most compelling pitch to students, because the experience of being in graduate

school ultimately was going to be very localized and decentralized. Sam Bailey, whose position was in the graduate school, reflected that her support would only be so helpful in the yield process and required a more proximal and direct faculty investment. She shared:

You know, I could make students feel wanted and interested and engaged but unless the faculty do that, nobody is going to want to make that move to come here. Now the students know it's my job to recruit them to come here (laughs) but [it's] for the faculty to say, "I think you're the best. I want you to come and work in my lab."

Denise Miller also acknowledged the importance of faculty voice and support during the yield phase, describing her plan to gain greater faculty buy-in and involvement. Her hope was that, "when [faculty] get these applications and interview their students and make the offers, we can get them here. And they have to participate in that." She emphasized that faculty must be involved in the yield process if they were going to be successful in enrolling more students of color.

Conclusion

In the early 2000s, approximately 21% of all doctoral students in the United States were people of color; however, over a third of the United States' population was either Native American, Black, Latina/o, or Asian/Pacific Islander. While there certainly has been some growth in the number of people of color enrolling in graduate programs in the United States, most populations have grown more slowly than the international student population (Sowell, Zhang, Bell, & Redd, 2008). Considering the lack of change in the graduate student population despite demographic shifts in the population of the United States and increased diversity in the undergraduate population, the active recruitment of students of color is central to increasing diversity in the graduate programs at U.S. universities (Aspray & Bernat, 2000; Council of Graduate Schools and Educational Testing Service, 2010; Muñoz-Dunbar & Stanton, 1999; Olson, 1988; Tierney et al., 2004). For many campuses, creating GDO positions to lead student recruitment efforts may serve as an important demonstration of an emerging institutional commitment to racial equity and promoting diversity. Rather than just stating diversity is important, which is characteristic of a superficial commitment (Hurtado, Milem, Clayton-Pederson, & Allen, 1999), institutional leaders have made more enduring commitments and directed some level of financial resources toward creating a more heterogeneous campus community through the establishment of these positions. Regardless of their level of power or control in the recruitment process generally or the admissions process specifically, it is important to understand these administrators' perspectives given that they are being hired to provide leadership and guidance to institutions, departments, and programs seeking to increase graduate diversity. Thus, this study contributes to the limited research on graduate recruitment, providing valuable insights from the perspective of administrators intimately involved in multiple dimensions of the process.

While institutions may demonstrate their willingness to go beyond diversity rhetoric by creating GDO positions, they also must be mindful that creating a diverse, inclusive environment requires a commitment that is embraced and demonstrated throughout the community. This concentration of responsibility with one individual in an institution, department, or program immediately calls an organization's true level of commitment into question. Change that promotes diversity and inclusion must be addressed by a community rather than one person in one office (Hurtado et al., 1999; Smith 2009), particularly given where they are situated in the organization and their decision making power in the recruitment process. Our findings do not suggest that the role of GDOs were completely unimportant; they created important initiatives, advocated for students, and had some level of influence. GDOs have the potential to play a critical role in coordinating recruitment activities, particularly in the outreach phase, that otherwise might not exist or occur inconsistently. However, others had to be invested at other stages of the recruitment process to truly increase diversity on their respective campuses. Thus, our findings suggest that in addition to

having key individuals in place to coordinate diversity efforts, a strong contingent of community members must commit to considering diversity as an important issue and goal to promote change.

The findings of this study suggest that the efficacy of many GDOs may be hampered by the nature and structure of graduate education in the United States. While colleges and universities in the United States generally function as loosely coupled systems (Weick, 1976, 1991), graduate education is highly decentralized, with the majority of policies, programs, and student-faculty interactions taking place at the departmental rather than the institutional level (Hirt & Muffo, 1998; Lovitts & Nelson, 2000). This study reminds that if progress is to be made in increasing graduate student diversity, the nested nature of colleges and universities must be taken into account. Institutional strategies must be coupled with departmental strategies that resonate with the decentralized nature of graduate education. In other words, institutional leaders must consider how to enable and encourage meaningful participation from both GDOs and faculty members during all three phases of the recruitment process to increase graduate diversity.

The need for a true institution-wide emphasis and commitment to diversity throughout all members of the campus community becomes particularly apparent when attending to the admissions stage of the recruitment process. While critical to outreach and yield, GDOs are often unable to directly impact admission decisions made by faculty committees. The GDOs that were able to have the most influence on this dimension of the recruitment process were those that were located organizationally in closer proximity to their department or program. If faculty are not engaging in a holistic admissions process that considers what students from underrepresented backgrounds can add to their communities and fields of study, efforts channeled toward the outreach and yield stages cannot realize their full potential.

This study also adds to the extant literature by providing an alternative perspective on the graduate school choice process in the United States, contributing to the knowledge regarding how actions by institutional agents and decision-making processes shape institutional choice. The literature related to college choice has been dominated by student-oriented perspectives and has focused on the agency of students and the factors shaping their choices. Alternatively, this study identifies a three-stage recruitment process (outreach, admission, and yield), and enhances scholarly understanding of the different levels of influence institutional agents can have in attracting graduate students, and particularly students of color, to American universities.

When one considers these stages, coupled with GDOs' placement in the institution and the decentralization of graduate recruitment, the scope of GDOs' responsibility is particularly wide and challenging to manage. This study contributes an understanding of GDOs' work and how they engage in each phase of the recruitment process, particularly as they engage issues of racial and ethnic diversity. As noted above, GDOs appear to engage most actively in the outreach phase, creating and facilitating opportunities for prospective students to learn about their university and connect with faculty and current students. GDOs most often describe their challenges with the admissions stage and are relatively unable to directly affect faculty decisions, minimizing their ability to truly influence the number of students of color who could potentially enroll at the university. The admissions process remains under faculty domain, which results in both admissions standards and considerations of diversity varying substantially by department.

Without any guarantee that diversity will be considered within a doctoral admission committee, GDOs observe that the diversity of admitted students varies greatly. Workshops, fellowship opportunities, and levels of personal commitment among faculty can factor positively into efforts to increase diversity within a department's pool of admitted students. Efforts to draw a diverse applicant pool may or may not be fully appreciated by faculty convinced that GRE scores are the most effective measures of merit. Using quantitative measures as indicators of ability and research potential can disadvantage students from underrepresented backgrounds with high poten-

tial but less academic preparation (Aspray & Bernat, 2000; Muñoz-Dunbar & Stanton, 1999; Pruitt & Isaac, 1985; Tapia, et al., 2003). Thus, rather than increasing student diversity, the status quo is maintained through the use of measures of merit that perpetuate rather than mitigate inequality. In sum, GDOs do important work in drawing a diverse applicant pool, yet their inability to engage directly in the admissions process, coupled with an inconsistent faculty commitment to graduate student diversity and assessments of ability based on metrics which disadvantage students of color, often results in a group of admitted students less diverse than the applicant pools that they worked so hard to attract. Thus, while they are not ineffective, one could say that their efforts are less effective than they would have hoped.

Similar to the comments of a GDO participating in our study, the graduate recruitment process in some ways mimics the faculty recruitment process. Based on GDOs' narratives, the level of departmental fit sought by graduate students may be more similar to the fit sought out by prospective faculty candidates than by prospective undergraduates, who often do not have the same level of disciplinary focus. Faculty investment in the graduate admissions process is also aligned with faculty selection, a process during which faculty select their future peers. Similar to graduate admissions, faculty hiring policies and decisions are made by faculty within departments. The criteria for faculty and graduate selection are similarly vague, less than objective, and subject to faculty perceptions of what constitutes "merit" and "fit" in an applicant (Smith, Turner, Osei-Kofi, & Richards, 2004; Tuitt, Danowitz Sagaria, & Viernes Turner, 2007). There are also similarities in terms of yield. The courtship of admitted graduate students by faculty through individual meetings with department faculty, receptions, and dinners demonstrates a level of faculty investment in the graduate recruitment process that is far less evident in the undergraduate recruitment process and feels more like the courtship experienced by faculty candidates.

Universities that understand the uniqueness of the graduate recruitment process, the ways race and diversity are and are not considered at each stage, as well as how graduate recruitment is similar to the faculty selection may be better situated to increase racial and ethnic diversity within their universities. Demonstrating a commitment to graduate diversity can start with hiring a GDO, but GDOs are limited in their ability to increase diversity in graduate education alone. The level of attention that GDOs can give and their level of influence varies based on their placement in the institution; more departmental and programmatic proximity lends to more influence. Despite the importance of having institutional agents coordinating diversity related efforts, it is far too much for one individual to be responsible for increasing diversity in graduate education for a department or an institution. Substantial change requires an underlying emphasis on and commitment to diversity in graduate education that extends beyond the institutional level to individual departments and programs. Therefore, as institutions worldwide consider strategies to increase diversity on their respective campuses, this study reinforces the importance of attending to organizational structure in identifying potential opportunities for change.

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Rethinking the Structure of Student Recruitment

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Biographies



Kimberly A. Griffin is an Associate Professor at the University of Maryland. Prior to becoming a faculty member, she served as a higher education administrator and student affairs professional, working in undergraduate and graduate admissions, promoting diverse and hospitable learning environments, and new student orientation. These professional experiences have greatly informed her work as a scholar, and her research focuses on three core topics: the persistence and success of underserved students; diversity within the Black community; and mentoring and developmental relationships.



Marcela Muñiz is a scholar specializing in higher education policy and diversity, and a regional director of alumni affairs and development for the Faculty of Arts and Sciences at Harvard University. Prior to completing her doctorate at Stanford University, she spent six years in Undergraduate Admission at Stanford, where she oversaw diversity outreach. Marcela also worked at the United States Department of Education on gender equity and has served on the Stanford in Washington and the National Hispanic Institutes College Register boards.

Cite as: Woolderink, M., Putnik, K., van der Boom, H., & Klabbers, G. (2015). The voice of PhD candidates and PhD supervisors. A qualitative exploratory study amongst PhD candidates and supervisors to evaluate the relational aspects of PhD supervision in the Netherlands. *International Journal of Doctoral Studies*, 10, 217-235. Retrieved from <http://ijds.org/Volume10/IJDSv10p217-235Woolderink0852.pdf>

The Voice of PhD Candidates and PhD Supervisors. A Qualitative Exploratory Study amongst PhD Candidates and Supervisors to Evaluate the Relational Aspects of PhD Supervision in the Netherlands

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Abstract

PhD trajectories are important to universities, as these contribute to the increase in knowledge and output. Therefore, they aim to decrease the completion time and dropout.

This article reports on our survey amongst PhD candidates and supervisors of the Graduate School CAPHRI, Maastricht University, The Netherlands. We investigated interpersonal aspects of coaching and (implicit) assumptions on skills and competences.

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Both groups consider personality, knowledge, skills, communication and coaching the major factors contributing to a successful PhD trajectory. PhD candidates consider responsiveness and respectful, good-quality feedback by supervisors important and suggest regular assessment of their performance. Supervisors consider flexibility, open-

Editor: David Kahl

Submitted: Sept. 17, 2014; Revised: Feb. 22, May 26; Accepted June 3, 2015

ness for feedback, taking initiative and being a team-player as good qualities for PhDs. Supervisors indicate struggling with offering support versus independence during different stages of the PhD trajectory.

The study shows that a good match between PhDs and supervisors is essential for a successful PhD trajectory, and we advise that both discuss and formally agree upon mutual expectations and responsibilities within the project. We advocate that Graduate Schools foster an open and safe learning environment, organise meetings where supervisors can share experiences to learn from one another, provide contacts for advice and support and involvement of HR during the selection process.

Keywords: Quality of PhD supervision, Hurdles and success factors related to PhD supervision, Supervision of PhD candidates, Exploratory qualitative study, Communication in PhD supervision

Introduction

Successful and timely PhD completion are becoming increasingly important to universities across the world. Due to increasing competition the academic world is trying to improve scientific output and their rank in international ranking systems (VSNU, 2014). Scientific output is a major contributing factor to determine rankings. Universities partly rely on the output of PhD candidates to achieve the best possible output and as a consequence improve their rank in the international ranking systems (van de Schoot, Yerkes, Mouw, & Sonneveld, 2013).

The current economic climate puts additional pressure on the relationship between the PhD candidates and their supervisors. Because of the financial climate and the consequential cutbacks that Dutch Universities are currently facing, it is necessary that PhD candidates finish their trajectories in time, thereby delivering sufficient output. As monitored by the 'Association of Dutch Universities' (VSNU) between 2001 and 2009, the average duration of a PhD trajectory is five years, exceeding the standard four-year Dutch PhD contract length. A PhD trajectory refers to the complete process of admission for a PhD placement until completion in a public defense of the thesis and receiving the PhD degree. In the Netherlands, a standard PhD has a four-year full-time employment contract.

Most universities describe formal regulations and procedures with regards to PhD trajectories and supervision, including requirements regarding training and education of PhDs, formal requirements and responsibilities of supervisors, the composition of the supervision team agreements concerning monitoring of the progress, requirements regarding the members of the assessment committee, etcetera. Notably, Anglo-Saxon universities are much more specific in describing supervisor and PhD candidate roles, and in addition to the formal requirements they often provide guidelines on good practices (universities of Canterbury, NZ, Auckland, NZ, Reading, UK, Imperial College London, UK). According to these guidelines supervisors should be accessible, provide timely feedback, of good quality and in a constructive way, align the activities of the members of the supervision team and ensure that their evaluation of the progress of the trajectory are communicated regularly to the PhD candidate, consequently contributing to a constructive and effective working relation. Supervisors and PhD candidates should discuss the type and extent of feedback and the kind and amount of assistance during various stages of the trajectory, personal circumstances (e.g., health or financial hardship) that may affect progress, and mutual expectations regarding supervision, exchange of feedback, and the way that problems or disagreements should be addressed. In some occasions (starting) supervisors can be obliged to attend meetings or seminars on PhD policies and the supervision process on a regular basis (Auckland, NZ). However, these requirements, guidelines and good practices have not sufficiently been explored in scientific research yet.

For universities to keep producing as much scientific output as possible, PhD trajectories are important and thus requirements to obtain a PhD degree are high. Therefore, universities need to invest in their PhD candidates. PhD candidates use a variety of resources, such as training and supervision. Untimely completion or dropout leads to loss of this investment for the university (Feldon, Maher, & Timmerman, 2010). High-quality supervision is hypothesised to be a success factor for timely PhD completion and for high quality scientific output (Spaulding & Rockinson-Szapkiw, 2012). There is some evidence on success factors for successful and timely completion of PhD trajectories (Gardner, 2009; Jiranek, 2010; Rodwell & Neumann, 2008; Sonneveld, 2009). According to van de Schoot et al. (2013) explanations for variations in PhD completion rates can be generalized into three categories: 1) institutional or environmental characters, 2) the nature and quality of supervision, and 3) characteristics of the PhD candidate. The second and third categories touch upon aspects related to supervision. A vast body of literature has been written on how to (best) supervise a PhD candidate (Cryer, 1997; Delamont, Atkinson, & Barry, 2004; Lee, 2008; Taylor & Beasley, 2005; Wisker, 2012). However less evidence exists about the relational aspects of supervision and the relation between the PhD candidate and their supervisors. Studies have shown that motivational aspects (showing interest), content aspects (knowledge of the supervisor on the topic), and process-oriented aspects are deemed necessary for qualitatively good supervision (Delaney, 2008; Gill & Burnard, 2008; Leonard, Metcalfe, Becker, & Evand, 2006; Sinclair, 2004; Sonneveld, 2009; Willems, 2009). Existing studies focussing on the relational aspects of PhD supervision mainly reported outcomes from the PhD candidates' perspective. Some studies have focused on the PhD supervisors perspective (Bøgelund, 2015) and even fewer have multiple perspectives (Grant, 2005; Lee, 2008). Especially the studies of Lee (2008) and Grant (2005) give insight in both perspectives on PhD supervision, however authors already remark the emphasis lies on the PhD supervisors' perspective.

Preliminary study findings within a specific study setting (Graduate school CAPHRI, Maastricht University, The Netherlands) suggest that one of the most pronounced reasons for dropout is a personal mismatch between supervisors and PhD candidates (Graduate school CAPHRI, Maastricht University, The Netherlands). Supervision of high-quality, tailored to the PhD's individual needs is therefore an extremely important issue, of high interest on a general level for universities, but also for the success of individual PhD trajectories. Although a PhD trajectory is focused on performance and output on a specific academic topic, supervision quality and the relationship with the supervisor are considered to be amongst the most important issues for a PhD candidate and should, therefore, not be underestimated.

A complicating factor of the relationship between PhD candidates and their supervisors is that they do not enter the PhD trajectory as equals; their relationship is hierarchical by nature. The PhD candidate is (highly) dependent on his or her supervisor(s), which is reflected by a go/no-go verdict 10 months after the start of a PhD trajectory in the Netherlands and by the quality and speed of the feedback provided by supervisors. Moreover, important decisions, such as when to submit a manuscript to a journal or to the thesis assessment committee, are being made by supervisors, not by PhD candidates. This can cause feelings of dependency and uncertainty within a person, feelings that need to be acknowledged and handled carefully by supervisors. Supervisors, on the other hand, may also experience doubts and difficulties in their relationship with a PhD candidate, even if they have ample experience with supervision. Whereas new supervisors might experience a lack of supervision skills or experience, the more experienced ones might not always be aware of the increasing gap between their own knowledge, skills, and competences and the level of those in their candidates. Individual supervisor's skills, such as empathy, communication and coaching skills, are highly important for matching or mismatching with a PhD candidate (Delaney, 2008; Gill & Burnard, 2008; Sinclair, 2004).

Considering the above and considering the size of the PhD candidate population (about 8702 in 2010 in the Netherlands) (VSNU, 2011), the quality of supervision and relational aspects between PhD candidates and their supervisors that might affect the performance of both and the factors influencing progress and success timely and completion of PhD trajectories are worth investigating in more detail. In addition this study aims to investigate both perspectives of the PhD candidates and the PhD supervisor on the relational aspects of supervision and on the quality of supervision.

With the present study we aim to explore relational aspects by investigating the expectations, experiences, and opinions of PhD candidates and supervisors regarding each other's role, thereby focusing on positive and negative contributing aspects.

Methods

Setting

This study was carried out amongst PhD candidates and supervisors in the field of Medicine and Health Sciences within Graduate School CAPHRI, Faculty of Health, Medicine & Life Sciences of Maastricht University, The Netherlands. In general, PhD candidates in these fields deliver a number of scientific articles published in international, peer reviewed journals, which are compiled in the doctorate's thesis, also including an introduction and general discussion.

Design

For both groups a web-based questionnaire with closed and open-ended questions was designed in SurveyMonkey (www.surveymonkey.com) and the data were collected online in 2011.

Participants

The source population included all of 317 CAPHRI's internal and external PhD candidates. Of this group 54 persons responded (17 %). The source population of PhD supervisors contained in total 240 supervisors of which 52 responded (22%).

Procedure

Firstly, announcement of the research was sent to all internal and external PhD candidates via e-mail by the School's PhD co-ordinator and afterwards by the PhD coordinators via the monthly PhD information e-mail one month prior to opening of the survey. Secondly, three reminders were sent to increase response rate. Supervisors also received an invitation via e-mail by the PhD co-ordinator. The supervisors received two reminders. For both groups anonymity was guaranteed; participants did not have to leave their names or birth dates. In addition the surveys that were received were coded with an anonymous ID number so tracing a survey back to the actual respondent was impossible.

Measures

Two separate web-based questionnaires were constructed, one for the PhD candidates and one for PhD supervisors. We developed the questions based on the literature as well as our experience of working with PhD candidates. Amongst the authors three were PhD representatives, and one was a PhD coordinator for a number of years. The questionnaires were developed after thorough discussion amongst the authors of this article and in cooperation with the members of CAPHRI's Board of Education (PhD representatives, PhD co-ordinator, confidential advisor for PhD candidates and the scientific director). The questionnaires were developed in English.

The questionnaire for the PhD candidates started with two questions concerning the year of their PhD trajectory and the number of supervisors involved in their PhD trajectory, followed by seven open-ended questions. These questions were the following: what do PhD candidates value in their supervisor(s) and what do supervisors do to encourage them in their work; what would PhD candidates need from their supervisors for further stimulation and encouragement (one item about the daily supervisor and one about other supervisors); what difficulties do PhD candidates encounter related to supervision; if and how they overcame these difficulties; and further feedback regarding supervision.

In analogy, the supervisors' questionnaire started with two questions on the number of years they had been supervising and the number of PhD candidates currently under their supervision, followed by five open-ended questions: what competences do they themselves have that are necessary/beneficial for a successful PhD trajectory (in terms of publications and/or timely completion of the PhD); what skills/competences of the PhD candidates do they value the most; what attributes of PhD candidates hamper a successful trajectory; what difficulties did they encounter in supervising PhD candidates; and how did they overcome these difficulties.

Analysis

The qualitative data was analysed using the principles of thematic analysis. Thematic analysis is an accessible and flexible approach to qualitative data analysis, which is based on coding (Braun & Clarke, 2006). Coding refers to categorising data, that is, labelling parts of text to a certain category (Joffe & Yardley, 2004). Coding can be both deductive (researcher brings in codes to the data) or inductive (arising from the data). In this study we first proceeded with deductive coding. The codes were created for each question separately for PhD candidates and supervisors. Based on these codes mind maps were constructed which helped us cluster codes into themes. This represented inductive coding, as it was driven by the data. These steps were undertaken by authors HB and KP for the supervisors and by MW and GK for the PhD candidates, initially on an individual basis, and then integrated after deliberation with each other (inter-rater reliability).

Results

After extensive thematic analyses the open-ended questions resulted in the distinction of three main themes relevant for supervision process for both groups. These themes were the following:

Personality includes PhD candidates' characteristics such as perfectionism, self-esteem, and diligence, and supervisors' characteristics such as empathy, patience, and flexibility. It also concerns the relationship between the PhD candidate and his/her supervisor and addresses issues such as involvement and being a team player.

Knowledge and skills refer to the statements about PhD candidates being expected to increase their knowledge on the content and to improve writing skills and analytical skills, and supervisors being expected to have a solid knowledge of the topic, an extensive network, and methodological expertise.

Communication and coaching reflect the process of supervision and address, for instance, the way feedback is provided, whether the PhD candidate feels stimulated by his/her supervisors, and whether the schedule is monitored closely enough.

The results for the PhD candidates and the supervisors were analysed separately and are therefore presented separately too. Both sections start with a general part, followed by a specific part on problems related to the three emerging themes: *Personality*, *Knowledge and skills*, and *Communication and coaching*.

Results for PhD Candidates

Of the responding PhD candidates, 52% were in the second or third year of their PhD trajectory, 26% in their first year, 20% in their fourth year, and a minority started over four years ago. Most of these PhD candidates had two or three supervisors (81%) and 9% of the respondents had more than three supervisors.

In general, PhD candidates stressed the importance of supervision and of the quality of the supervision for their performance. PhD candidates also suggested that the supervisors should be assessed on performance factors such as number of successful PhDs, number of timely graduated PhD candidates, delay in work of PhD candidates, and so on. Some even went as far as suggesting these performance factors should influence the supervisor's budget. PhD candidates indicated that performance factors and other factors related to good supervision should be written into a supervision guideline:

“It would be very good if there was a course for supervisors. Supervisors sometimes have a blind spot when it comes to supervision and so a course would be beneficial for all parties.” PhD candidate # 25

“I think there should be some clear guidelines for supervisors regarding what they should and are expected to do, and what they should avoid doing.” PhD candidate # 8

A general issue shown by the data is that PhD candidates complied with excessive workload by structurally working more than 40 hours a week. Some of them reported changing their own attitudes or mind-set in order to deal with the problems encountered. A few even ignored the problems, hoping they would go away after trying to solve them without success.

Personality

The PhD candidates reflected on the personality of their supervisor(s) by identifying valuable supervisors' characteristics for their motivation and encouragement.

The candidates specifically stated that what they wanted and needed from their supervisors included flexibility, honesty, being a good listener, and being empathic in order to be encouraged in their work. Empathy not only meant that supervisors should be able to understand the PhD candidate in work-related situations, but also in private situations, shifting from a role of a supervisor to the role of a mentor. Moreover, the supervisor showing explicit engagement and involvement in the project, but also taking an interest in the PhD candidate as a person and in his/her private life influenced the majority of the PhD candidates' work in a positive way:

“I value that my supervisor is personally very engaged in my project. She motivates me and that gives me peace and rest in very busy periods.” PhD candidate # 17

“She is always honest. You can tell her every problem you have and she will help you find a solution. She listens to your problems...” PhD candidate # 8

Some but not all of the supervisors were considered inspiring and very successful in motivating, stimulating, and encouraging their PhD candidates. Not feeling inspired or motivated was considered detrimental to the PhD trajectory. In addition, PhD candidates wished to be more appreciated and trusted by a supervisor. Responsiveness was also considered to be a quality of supervisors that was highly valued, but often lacking. Some PhD candidates explained that they missed the responsiveness in their supervisors:

“A bit more interest in the work being done.” PhD candidate # 39

On trust, one candidate said, “I would need my supervisor to have faith in my abilities.” PhD candidate # 21

According to the above, PhD candidates' motivation depended on a supervisor being empathic, taking an interest in the candidate, being open, being a good listener, and being responsive. A lack of these characteristics negatively influenced their motivation.

Knowledge and skills

PhD candidates stressed the importance of supervisors providing good content-related feedback and having a high level of content-expertise. Good content-related feedback was defined in terms of being clear, to the point, and providing unambiguous suggestions for improvement.

“[My supervisor has] high expertise, real interest in my work, gives very technical and detailed reviews of my work, has good attitude. [S/he] gives very detailed review of my drafts...” PhD candidate # 21

“My supervisor is almost always available to answer my questions and is very patient explaining things. He has a lot of knowledge on the subject.” PhD candidate # 12

Not all PhD candidates were satisfied with the feedback provided by their supervisors. They reported needing better content-related feedback and clearer guidance. Improvement in the feedback also included a thorough preparation by the supervisor.

“[I need] more content driven instead of vague and general feedback. Teach me something instead of talking very general.” PhD candidate # 6

“[I need more] involvement and don't need them to only read the articles and change words, I need them to actually come up with new concepts or input.” PhD candidate # 25

PhD candidates clearly needed proper content-related feedback in order to help them improve the quality of their work. A high level of expertise was listed a prerequisite for good content related feedback.

Communication and coaching

Communication and coaching skills were much appreciated by PhD candidates. Firstly, PhD candidates found it important to have a good relationship with their supervisors individually, but also with the complete PhD team. Secondly, PhD candidates found it essential that supervisors take the feedback rules into consideration. What PhD candidates valued was feedback given in a non-judgmental and constructive way, not just emphasising all that was not good. As long as feedback was constructive, it was evaluated positively by PhD candidates:

“Both supervisors are very involved in the research project. [I value their] involvement and the positive feedback they give me is encouraging.” PhD candidate # 4

“They encourage me by giving compliments when a job is done properly.” PhD candidate # 23

If supervisors showed involvement and provided PhD candidates direction, but at the same time offered sufficient freedom in their work, this encouraged the PhD candidate's confidence to proceed. One PhD candidate explained it as follows:

“The supervisor is helping me in finding my own way and research style.” PhD candidate # 24

“[I appreciate that my supervisor] comes up with new ideas, sets deadlines and helps me arrange certain things to achieve goals.” PhD candidate # 38

PhD candidates found it important that their supervisors were available (for questions and advice via Email and/or an appointment), responded in time, set deadlines, and gave practical advice. They found it difficult to work when these coaching skills were missing:

“I need my daily supervisor to support me in the parts of the project that I have no experience with (e.g., planning a pilot-study, planning a project). I expect my daily supervisor to take the lead sometimes and not always wait for me to solve problems or address issues.” PhD candidate # 29

Some PhD candidates reported the supervisors having too high workload and working under a lot of pressure. This affected feedback and meetings:

“Due to stress and huge workload.... feedback and meetings are rushed or vague.” PhD candidate # 10

On few occasions personal disagreements between supervisors, and supervisors having different opinions about the content of the PhD track were mentioned as problematic. At times, larger-scale departmental conflicts, in which supervisors were involved, affected the PhD project or PhD candidate as well:

“My supervisors have issues with each other.” PhD candidate # 35

“[I have difficulties with] departmental or even higher degree conflicts (with or together with the supervisors) affecting the workplace of a PhD candidate in a negative way.” PhD candidate # 45

Most PhD candidates stressed that talking with peers and colleagues, as well as direct communication with the supervisor, was the first step in the process of solving difficulties:

“[We solved it] mostly by negotiations.” PhD candidate # 10

“Working on the problem with people who are concerned with this problem.” PhD candidate # 22

In addition, they also tried to develop a better relationship with supervisor(s) and make arrangements and clear plans.

From the above it follows that good coaching skills, including providing constructive delivery of feedback, taking the lead when necessary, and providing a clear direction were considered extremely important by the PhD candidates. Communication, also among supervisors, was deemed necessary and helped to overcome difficulties or solve problems, though not on all occasions. A high workload was generally handled by working structural overtime, instead of communicating about it. It appears that PhD candidates considered a high workload as their own problem, instead of a joint problem.

Results for PhD Supervisors

The number of PhD candidates that supervisors guided varied: 76% reported supervising up to 6 PhD candidates, but also a considerable part (16%) supervised more than 10 PhD candidates, either as a co-promoter or as promoter. The respondents were generally equally divided on a continuum from relatively little experience to very experienced: almost a quarter (23%) just started supervising, a quarter had 3 to 5 years of experience, 24% had 6 to 10 years of experience, and 28% had more than 10 years of experience as a PhD supervisor.

From the qualities that supervisors valued in themselves and in their PhD candidates that contribute to successful completion of the PhD trajectory, the difficulties they encountered and the ways in which they acted to overcome these, the same three themes as from the responses of the PhD candidates could be derived: *personality, knowledge and skills*, and *communication and coaching*.

Personality

Personality characteristics related to one's own qualities as a supervisor that are perceived as helpful for the supervision process are flexibility, analytical thinking, empathy, social competences, being a team player, patience, insightfulness, ability to self-reflect, and being a good listener.

“Being aware of one's own supervision style and being able to vary the supervision style... and being able to shift the focus from professional to personal if needed.” Supervisor # 20

“Being patient, having expertise, coaching competencies... being a team worker and able to make decisions if necessary.” Supervisor # 7

Personality characteristics that supervisors highly valued in their PhD-candidates were related to the ability to work in a team, while at the same time also being able to work independently and autonomously. Openness for receiving feedback and criticism, self-reflection, and enthusiasm were also considered important in PhD candidates.

“...it is very important that PhD candidates are able to reflect on their own functioning... so that they are able to ask for help at the right moment, to articulate their needs, to take critique and integrate feedback in their work.” Supervisor # 2

“Enthusiasm, positive outlook, independence, eagerness...” Supervisor # 46

“Being transparent in why he or she has good or bad days, the candidate has self-reflection, and realizes in time that a thesis project is, or is not, the right choice for him or her.” Supervisor # 12

Two personality types in the PhD candidates were distinguished that might hamper the supervision process and the completion of the PhD trajectory. One type concerned candidates being too independent, overconfident, not being open for criticism, and having troubles accepting authority and expertise of the supervisor. The other type concerned candidates who were too dependent, passive, waiting for solutions offered, and had no self-confidence.

“Be too independent, do not ask for help timely; or the other way around, ask too much help” Supervisor # 9

“...PhD not accepting (consciously or unconsciously) that supervisor might have superior knowledge and experience.” Supervisor # 36

The PhD candidate being sloppy or being too perfectionist was not appreciated either:

“Perfectionism, not being able to set priorities, postponing tasks.” Supervisor # 47

“Being sloppy and very slow with addressing feedback.” Supervisor # 49

Other characteristics that were identified by supervisors as difficult included rigidity, inflexibility, difficulties in dealing with stress and frustration, and a lack or loss of motivation.

Knowledge and skills

When reflecting upon their own qualities contributing positively to the supervision process knowledge of numerous specific methodologies, of statistics, and on the contents of the topic were mentioned, along with having an extensive network, experience in writing scientific papers, and previous experience in guiding research projects. One supervisor explained:

“I have ample experience in different methodologies, and based on that I can coach the PhD candidate where opportunities and difficulties lie during the PhD track.” Supervisor # 23

When reflecting upon preferred skills of their PhD candidates, supervisors mentioned analytical skills, statistical knowledge, overview of the research topic, good networking, writing skills, and creativity.

“Organising skills, writing skills, communication skills, time planning skills, skill to discriminate.” Supervisor # 1

“Good writing skills, working in a structured way, good analytical skills...” Supervisor # 18

However, sometimes the preferred qualities were lacking. For example, supervisors mentioned problems with their PhD candidate’s English writing skills, analytical skills, and learning ability. More specifically, problems were mentioned in case of a lack of statistical and research methods skills.

“Not able to write a research plan or not able to translate research question in sub questions that are feasible to execute; not able to organise his or her own research and data collection; no writing skills.” Supervisor # 44

“Difficulties when a PhD candidate has problems with writing an article.” Supervisor # 41

Strategies to handle these problems included advising PhD candidates to attend courses, providing access to their own network, re-writing sections of articles, or trying out different writing methods that would suit the candidate better. Some supervisors decided on taking a course themselves, thereby improving their own supervisory skills. However, not all difficulties could be resolved by these strategies. The workload was sometimes considered too high since some supervisors had too many PhD candidates, which in their view compromised the supervision quality. This problem was considered unsolvable:

“It is difficult to overcome this issue, since it is not done to give PhDs to somebody else. Also, of course because somebody else may not have the expertise.” Supervisor # 27

Generally, PhD candidates and supervisors had the same opinions about necessary skills and competences for supervisors, concerning mainly expertise and experience. In case of lacking or insufficient skills more coaching was considered necessary.

Communication and coaching

Communication and coaching aspects that were considered important for the PhD trajectory concerned motivation, availability, support, expectations, and the personal relationship between the supervisor and the PhD candidate. Supervisors highlighted that their ability to motivate their PhD candidates and make them enthusiastic about the research was also brought about by their own dedication to the project.

“Inspiring young researchers concerning research, especially applied science and pragmatic studies, passion for research, creating an egalitarian climate where the candidate is stimulated to take responsibilities...” Supervisor # 12

“Easy access both on- and off-line (just come to my office) creating a safe environment in which all suggestions/comments can freely be discussed without judgement.” Supervisor # 5

“I create a safe learning environment and connect candidates with similar themes to enhance creativity... I create challenging experiences with safe environment, so they are able to experience success.” Supervisor # 32

Supervisors also tried to help the PhD candidates deal with (occasional) complexities that arise during team meetings. One supervisor highlighted:

“In joint meetings with the whole promotion team (PhD candidate, co- and promoter(s)) I further notice that a PhD candidate cannot always process all information and questions directly. Therefore, I, as co-promoter, sometimes have (if PhD students asks for it) a talk afterwards, in which we go through everything and work out a concrete step-wise plan. I do think this especially occurs in the beginning of a PhD trajectory (year one and two).”
Supervisor # 17

Issues that supervisors considered problematic to deal with were lack of motivation and lack of organisational and communication skills in their PhD candidates.

“Nine to five mentality, unrealistic optimism, bad time-management, stubbornness.” Supervisor # 10

“Mixing private life with professional life, time management, lack of motivation to work after working hours.” Supervisor # 13

“Not doing what has been agreed upon.” Supervisor # 8

Supervisors also expected that, over time, PhD candidates would take more initiative in and responsibility over their project, and found it problematic if such transition did not take place. They also acknowledged that balancing independence of the PhD candidate and guidance by the supervisor is difficult. Expectations are pivotal in this, yet not circumscribed.

“If PhD candidates are not slowly developing more insight and responsibility of their project (in cooperation with the PhD team).” Supervisor # 16

“Balance between telling the PhD candidate what to do, and allowing him/her to develop own ideas.” Supervisor # 25

Strategies by supervisors to handle these difficulties included making explicit and clear agreements, and being more responsive to the PhD candidates' needs.

“Stay clear to the candidate, make fixed appointments and when nothing works, stop the process.” Supervisor # 30

“I am busy, helpful: reflecting on it and working together with co-supervisors and assessing what works.” Supervisor # 20

Some supervisors interpreted the issues mentioned above in light of the learning process that a PhD candidate goes through and discussed the impact of a PhD trajectory on the future career of the candidate.

“Try to regard the PhD trajectory as a learning trajectory. Have attention for the career of your PhD candidate, he/she is not just doing research for you/with you, but also developing a career...” Supervisor # 31

“...show PhD candidates all facets of doing a PhD so that they are prepared and able to continue research when they are done, and take the time to plan the future, what to do after PhD is finished.” Supervisor # 22

The interpersonal relationship between supervisors and their candidates deserves special consideration here. Loss of trust in each other or a mismatch on a personal level were perceived as a source of stress and frustration. Supervisors also mentioned difficulties in dealing with PhD candidates who had personal problems that affected their work capacity negatively. Sometimes the supervision team did not function well, such as different supervisors steering in divergent direc-

tions, different views within the team, and not having good interpersonal relations within the supervision team:

“[I encounter problems regarding]...Different views within the inner circle on supervision; occasionally time shortage and political stuff (best left out of students’ work).” Supervisor # 22

“Unclear communication about cooperation in supervisors group and authorship, different supervisors who steer in different directions, or in different ways asking too much supervision from too many persons no penalties-consequences when students do not meet deadlines.” Supervisor # 34

Finally, supervisors also mentioned some procedural issues, such as lack of funding and the difficulty in guiding external PhDs who were physically far away.

Supervisors were quite clear about their own input in the coaching process. What supervisors struggled with was the amount and type of support needed in the different stages of the PhD trajectory and finding the right balance between delivering input and allowing the PhD candidate the freedom to decide for himself. Also the personal relationship between supervisor and PhD candidate sometimes gave rise to problems, which were handled by making clear agreements with the candidate, being responsive, and acknowledging the fact that a PhD trajectory is about learning and development. An overview of the concepts mentioned by both PhD candidates and PhD supervisors is presented in Figure 1.

Figure 1 is a visual representation of the most often reoccurring concepts mentioned by the interviewees. The figure shows the results of both supervisors and PhD candidates. Vertically the two groups are represented; PhD candidates on the left and PhD supervisors on the right. Horizontally the themes discussed are displayed. Analyses of the data showed PhD candidates reflect on their supervisors qualities and skills (success factors and hurdles) represented in the lower left quadrant. PhD candidates did not reflect on their own qualities and skills. This explains why the upper right quadrant of the figure is blank, meaning we did not evaluate this. For supervisors it is slightly different, they reflected on qualities and skills of their PhD candidates (success factors and hurdles) and they also reflected on their own qualities and skills which make their supervision successful (success factors). However PhD supervisors did not reflect on accepted or perceived hurdles. That is why half of the lower right quadrant is blank.

		PhD Candidates		PhD supervisors	
		Success	Hurdles	Success	Hurdles
ABOUT PhD candidates	General	NOT EVALUATED			
	Personality			Balance between team player & being independent Openness to feedback & criticism Self-reflection Enthusiasm Transparent	Not accepting things Too independent Not being open to feedback Rigidity Inflexibility Being stressed
	Knowledge & Skills			Overview Writing skills Time Planning skills Communication skills Creativity Analytical skills	Lack/ loss of motivation Bad use of English Learning ability not high enough Lack of skills
	Commun & Coaching				Nine to five mentality Bad time management Unrealistic optimism Stubbornness
		Success	Hurdles	Success	Hurdles
ABOUT PhD supervisors	General		Blind spot when it comes to supervision due to assumed experience		NOT EVALUATED
	Personality	Flexibility Honesty Good listener Empathic Responsiveness	Uninspiring Non-motivational Not able to encourage	Flexibility Patience Analytical thinker Empathy Self reflection Team player Social competences Having insight Good listener	
	Knowledge & Skills	Ample experience High expertise Knowledgeable Content driven Patient explainer	Vague or no feedback Only feedback on minor things (no content feedback)	Ample experience Good network Knowledgeable Experience in writing Management skills	
	Commun & Coaching	Giving compliments Deadlines (process management) Not being judgemental Good relationships in team	Supervisors disagree amongst each other Workload influences the quality of feedback & meetings	Availability Support Building a personal relationship Ability to motivate Accessible Create safe learning environment	

Figure 1: Overview of the concepts mentioned by both PhD candidates and PhD supervisors

Discussion

We set out to examine the intricate relationship between PhD candidates and their supervisors and the hurdles and success factors related to good PhD supervision. By specifically focussing on what the individuals from both groups value in each other, this study contributes to an increased understanding of the needs of both PhD candidates and PhD supervisors. Practical solutions were suggested by both parties in case problems arose with PhD supervision. The respondents acknowledged and confirmed the importance of receiving (for the PhD candidates) and providing (for the supervisors) high quality supervision. According to both groups, good quality supervision increases motivation, as well as keeping a good flow in the project and enhance the self-confidence and professional development of the PhD candidate. Thus, the practical solutions and the specific needs and preferences as reported by the respondents described above, can be used to facilitate (timely) PhD completion.

On a *personal* level, PhD candidates' motivation depended on a supervisor being involved, empathic, open, a good listener, and responsive. When personal attention was lacking, it created motivational problems for the PhD candidate. Similarly, the supervisors mentioned flexibility, empathy, social competences, and responsiveness in themselves as positively contributing factors to the trajectory. They were aware that motivating PhD candidates, investing time, and providing emotional guidance and support were necessary qualities for providing good supervision. Concerning personal attention, supervisors also acknowledged that insight into the personality of the PhD candidate helped tailor the supervision to individual needs (for the overlap in and links between answers, see Figure 1). Attributes appreciated by the supervisors in their PhD candidates were independence and taking initiative but also being receptive to feedback. Difficulties encountered involved overconfident PhD candidates who did not acknowledge the supervisors' expertise on the one hand, and passive candidates who relied too heavily on the supervisor on the other hand. Sloppiness or being too perfectionist were not much appreciated.

Generally, PhD candidates and supervisors had the same opinions about necessary *knowledge and skills* for supervisors. These included expertise on the content, methodological skills, abundant experience in publishing, knowledge of statistical methods, and having an extensive network. In addition, the PhD candidates stressed the importance of providing good content-related feedback, which should be specific and provide a clear direction to the work in progress. Necessary knowledge and skills for PhD candidates, more or less expected to be present, were analytical skills, statistical knowledge, good networking and writing skills, and creativity. Not all these qualities were found in all candidates. Strategies supervisors used to overcome these gaps included advising on which courses to take, helping them with writing, and monitoring the process and progress frequently. Some supervisors took a course on supervision to improve the quality to prevent or deal with problems related to above-mentioned gaps and skills. It was recognised by supervisors that a PhD trajectory was a learning trajectory, i.e., a development should take place in the work and professional attitude of a PhD candidate. It was expected that over time PhD candidates would take more initiative in and responsibility over their project. While supervisors felt that on some occasions development was lagging behind, PhD candidates occasionally felt that their development was not recognised enough. The supervisors specifically expressed their struggle with coaching a candidate towards more independence and with knowing what can or cannot be expected of a person in a certain phase of the trajectory. The results did not reveal whether these expectations were communicated and discussed with each other. Therefore, to prevent problems there should be an open and safe learning environment so that if one of the parties fails with respect to the above-mentioned expectations, the other party can address it without fear or feeling insecure.

Both PhD candidates and supervisors agreed on the importance of good *communication and coaching* skills. PhD candidates valued good coaching skills, including receiving constructive

feedback, supervisors taking the lead when necessary, and providing clear direction. Similarly, supervisors wanted to motivate the candidates and make them enthusiastic about their research by showing their own dedication, by being available, providing support, and creating the right atmosphere. Inspiring their candidates and making them feel passionate about their research were aims frequently mentioned. Communicating well also helped to overcome difficulties or solve problems. However, on some occasions communication failed: personal disagreements between supervisors, or disagreements about the work of the PhD candidate, as well as problems within the department were reported that hampered the progress of the trajectory. In case of the workload being too high, PhD candidates handled this by structurally working overtime and not by communicating about it. However, it is not clear from the findings whether they did not raise the subject at all or whether they tried to discuss it but were turned down. Some supervisors criticised the ‘nine to five mentality’ or the ‘lack of motivation to work after working hours’, so the authors suspect this is a sensitive issue to discuss.

In general, it is noteworthy to mention the nature of the relationship between the PhD candidate and the supervisor, which is based on a power difference. Hence, PhD candidates are bound to be affected more if the relationship is not good, than supervisors. We believe that PhD candidates are well-aware of the power difference in their relationship with supervisors. Consciously or subconsciously, the dependence on the supervisors’ judgement, feedback, availability, and approval affects the trust in one-self and self-esteem and can cause insecurities that may vary from minor uncertainties that can easily be solved or discussed, to fundamental insecurities that can hamper daily functioning. Although supervisors may also be well-aware of this disparity in their mutual relation, they may not always be aware of the day-to-day effect it has on the state of mind and attitude of their PhD candidates and the level of insecurity and dependence it involves. In that light, direct and explicit communication, appreciation of mutual openness and trust, are all the more important.

Recommendations

Based on the results we propose several recommendations. Though some of these may not be ‘new’ that is they may already be a part of the guidelines or good practices in place at some universities, we feel that the current study results underpin and warrant the listing of these recommendations. In general, we consider it very important that mutual expectations and responsibilities should be explicitly discussed and put down in writing at the start of the PhD trajectory (van der Boom, Klabbers, Putnik, & Woolderink, 2013). These mutual expectations and responsibilities should have a regular follow-up and readjustment. During yearly evaluation meetings, and preferably more often, not only the progress of the PhD trajectory should be discussed, but the relationship and communication within the PhD team should be appraised as well. Feedback on work in progress or performance, by either one of the parties, should be given in a constructive and respectful way, contributing to a positive and confidence-building atmosphere. PhD candidates are recommended to make a long-term, structured plan of meetings with their supervisors to ensure sufficient guidance, to take minutes of each meeting, and to take initiative and responsibility for the PhD trajectory and be open for feedback. Supervisors are recommended to involve the HR department in the selection of a PhD candidate, and seek advice and guidance in the form of supervision courses or regular peer exchange of supervision experiences, preferably facilitated by their organisation. Supervisors are recommended to tailor their supervision style and approach to the specific PhD candidate, and provide varying levels of support adjusted to the phase of the PhD trajectory and the needs of the individual, thereby fostering their confidence and self-esteem (van der Boom et al., 2013). We recommend that the supervision team consists of at least two, and maximum three or four supervisors who complement each other and that they clearly divide their tasks. One should be made responsible and available for the more intense daily coaching of the candidate. The whole team should remain conscious of the dynamics within the

supervising team and of the PhD trajectory and how this may affect the PhD candidate (van der Boom et al., 2013).

Limitations

Some limitations of the present study must be taken into account in order to correctly interpret the findings. Firstly, although the response rate was limited, the authors believe the responses were reflective of the variety of PhD candidates' and supervisors' experiences, considering that a lot of information received was centring repeatedly on the highlighted themes, indicating saturation. Secondly, authors cannot pair the responding PhD candidates with the responding supervisors considering that participation was anonymous. This would have been particularly interesting since it would have enabled us to study whether there are interpretational differences or strategic differences in recognising or dealing with problems. Thirdly, our questionnaire did not include PhD candidates having to reflect on their own attitudes, knowledge, or skills (as shown in Figure 1) whereas we asked the supervisors about their attributes contributing to a successful PhD trajectory. Given the finding that supervisors sometime struggled with personality attributes of the candidates it would have added to the findings if we knew how PhD candidates interpret the importance of their personality to the trajectory. Fourthly, difficulties and how to overcome these were topics included in separate questions. Therefore, we could not always relate the strategy to the problem. However, because a substantial part of the participants combined both questions, this enabled us to integrate them. Finally, the present study has been conducted within one graduate school and the question is whether the results are applicable to the same extent to other schools in and outside the Netherlands as well. However, considering this particular graduate school is quite large and encompasses numerous departments that vary in size and topic, we believe that this study can be of use to other PhD candidates and supervisors in other health-related academic settings as well.

Conclusion

This study contributes to an increased understanding of the needs, wants, preferences, and expectations of both PhD candidates and PhD supervisors regarding supervision. The study is unique in its kind due to the fact that it reflects on and describes perspectives of both the PhD candidate and their supervisor. Interesting to see is that there is an overlap between the answers given by both parties which means the same attributes are valued. This is a good starting point for an increased understanding about each other's needs and might improve the relationship between the PhD candidate and the supervisors.

PhD candidates and their supervisors can save a lot of time and mishap when discussing mutual expectations and needs before and during the PhD trajectory. This might diminish the dropout rate as well as enhance timely completion of PhD trajectories without compromising the quality of scientific output. At the same time, costs can be saved on departmental and university level. Further research should seek to validate the results in other scientific fields, and in other countries.

Acknowledgement:

This manuscript is based on a study performed within graduate school CAPHRI, Maastricht University, the Netherlands. Based on the data, the authors have published a booklet for internal use and this manuscript builds on this earlier work.

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Biographies



Marla Woolderink, MSc, obtained her BSc in Health Organisation, Policy and Economics and has a degree from CAPHRI Health Research Master, with a specialisation in Epidemiology and Health Technology Assessment. She has been PhD representative for CAPHRI from July 2010 to December 2012. Marla started the PhD supervision project in 2011 and is currently the representative for the Netherlands School of Primary Care (CaRe). Currently Marla is working on cost-effectiveness analyses of an online health prevention intervention.



Katarina Putnik, MA; MSc, has a degree in Psychology from the University of Malta, an M.A. degree in Peace studies and conflict transformation from the European Peace University, Austria and an M.Sc. in Public Health with the specialisation in Work and Health from Maastricht University, the Netherlands. She is finalising her PhD on the topic of work-home interface across cultural contexts at the Social medicine and Epidemiology departments of Maastricht University, CAPHRI research school. Driven by a motivation to be engaged in the PhD issues that go beyond her own trajectory, Katarina has been chosen as the PhD representative for the CAPHRI research school from 2009-2011 and a PhD representative for the Netherlands School of Primary Care (CaRe) from 2012-2014. Currently, Katarina works as a research scientist on the topic of work innovations at TNO, Leiden, the Netherlands.



Hannerieke van der Boom, PhD, has obtained her degree in Arts and Sciences at Maastricht University in 1997. During her PhD trajectory, she performed a comparative study on home nursing professionals and has been PhD representative for the School CAPHRI. After having obtained her PhD degree in 2008, she worked as a researcher and lecturer in Health Sciences and became CAPHRI's PhD co-ordinator. Since 2013, she is also working as policy advisor on PhD Affairs at the Faculty of Health, Medicine and Life Sciences at Maastricht University.



Gonnie Klabbers, PhD, studied Health Sciences, Work & Health at Maastricht University, Maastricht, The Netherlands and obtained her PhD degree on social health inequalities in 2012 at the same university. Besides research, she also worked as a lecturer in Health Sciences. During her PhD track she was a PhD representative in three PhD committees. After obtaining a PhD, Gonnie Klabbers worked as a postdoc researcher for two years.

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Cite as: Thiry, H., Laursen, S. L., & Loshbaugh, H. G. (2015). "How do I get from here to there?" An examination of Ph.D. science students' career preparation and decision making. *International Journal of Doctoral Studies*, 10, 237-256. Retrieved from <http://ijds.org/Volume10/IJDSv10p237-256Thiry0925.pdf>

"How do I get From Here to There?" An Examination of Ph.D. Science Students' Career Preparation and Decision Making

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Abstract

Drawing on developmental networks theory, this qualitative research study explores the professional preparation and career decision-making processes of doctoral students in the sciences. The study is based on 95 semi-structured interviews with informants at three research universities in the United States. Though many students were interested in non-academic career tracks, they were largely unaware of the breadth of their choices or how to best prepare for these careers. Unable to cultivate networks in non-academic careers, many students turned to peers to fill the career development gap. Due to their lack of knowledge about career options, among other factors, students often delayed selecting and preparing for careers until the end of their graduate studies. Implications for doctoral education practice are discussed.

Keywords: Ph.D. students, career preparation, decision-making processes, doctoral students, science students

Introduction

The global scientific workforce is undergoing dramatic changes, yet the traditional model of doctoral education in the sciences remains stubbornly entrenched. To be sure, the apprenticeship model is successful in preparing students to be independent scientific researchers, yet researchers,

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and educators have voiced concerns for years about doctoral students' lack of professional preparation (American Association of Universities (AAU), 1998; Golde & Dore, 2001; Nerad, Rudd, Morrison, & Homer, 2006; Nyquist, 2002; Taylor, 2006; Wendler et al., 2012). Scholars have highlighted the mismatch between doctoral students' training and workforce realities (Golde & Dore, 2001), citing

Editor: David Kahl

Submitted: November 5, 2014; Revised: April 25, May 28, 2015; Accepted: June 19, 2015

the lack of preparation for 21st-century jobs in areas such as communication, teamwork, teaching, and leadership skills. Moreover, economic pressures, demographic trends, and the need for workers in emerging fields have influenced the nature, characteristics, and composition of the scientific workforce (National Science Board (NSB), 2012). Although the long-standing apprenticeship model of doctoral education emphasizes preparation for the professoriate, in fact, more scientists are now employed by business than by universities or government (Suresh, 2011).

Shaped, in part, by these changes in the economy and workforce, long-term job growth in the sciences is not monolithic, but varies by nation and by field. A few sectors, such as biochemistry and biotechnology in the US and renewable energy and information technologies in the EU, are projected to experience faster than average growth in the coming decade (Bureau of Labor Statistics (BLS), 2012; European Commission, 2012). In contrast, other scientific sectors are expected to experience average, or even below-average growth. Jobs for chemists and materials scientists—the subjects of this study—are projected to experience slow growth in the coming decade in both the US and Australia (Australian Government, 2012; BLS, 2012). One common thread does transcend national borders; in many countries, the number of recent scientific doctorates in some fields may exceed the supply of available and appropriate jobs, at least by traditional definitions (American Chemical Society (ACS), 2012; Cyranoski, Gilbert & Ledford, 2011; Neumann & Tan, 2011).

Although an increasing number of scientific doctorates are employed outside of the professoriate, the nature of scientific work within academe is changing, too. The recent economic downturn is expected to have a long-lasting impact on higher education in the US with reduced institutional funding, diminished faculty salaries, and increased numbers of non-tenure-track faculty positions (American Association of University Professors (AAUP), 2011). Internationally, there has been a decline in the number of academic positions available for doctoral recipients (AAUP, 2011; Neuman & Tan, 2011), and recent scientific doctorates in the US are increasingly turning to temporary postdoctoral research positions for their first employment (BLS, 2012). The impact of these changes on the practice of science in academe is not yet clear; but the outcomes for individual lives and careers seem detrimental as these positions offer lower pay and fewer benefits than permanent academic positions.

Commensurate with the realities of the scientific labor market, most doctoral students in scientific fields do not aspire to or pursue academic careers (Fox & Stephan, 2001; Nerad et al., 2006; NSB, 2012; Sauermaann & Roach, 2012), yet “alternative” career paths, such as those in education or public outreach are often discouraged by science faculty (Connolly, 2011; Janke & Colbeck, 2008; Laursen, Thiry, & Liston, 2012; Thiry, Laursen, & Liston, 2007). Experiences that supplement doctoral research and coursework, such as professional development trainings, workshops, or internships, are beneficial in developing students’ skills and clarifying their career paths (Bouwma-Gearhart, Millar, Barger, & Connolly, 2007; Laursen et al., 2012;) and are recommended in calls for doctoral reform (AAU, 1998; Golde & Dore, 2001; Nerad et al., 2006; Nyquist, 2002; Taylor, 2006)—yet these opportunities are not widely available. Recent research has affirmed the need for more explicit professional preparation in doctoral education (Austin, 2002; Austin & McDaniels, 2006; Golde, 2008; Golde & Dore, 2001; Kuck, Marzabadi, Buckner, & Nolan, 2007).

Thus, the scientific workforce is rapidly changing and career prospects for doctoral scientists are muddled: projections vary by field, occupational sector, and country. Doctoral recipients in some fields, such as the field of chemistry investigated in this study, or sectors, such as higher education, may struggle to find suitable jobs in the face of declining job prospects. For these reasons, doctoral students’ awareness of non-academic careers and preparation for the 21st century global workforce is a pressing concern. Students and doctoral advisors can no longer assume that an appropriate and desirable job will appear at the end of doctoral studies.

It is clear that both pragmatic realities and research on career development speak to the need for more informed career preparation for doctoral students in the sciences. Yet we still know little about how doctoral students learn about and prepare for future careers. Doctoral students' non-academic career pathways have also been relatively uninvestigated (Baker & Pifer, 2014; Wendler et al., 2012). Some studies have focused on students' beliefs about academic careers (Austin, 2002; Bieber & Worley, 2006), while others have investigated students' professional socialization within disciplinary and departmental contexts (Gardner, 2007). Instead, this study explores doctoral students' knowledge about careers, including non-academic careers, the sources of this knowledge, and their influence on students' career development.

Developmental Networks and Professional Learning in Doctoral Education

The nature of academic disciplines and scientific professions is shifting and doctoral students must seek a wide range of experiences to help them learn about and prepare for careers (Antony, 2002). We turn to developmental networks theory (see Higgins & Kram, 2001; Sweitzer, 2009) to explore the sources of doctoral students' learning about careers, particularly the role that social networks play in their knowledge about career options and their professional preparation. Higgins and Kram (2001) originated the concept of a developmental network, defining it as the "people a protégé names as taking an active interest in and action to advance the protégé's career by providing developmental assistance" (p. 268). Developmental networks theorists have often focused on specific social interactions and relationships, especially the range (i.e., the variety of sources and contexts within networks) and the density of networks (i.e., how well the connections, or "developers," know one another) (Dobrow & Higgins, 2005; Higgins & Kram, 2001). Recent research has examined the role of "distant, unmet, or imaginary figures" in students' developmental networks (Dobrow, Chandler, Murphy, & Kram, 2012), thus broadening the concept to include short-term connections, virtual relationships, media images, and other social phenomena that may influence students' professional development. In this study, we focus on the range of students' networks, especially the variety of sources within their networks, rather than the density of students' networks.

Career preparation involves more than simply the acquisition of technical knowledge and disciplinary expertise. Though these elements are important aspects of the learning process, learning also involves identification with a discipline, profession, or community; in short, "becoming" a certain type of person (Lave & Wenger, 1991; Stevens, O'Connor, Garrison, Jocus, & Amos, 2008). While developmental networks theory provides insight into the "developers" that influence students' career trajectories, it has focused less on the identities that are fostered through these networks, the cultural and social contexts within which these networks operate, or the role of individual agency in shaping professional learning and career paths. Recently, developmental networks theorists have begun to incorporate concepts from sociocultural theories of learning, such as agency, identity, and culture into their research (Baker & Lattuca, 2010; Baker & Pifer, 2014; Hopwood, 2010; McAlpine & Lucas, 2011). The integration of developmental networks and sociocultural theories expands the theory to include the processes by which students become members of a professional community. In this study, we explore the specific developers and developmental opportunities that shape students' career trajectories, yet we also consider the role that student agency plays in students' career preparation and the cultural and social phenomena that may facilitate or constrain students' professional development.

These sociocultural constructs highlight the importance of possible selves in students' developmental trajectories. Possible selves are defined as professional identities that one may try out by observing role models, experimenting with provisional selves, and then evaluating the results (Ibarra, 1999). Professional identity development, including students' career decision-making pro-

cesses, hinges on students' ability to experiment with possible selves and subsequently select or discard the possible selves that have been considered (Hopwood, 2010). Through this process of experimentation with a variety of possible selves, doctoral students shape their identities as professionals within their discipline. This aspect of identity development is crucial to students' trajectories as they must "begin to enact and assume the professional identity of their intended career in order to be deemed credible" (Baker & Pifer, 2014, p. 140).

Developmental networks theory in doctoral education has most often been applied in terms of academic career preparation (Sweitzer, 2009), although the theory holds promise as a lens to examine the influence of the range of networks in students' preparation for non-academic careers. Doctoral education researchers have not yet fully explored how students construct (or not) developmental networks outside of the doctoral advisor-student relationship to learn about or prepare for careers. For these two reasons, developmental networks theory is a valuable lens to investigate doctoral students' career learning and preparation, particularly for non-academic careers.

Research Design and Methodology

Overall, this broad research study explored science doctoral students' professional learning and preparation and their career decision-making processes. We examined these fundamental issues through the perspectives of early and late-stage doctoral students, faculty research advisors, and others with knowledge of doctoral students' educational experiences.

The following research question is the focus of this paper:

What role do students' developmental networks play in their knowledge and beliefs about career options?

We explore this question through the perspectives of early-stage and late-stage doctoral students in the sciences.

Disciplinary focus

The discipline of chemistry was chosen as a site to study students' professional learning because many of the general concerns in doctoral education have been well documented in chemistry (ACS, 2012; Caserio et al., 2004; Council for Chemical Research, 2011; Kwiram, 2006). Chemistry, while a foundational scientific discipline, has become increasingly interdisciplinary, with the bulk of job growth in emerging fields such as biotechnology (ACS, 2010). Additionally, two thirds of chemists work outside academe, primarily in industry, government, or entrepreneurial ventures (ACS, 2010), and chemists are less interested in academic careers than scientists in other disciplines (Sauermann & Roach, 2012). In fact, chemistry doctoral students' interest in the professoriate has been shown to decline during the course of their graduate studies (ACS, 2014). Because of the breadth of career paths available to doctoral chemists and the increasingly interdisciplinary nature of chemical research, chemistry was an ideal discipline in which to study doctoral students' career preparation and selection processes.

Research design

This study consisted of two phases, an initial mapping study followed by in-depth case studies of three departments. In the mapping study, we investigated the top 60 US chemistry departments to determine which departments and institutions had engaged in doctoral education reforms consistent with prior research and recommendations. In the mapping phase, we sought to explore and define the extent of such reform by determining which departments had engaged in any type of reform and what types of activities they may have undertaken. Mapping was an iterative process, an inductive qualitative research method used to gather data about a subject in context. We collected and analyzed departmental data in tandem. Early data provided us with an increasingly

precise understanding of the nature of reform in departments and allowed us to refine later investigation.

We believed that reform-oriented departments were more likely to engage in innovative educational practices that may better prepare students for a range of careers and, thus, would make better sites for in-depth case studies. To understand how U.S. chemistry graduate departments engaged with reform, we first conducted a thorough literature review, reviewed department websites, and sought advice from over a dozen chemists and nationally recognized experts on graduate education reform. While there is no standard definition of doctoral reform, we turned to reform-oriented recommendations in the doctoral education literature to operationalize doctoral reform. Thus, we assessed departmental or institutional opportunities for teaching preparation, formal mentoring programs or training for mentors, industry seminars and internships, graduate student support groups, and doctoral student training in communications, leadership, or management skills. We then conducted interviews with department chairs, graduate program directors, and experienced faculty members of fourteen departments that appeared to have engaged in curricular, pedagogical, or programmatic reforms. This first research phase explored departments' challenges and concerns in doctoral education (Loshbaugh, Laursen, & Thiry, 2011).

In this way, the mapping study stood alone as a descriptive study of doctoral reform in highly ranked US chemistry departments (Loshbaugh et al., 2011), yet we also used the findings to inform our selection of case study sites. From the mapping study, we chose three departments for deeper study. This number allowed us to examine similarities and differences across reform-oriented departments, yet also allowed us to fully investigate the distinctive context of each site. Although qualitative research is inherently exploratory and descriptive and not usually designed to be generalizable, the inclusion of only three institutional sites does hamper the wider applicability of our findings.

Departments were chosen based on a number of factors, including student diversity, high levels of interdisciplinary research, positive departmental climate, and prior participation in doctoral reform initiatives. We measured student diversity by analyzing public data on doctoral degrees awarded in chemistry by individual departments from the Integrated Postsecondary Educational Data System (IPEDS) of the U.S. Department of Education (National Center for Educational Statistics, 2011). We conducted analyses to identify departments with above average proportions of women and students from U.S. minority groups that are underrepresented in the sciences (e.g., African Americans, Hispanics, and Native Americans), seeking departments with higher levels of diversity or those on an upward trajectory in the graduation rates of women and underrepresented minority students. We assessed levels of interdisciplinary research by analyzing department websites to identify faculty with interdisciplinary research projects or dual departmental appointments, and to ascertain whether interdisciplinarity was featured in the department's self-presentation. We determined that a department had high levels of interdisciplinary research if multiple faculty members had dual appointments, multiple interdisciplinary research grants were housed within the department, and the departmental website emphasized interdisciplinarity. Finally, we assessed departmental climate according to mapping study interviewees' perceptions of the climate in their departments, seeking departments with consensus among interviewees that the climate was positive for faculty, staff, and students. Study sites were all relatively selective graduate chemistry programs at research-extensive universities. Two of the sites were public universities and one was private. The sites were located in the Midwest, Southern, and Eastern US.

Research methods

During campus site visits, researchers conducted open-ended, semi-structured interviews with participants. Semi-structured interviews offer systematic and consistent qualitative data collection by combining the flexibility of unstructured interviews with the directedness of surveys or struc-

tured interviews (Schensul, Schensul & LeCompte, 1999). The interview protocol contained a core set of open-ended questions that were based on literature reviews and our research questions. However, topics could be addressed in the order in which they came up during the interview and emerging themes were expanded and explored through probes or follow-up questions (Schensul, Schensul & LeCompte, 1999). In this way, semi-structured interviews allowed for much deeper exploration of key constructs than structured interviews or surveys, while maintaining the consistency necessary to compare themes across the entire data set. Interview protocols addressed participants' prior career paths, future goals, and key career decision-making points; advisory relationships; professional development opportunities available in the department, on campus, and elsewhere; and the sources of students' learning—both inside and outside the department—about careers and being a professional in the scientific community.

Despite the advantages of interviews for capturing rich and detailed information, interviews also have drawbacks, especially when they are the sole means of data collection. Interviews elicit participants' self-reports and may not be as effective as frequent observation to investigate interactions, social and cultural processes, or everyday behaviors. To account for these shortcomings, multiple interviewers conducted and analyzed interviews because analyst triangulation is one of the primary ways to improve the robustness of qualitative research and reduce any potential bias from a single analyst (Denzin, 1978). Additionally, many students, faculty, and staff were interviewed in each department to explore issues of interest from a variety of perspectives. In this way, participants' self-reports were triangulated with the reports of other individuals (i.e., triangulation of sources) and a more comprehensive portrait could be drawn of doctoral education at each site and across sites (Denzin, 1978).

In the summer and fall of 2009, teams of two researchers conducted week-long site visits to each department. Prior to the site visits, departmental graduate education staff provided detailed lists containing doctoral students' names, e-mail addresses, entry year, sub-discipline, advisor, gender, and race/ethnicity. Stratified samples of students were drawn from these departmental records to achieve a representative sample of sub-disciplines, doctoral stage, gender, and race/ethnicity. Students were divided into early-stage and late-stage categories. Early-stage doctoral study—or phase II of doctoral study as defined by Gardner (2010a)—spans the time from entry to the Ph.D. program to achieving candidacy status, is a time when students choose a doctoral supervisor, gain research experience, and become academically and socially integrated into the department. Late-stage doctoral study—or phase III as defined by Gardner—involves deeper immersion in research, changing relationships with peers and faculty, and greater focus on life after graduate school.

We over-sampled late-stage students (phase III) because they were more likely to be considering career options and developing a professional identity (Gardner, 2010a). Additionally, women and underrepresented minority students were over-sampled to ensure that their perspectives would be included in the study. Departmental chairs, graduate staff, and key university administrators were also invited to participate. The response rate by institution ranged from 50-70%. All interviews were conducted individually, with the exception of five focus groups held with early-stage (phase II) doctoral students. The digitally recorded interviews were 45-75 minutes long and each was transcribed verbatim and submitted to *NVivo 9* qualitative software for analysis.

Analysis methods

To analyze the interview data, we used domain analysis techniques developed by Spradley (1980). Three researchers reviewed transcripts, met regularly to discuss themes in the data, and developed the codebook in an iterative process. In this iterative process, codes were first generated inductively based on emerging themes and patterns based on our participants' reports, called “folk” domains by Spradley (1980). However, we also generated domains that were deductive in

nature, or “analytic” according to Spradley (1980). In other words, analytic categories are domains that reflect theories, hypotheses, or constructs of interest to the researchers. For instance, we were interested in developmental networks and their influence on students’ career paths, and thus created domain categories related to students’ networks. The codes generated within these domains were largely inductive, based on students’ reports about their developmental networks and sources of career learning. Additionally, we shifted from a primarily inductive approach to a more deductive approach as analysis progressed. As codes and domains emerged, we tested the categorical scheme against the existing data and generated hypotheses that we checked across the entire data set (Merriam, 2009). Some of the domains identified in our analysis were career decision points, professional development needs, sources of career learning, career planning and activities, and *faculty advising behaviors and values*. We examined patterns by gender, race or ethnicity, doctoral stage, and institution. Ongoing discussions among the researchers helped to refine category definitions and to assure construct validity. Comparison of researchers’ interview coding enhanced inter-rater reliability.

The analytic domains discussed in this paper include developmental networks, possible selves, and agency. Using domain analysis procedures, we operationalized the concept of developmental networks by coding transcripts for students’ references to role models, family of origin, and personal or professional relationships and activities that influenced students’ career knowledge, beliefs, or choices. The concept of possible selves was operationalized in terms of students’ knowledge (or naiveté) about career options, their beliefs about possible careers, and the career preparation behaviors that allowed them to try out certain professional roles (e.g., internships, trainings, jobs, etc.). We operationalized agency in terms of the extent of students’ activity or passivity in planning and preparing for careers. The collective codes comprising these domains were examined and discussed to explore the linkages between concepts.

Demographic Characteristics of Participants

The data set for this study consisted of 95 interviews with 104 participants. Interviews were conducted with 32 late-stage students and 25 early-stage students. The demographic characteristics of student participants are summarized in Table 1. The racial/ethnic distribution of the student sample was representative of the distribution of students within the participating departments. This paper draws on interview data from early-stage and late-stage doctoral students. Interviews with 47 departmental faculty, staff, and administrators are not discussed in detail in this report but are mentioned when they offer context for, confirmation or triangulation of findings.

Table 1. Gender and racial/ethnic distribution of doctoral student sample, by graduate career stage (n=57)

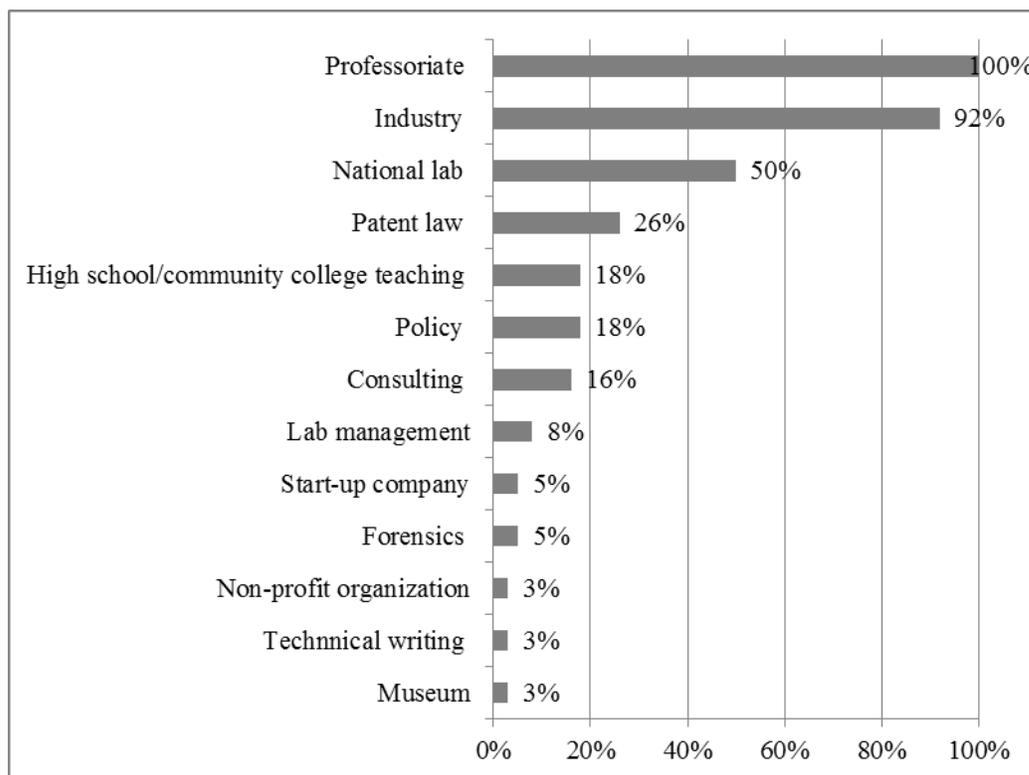
	Gender		Race/Ethnicity			
	Women (#, percentage)	Men	Caucasian	Asian- American	African- American	Hispanic
Early-stage students (n=25)	17 (68%)	8 (32%)	19 (76%)	2 (8%)	4 (7%)	0
Late-stage students (n=32)	18 (56%)	14 (44%)	25 (78%)	0	5 (16%)	2 (6%)

Research Findings

In this section, we describe doctoral students' awareness of career options and the sources of their learning about career paths. We discuss the influence of their developmental networks, particularly the range of their networks, on their career knowledge and beliefs, including their ability to envision themselves in potential careers. We then discuss the role of individual agency in students' career planning and decision-making processes.

Doctoral Students Lack Awareness of Career Options

A fundamental aspect of preparing for and selecting a career is the ability to envision oneself in that future career. Chemistry doctoral students, in particular, must learn about non-academic career paths because two thirds of Ph.D. chemists work outside academe (ACS, 2010). Thus, one might expect that many chemistry doctoral students would display an awareness of the array of non-academic careers available to them and might be actively weighing the advantages or drawbacks of these potential career paths. Figure 1 displays the frequency with which individual student interviewees mentioned various career options, in response to an interview inquiry about the career paths available to Ph.D. chemists.



**Figure 1. Doctoral students' awareness of career paths
(percentage of individual interviewees, n=44)**

Our interviews with students demonstrated that while many knew of basic career options for chemists, such as professor or industry researcher, most had little knowledge of specific career paths beyond those two fundamental options. Awareness of academe and industry was nearly universal: 100% of students mentioned academe as a possible path, and 92% of students noted industrial career paths. However, knowledge of potential careers fell sharply from there. Only 50% of students mentioned US government research labs and 26% mentioned patent law. Fewer than 20% noted careers in policy or consulting, or other "alternative" career options, such as

technical writing. In the most worrisome cases, a few interviewees lacked awareness of careers that were appropriate for their educational level. In fact, about 10% of late-stage students expressed interest in careers which did not require a graduate degree, most frequently forensic science careers that often require only an undergraduate degree, as noted in the following statement from a late-stage student.

There's always been some fields of chemistry that have interested me but I don't know if it would really take a PhD to do them. Like food chemistry, I've always found to be intriguing, and forensic science. But the more and more people you talk to about it, they're like, 'You can pretty much do that with a bachelor's level degree. You don't need a doctorate to do forensic science.'

Students showed limited understanding of professional work responsibilities and lifestyles, even for careers that they knew were possibilities for doctoral chemists. Industry is the most common career path for chemists (ACS, 2010) and was a widely recognized path in our study, but not well understood by students. Students reported that they had little conception of what their future work life might be like in industry or how to best prepare for such a career during graduate school. They also did not know about industry career tracks—such as choices of management versus research positions—or differences among company types or sizes. Additionally, only 5% of students reported that they had actually tried out industry research through an internship experience. In a focus group interview, an early-stage student described the lack of opportunity to learn about the nature of work in industry careers.

I actually kind of want to go towards industry. I'm not sure if I'd want it to be a pure research experience, but I'm not sure about what other opportunities are available. I definitely want an opportunity at some point to see what industry is all about. Because you just hear industry all the time, and I don't really know what that entails.

A contributor to this lack of career information and awareness was students' limited access to role models. Students had role models in academe, but lacked professional models in other careers. The following comment is representative of many students, both early- and late-stage, contrasting their abundant access to role models within academe to their limited access to industry role models.

Of course there's academia, you see it, because that's what everybody you're learning from has done. Beyond that, I've picked up a little bit on industry. No one's ever really said what industry is. Even today I still haven't had anybody sit down and say what "industry" for a chemist is. They just say, 'It's industry, it's that other thing that chemists do besides going into academia.'

A sizable minority, nearly 40% of late-stage students, expressed interest in learning more about or pursuing the so-called "alternative" career paths for scientists, those outside industry research or the professoriate. Many of these students had decided that they did not want to focus on research in their careers, but they were uncertain as to how they might use their degrees. For example, a late-stage student described her professional path: she had decided she did not want to be a bench chemist and she was interested in communicating science to lay people, yet she lacked specific information about the potential careers in which she could use that skill. Consequently, she attempted to explore a variety of career paths without real knowledge of what those paths entailed and whether they would be a good fit for her skills and interests. She described this chaotic process of exploring potential careers during the job search process.

I'm still kind of trying to figure out [what to do after graduate school]. I've come to realize that I probably don't want to be a bench chemist if I can avoid that, so

I've been looking at alternatives. I interviewed with a consulting firm last year. I'm currently trying to apply for potential government positions. I've looked at law firms—I'm kind of open. But I realize I want to be the go-to scientist for someone who's not a scientist.

Students generally learned about the professoriate by drawing on their faculty networks and observing their doctoral research advisor. But students with other career interests had difficulty exploring career paths where they had no social connections. An early-stage student remarked:

I think everyone kind of sees it, we know what it looks like to be an R1 professor [i.e., in a research-extensive university]. Those of us who went to small liberal arts colleges know kind of what it looks like to do that. But not very many of us know what's it like in industry. Or in a national lab. Or, working in the policy side of things, or it's hard to see how to do that. How to—'Okay, I have a Ph.D., I don't want to do this anymore—how do I get from here to there?'

Unlike their peers, a few students ($n=6$) with "alternative" professional interests had a more advanced understanding of their future career paths, primarily because they were able to cultivate developmental networks in these careers. As an example, four late-stage students conveyed interest in non-tenure-track faculty positions that they had discovered through their research or teaching work in graduate school. One student recounted how she had consulted with a lab manager who was an expert in crystallography for her dissertation research. Subsequently, she became interested in this type of position as a future career. Through her interactions with the crystallographer, she learned about the work responsibilities and lifestyle of a lab manager.

Short-term connections could also be influential for students interested in alternative careers, at least in terms of exposing students to career possibilities. A late-stage student described the process of learning serendipitously about policy careers from a science policy expert who gave a talk in her department.

So [the speaker] was here giving a talk, and he works in D.C. as a science advisor. I was like, 'Science policy? Who even knew? That's really interesting.' So I've started paying attention more now to the options that are available I think, 'cause that time is nearing.

However, these short-term connections did not always offer students the depth of understanding about the nature of practice in alternative careers provided by long-term relationships with professional role models.

The Range of Students' Developmental Networks

To address their gaps in career knowledge, students drew on many sources of information, with varying degrees of success. In interviews, we asked students where they had learned about doctoral career paths in their field. Figure 2 details the percentage of individual student responses naming specific sources of career information.

Students' most common source of career information was peers. Our data suggest that students primarily learned about future professional roles from observing their peers in the job search process—peers who probably gained their own career information in the same way. A student described the "word of mouth" process of learning about careers through peer networks, noting that it was not a helpful process for learning about industry and non-academic careers.

Industry. That would probably be the career that I've had the least exposure to. While I've heard of a few people that have gone into industry and do different things, I haven't really sat down and talked with them about what they're doing,

mostly just because they are several years older than me and kind of work in their jobs out there. It's more of just by word of mouth, I hear, 'Oh, so and so is working at this company now and they just got promoted to group manager.'

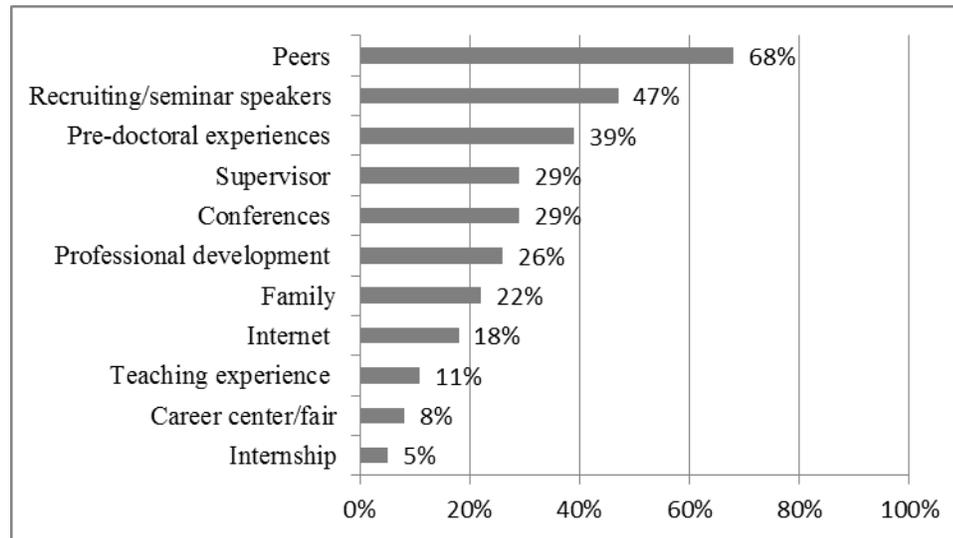


Figure 2. Sources of career information for Ph.D. students (percentage of individual interviewees, n=44)

In addition to their peers, students drew on other sources of career information. Nearly half of students mentioned that they learned about careers from opportunities provided by their departments, such as seminar speakers or recruiting talks by industry representatives. For instance, a late-stage student commented on how he had learned about career possibilities from speakers in a departmental workshop series.

The department's career enhancement series, they show you the options. They bring in industry people who talk about industry. They'll bring in outside academic people to talk about academics. They'll bring in someone from a government lab to talk about government positions. So, that really helped clarify the pros and cons of each position from people on the inside.

Although each campus had a career development office, few students reported that they had used this campus resource. Ironically, a student on one campus reported that she had never used the campus career office because she hadn't known any other students to use it.

To some extent, programming that supplemented students' research and coursework helped to partially fill the gaps in students' limited knowledge of careers. Two campuses in our study had active and long-standing Preparing Future Faculty (PFF) programs (Gaff, 1994) and all three departments held career seminars and occasional skill-building workshops. Additionally, some students received mentoring or training at conferences. Still, departmental, professional society, and institutional career resources were often targeted toward careers in academe, or to a lesser extent, industry. These offerings were also underutilized by students, as only one quarter of students reported they had participated in such professional development opportunities. Nevertheless, professional development opportunities were beneficial for students interested in the professoriate, developing students' pedagogical skills and knowledge, and introducing them to career opportunities they were unaware of or had not considered, such as community college teaching.

Nearly a quarter of students mentioned that they drew on familial networks for information about working in scientific fields. But students with no familial role models were more likely to be ill-

informed about professional roles in the sciences. Gender did not play a role in access to familial role models. However, underrepresented minority students and those who had been the first in their family to go to college reported less awareness of career options. In part, these differences stemmed from variability in students' access to familial networks that are connected to science. For instance, nine out of 34 (26%) Caucasian interviewees reported that their parents in scientific or academic careers were a source of learning about doctoral careers, while only one out of nine underrepresented minority late-stage students (11%) discussed familial role models in science. Students without familial networks had less information about science careers, as suggested by the following comment.

I have no idea [about career options]. (LAUGHS) I have no clue. Which is scary. Because I don't really know anyone... that has a PhD in chemistry, other than the people around here. I don't know anyone in like "the real world" with a chemistry PhD, or like any of my parent's peers that I could talk to about it. So, I have no idea what to expect.

Doctoral advisors are often thought to be students' most important source of career information, yet in this study, they were the fourth most frequent source of career information for students, with high variability in the quality and utility of this advice. Less than one third of students reported that they learned about careers from their current advisor. Students often did not seek information from their advisors because they perceived them to be unhelpful for their career development. Indeed, nearly one third of students commented that their advisors were unsupportive of any professional activities that took them away from research. These students often felt uncomfortable discussing such opportunities with their advisors and did not feel that they were "allowed" to participate in them. For example, one student had identified a summer industry internship opportunity in Europe that fit her professional interests and goals, yet her doctoral advisor required her to stay in his lab over the summer. Other students described trepidation in telling their advisors about their desire to participate in professional development opportunities for fear that their advisor would not consent to their participation.

Those in our study who *did* receive career information from their advisors found them to be helpful, supportive, and influential to their career preparation. In the following comment, an early-stage student described her advisors' interest in her career goal of government research, contrasting him with other, less-supportive advisors in her department.

When I started working with him, one of his first questions, was, 'Well, what are you interested in doing in the future?' Because he's definitely interested in preparing us for wherever we wanna go, and he knows where I wanna go, and he's very supportive of that. And we just talked about it again about a month ago, because he was trying to set up the whole internship thing for me. He's good at introducing us to people that he thinks will help us along the way. He's very supportive of going to conferences, which is nice. Because, again, some advisors won't do that because they think it's a waste, because you're gone for a week from the lab.

Although some interviewees learned about career choices from their doctoral advisors, many in this group of students still did not observe their advisors in all of their multi-faceted roles as faculty member and scientist. Similar to Austin's (2002) findings, students reported that many aspects of the professoriate were unclear to them, including grant writing, committee and service work, and other governance or entrepreneurial functions of the faculty role, as described in the following comment.

I see a little bit of [the life of a professor] although I kinda see [my advisor] as an in-between kinda guy, 'cause he does have businesses that he runs, and he also

has the lab at the university, and so he's a little bit everywhere. And so, of course, I don't really observe him, and it might be a good idea, to try to observe him in his role as the administrator of his business versus his role in our group meetings when he's working with his grad students. Maybe that's a good idea, but, I really don't know exactly how it works for a PhD at that level, between academia and industry.

In conclusion, students reported that peers were their most frequent source of career information, especially observing peers during the job search process. Against common wisdom of many in academe, students relied on their advisors for career information to a much lesser extent than on peers.

The Role of Agency in Students' Career Planning

Late-stage students often had one of two polarized reactions to their lack of knowledge about career options, either anxiety or apathy. For instance, a student who was very active in scientific presentation and professional networking to advance her scientific research expressed concern about her lack of career awareness. Her comment was typical of statements from students who had successfully navigated graduate school and achieved its major milestones, yet who were clearly anxious about their lack of understanding of career paths for doctorates.

It's all sort of a black hole. Which as I get closer and closer to writing my thesis and graduating, I feel like the black hole is gonna swallow me.

Anxious students were more likely to engage in career exploration activities than apathetic students, yet they often did so in an incoherent or haphazard way as demonstrated by the earlier description of the student who had pursued a variety of non-academic career options without a coherent plan or real knowledge about those careers.

On the other hand, most students were more apathetic about their lack of knowledge about careers, and thus delayed career preparation and selection until near or after graduation. Many of these students planned to pursue temporary postdoctoral research opportunities without a rationale for how these positions may advance their career or fit into a career trajectory. The following comment from a student within a year of graduation is representative of the perspective of these students who felt no urgency to prepare for careers until the end of graduate school.

I don't know tons, but I know there's plenty of options in academia, industry, government work. I dunno. There's kind of a lot out there. I haven't gotten to the point yet where I'm actively trying to search for jobs, so I'm not quite sure if I know as much as I should.

While some students—mainly those students who had already selected a career—actively and strategically cultivated a wide range of developmental networks and sought information about future careers, nearly two thirds of students reported no systematic strategy for learning about or preparing for careers. Many of the former group were interested in the professoriate or had stumbled upon a desirable “alternative” career in which they were able to cultivate developmental networks and had clearly charted a course toward achieving their goals. On the other hand, many of the latter group of non-systematic students did not rely on personal, developmental networks at all in their career selection process and looked to the internet or departmental emails for information. However, these distant and fleeting connections did not allow students to learn about more nuanced details of these career paths, as noted in the following comment from a late-stage student.

I [learned about careers] mostly from just looking at the internet and getting information that way. And not from necessarily talking to other people. Like if you

go to *Science* or ACS [the American Chemical Society], their websites have career sections. There's a lot of information there [about academic careers]. There's some information about different career paths if you want to be in industry. I haven't seen anything really specific about that or a large amount of information.

Thus, the majority of students did not have a clear and coherent strategy for learning about career choices and were not lucky enough to stumble on the right option. Consequently, most students put off the career preparation process until the end of graduate school and then made frantic efforts to prepare themselves for a career as they approached graduation. A faculty member observed:

Do I think students could be better informed? Absolutely. Do I think it's partly their fault? Absolutely... The analogy is everybody's cramming for exams. How do you get people to not cram for exams, and put a little time in for reflection so that they can ask the next question before the exam comes?

In conclusion, students' professional preparation was often hampered by a lack of knowledge about career possibilities. In particular, students lacked knowledge and access to role models for the array of non-academic careers available to doctoral scientists.

Discussion and Implications

Calls for reform in doctoral education over the past few decades have focused on students' lack of preparation for careers (Golde & Dore, 2001; Nerad et al., 2006; Nyquist, 2002; Taylor, 2006; Wendler et al., 2012), often citing a dearth of training opportunities in teaching, communication, and other essential skills. In this study, departments, institutions, and professional organizations provided some supplemental opportunities for doctoral students to learn about careers and develop non-scientific skills. But our study has uncovered other factors underlying students' general lack of preparedness for life and work after graduate school. Career and skill-building workshops, seminars and other professional development opportunities are only meaningful to students if they have a broad knowledge of the types of careers available to doctorates and an understanding of the skills, attitudes, and behaviors required in those careers. When students lacked this foundational understanding of potential career options, they either did not pursue available opportunities, or they overloaded themselves with a haphazard assortment of trainings and activities that often left them no further along the career decision-making path than when they started. Therefore, doctoral students' career development must *begin* with a firm knowledge and understanding of the variety of careers suitable for doctorates in their field.

This study also challenges the taken-for-granted notion that doctoral advisors are, and should be, students' most important source of career development. These types of taken-for-granted practices are structured into doctoral education without evidence of their outcomes or effectiveness (McAlpine & Amundson, 2012). For one, advisors are often unaware of the importance of peers and informal socialization in doctoral students' professional development (Gardner, 2010b). Indeed, our data affirm that students drew on a broad range of developmental networks to learn about and prepare for careers, in both positive and negative ways. Rather than depend solely on their advisor for career information, many students cultivated a range of developmental networks for career guidance, including peers or short-term connections from professional development seminars or workshops. Yet students often constructed these networks in a disorganized and unhelpful way as there was no systematic process for them to learn about potential careers and to build the requisite skills to succeed in the workforce.

Recent research has highlighted the significant role that peers play in doctoral students' developmental networks (Jazvac-Martek, Chen, & McAlpine, 2011). Similarly, our data indicate that stu-

dents often turned to their peers for career information—yet these peers were largely unaware and uninformed themselves, especially about the so-called “alternative” careers. Given the lack of systematic sources for students’ career development, the void was often filled by rumor, hearsay, and word of mouth from peers. Thus, a cycle of misinformation perpetuated itself as students had no clear way to develop the wide range of networks that they needed to prepare for careers. Additionally, students differed in their interest in and ability to cultivate helpful developmental networks that extended beyond their advisor and peers. If students were unable to learn about and try out possible selves, they did not feel that developing an array of professional networks was a useful endeavor for them, and they simply delayed the career preparation process. Students without familial or prior role models in the sciences—often underrepresented minority students or those who had been the first in families to earn an undergraduate degree—had an even greater need for explicit career information.

Students’ lack of awareness about careers and their subsequent under preparation was confounded by the perceptions of a sizeable minority of students that their advisor was unsupportive of their career exploration, particularly for non-academic careers. These perceptions were often grounded in the belief that the advisor “needed” the student for his or her own research work and would not permit the student to seek supplemental opportunities. Lack of advisor support may be particularly detrimental to students interested in preparing for non-academic careers because advisors and general departmental cultures often value academic careers over teaching or administrative careers (Baker & Pifer, 2014; Thiry et al., 2007). In this respect, our findings support the recommendation in a recent American Chemical Society report that graduate student funding should be decoupled from faculty research grants (ACS, 2012). The current US model of funding for STEM graduate education through grants to faculty to support graduate research assistants privileges the need for faculty research productivity over doctoral students’ educational needs and creates organizational contexts that can impede students’ access to professional preparation opportunities.

Clearly, the majority of students in this study had only partial knowledge of the range of career paths available to doctoral chemists. They were also unable to observe role models in potential careers, with the exception of the role of professor in a research university, and thus most students lacked basic knowledge of non-traditional careers, such as scientific policy expert, entrepreneur, or consultant. The few students who had selected and were actively preparing for alternative careers had stumbled upon these options by happenstance, rather than through a thoughtful career development process. Without the opportunity to observe or interact with practicing professionals, especially in “alternative” careers, students were unable to learn about and prepare for these careers and, thus, try out possible selves.

Our findings highlight several reform efforts that should be undertaken within scientific doctoral education. First, students are ultimately responsible for their own career paths, and they must actively pursue a variety of networks and role models to allow them to try out possible selves. Our data suggest that developmental networks do not have to be intensive or extended in scope or duration to be helpful to students. Short-term connections fostered through workshops and seminars helped students to learn about the variety of career possibilities and to consider various options for fit, though in a limited way. However, students must seek out and participate in these opportunities.

For departments and institutions, our data highlight the importance of systematically expanding professional learning opportunities so that students are exposed to career paths and provided with information about the knowledge and skills required in those careers. O’Meara and colleagues (2014) described steps that departments can take to augment students’ agency in career advancement, such as encouraging multiple career paths, providing supplemental learning opportunities, providing information resources, and facilitating networking and mentoring. In this study, departments, institutions, or professional societies had undertaken some of these career develop-

ment activities, such as offering career workshops, seminars, and guest speakers. Nevertheless, our informants noted that these forums were not as well attended as they could have been, and many students claimed that they did not know about them. Additionally, many of these opportunities were geared for academic paths. Instead, these opportunities should span the spectrum of career paths and be provided in a variety of venues. These valuable opportunities must be creatively marketed to students and advisors and students should be encouraged to take advantage of these short duration, yet informative, opportunities.

Career exploration needs to begin earlier than the late-stage scramble that we so often encountered in this study. All students should be encouraged early in their studies to cultivate a range of developmental networks and pursue a variety of opportunities to learn about careers and to build professional skills. Students and faculty should view these trainings as integral to doctoral education. Observing peers in the job search process may be helpful in some ways, but students must look beyond their peers if they are to be fully informed and prepared to choose among the breadth of 21st-century scientific careers. Developmental networks that fostered long-term relationships and interactions between students and practicing professionals were most beneficial. However, because peers are such an important source of support for doctoral students, outcomes from these developmental networks might be improved if interested students received training in career-focused peer mentoring or if recent alumni were recruited to share career information with current students.

While students certainly need to take a more strategic approach to their own professional preparation, doctoral educators and others invested in the future scientific workforce surely bear some responsibility for assisting this process. Doctoral education should be a time for exploring a variety of professional roles. Our findings suggest that students need a wide range of networks, beyond peer and advisory relationships, to learn about and try out the full array of possible selves available to them. Professional opportunities, including access to professional networks, must be more purposefully and systematically integrated into doctoral education throughout students' graduate careers.

Our findings help to explain some of the reasons behind the gap between graduate preparation and professional workforce needs that has been described by other researchers. While other scholars have identified the existence of this gap (American Association of Universities (AAU), 1998; Golde & Dore, 2001; Nerad et al., 2006; Nyquist, 2002; Taylor, 2006; Wendler et al., 2012), we have documented some of the interactions and processes that underlie the mismatch. In particular, we have articulated the role of developmental networks (or lack thereof) and other sociocultural factors in exacerbating students' lack of professional readiness. Our findings suggest that improved doctoral career preparation will depend on the actions of graduate students, faculty and departments alike. These lessons should apply widely across science and other disciplines.

Acknowledgement

This research was supported by the National Science Foundation under Award DRL-0723600. All assertions are those of the authors and not of the National Science Foundation.

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Cite as: Grabowski, L., & Miller, J. (2015). Business professional doctoral programs: Student motivations, educational process, and graduate career outcomes. *International Journal of Doctoral Studies*, 10, 257-279. Retrieved from <http://ijds.org/Volume10/IJDSv10p257-278Grabowski0957.pdf>

Business Professional Doctoral Programs: Student Motivations, Educational Process, and Graduate Career Outcomes

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Abstract

The emerging body of research on business professional doctoral programs has focused primarily on the programs' composition and management, offering limited insight into students' motivations and the impact the degree has on graduates and their careers. However, understanding these student motivations and career impacts is valuable for several reasons. In addition to helping future candidates assess various programs and the business professional doctoral degree itself, it can help enrolled students maximize their academic experience and help administrators improve these programs so that they better meet students' personal and professional expectations. To bridge this research gap, this study pursued a mixed-methods approach to glean insights into why people pursue professional doctorates in business, the ultimate personal and professional outcomes of students, and the educational process producing those outcomes. The study revealed that most students entered these programs with a desire for personal or professional transformation, including the possibility of entering academia or a new industry. Moreover, the vast majority of program graduates believed they had experienced such a transformation, often in both professional and personal ways. Further, while important to personal growth, alumni perceived that certain program elements—such as the student networks they created and non-research related coursework—had little to no effect upon their career and viewed their research and the research process as far more important to their professional development. Based upon these findings, the researchers propose a comprehensive process model to explain the personal and professional factors and outcomes for graduates of business professional doctoral programs. They also suggest practical steps that students and administrators can take to improve the business professional doctoral educational experience.

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Keywords: Professional doctorates, careers of professional doctoral graduates, motivations of professional doctoral students, doctoral education process

Editor: Victoria Wise

Submitted: November 25, 2014; Revised: June 28, 2015; Accepted: July 27, 2015

Introduction

Professional doctorates have existed for decades in many disciplines, including medicine, law, psychology, engineering, and education (Gill & Hoppe, 2009). Indeed, professional doctorate offerings are currently expanding. Possible reasons for this growth include increased demand from industry in a knowledge-driven economy (human capital theory), conflict and competition in higher education, credentialism (that is, as the number of people with a certain credential increases, the credential's value in the labor market decreases), and the corporatization of higher education (Servage, 2009).

Although business professional doctoral programs are relatively new, such programs are emerging around the world. In early 2012, the Association to Advance Collegiate Schools of Business (AACSB) created a task force to determine global trends and future needs of business doctoral education. The resulting report revealed a significant amount of diversity in business doctoral education models, intended outcomes, and purposes worldwide. The study found that, while more than 2,300 doctoral students at AACSB-accredited business schools successfully defended their dissertations in 2012, little quality information exists about potential career paths, the benefits of business doctoral education, or the ideal profile of successful candidates for these programs (AACSB International, 2012). This information is critical to helping potential students assess the various programs offered, as well as compare the business professional doctoral degree with other degrees, including a traditional Doctor of Philosophy (PhD). Further, the study's findings can help students maximize their business professional doctoral experience and program administrators better tailor programs to meet students' personal and professional needs.

Existing Research

Building on the need for additional research, this study aimed to understand why professionals pursue business professional doctorates, illuminate the process students undergo to receive these degrees, and determine the ultimate personal and professional outcomes of graduates.

Student motivations

In general, students enter doctoral programs for a variety of intrinsic and extrinsic reasons (Brailsford, 2010). For doctoral students of all types, vocational concerns appear to be outweighed by personal development and general intellectual interests, including acquisition of research skills, interest in the research area, the joy of study, and simply acquiring the degree in itself (Leonard, Becker, & Coate, 2005).

Wellington and Sikes (2006) found that biography—described by Fenge (2009, p. 171) as “who I am and what I do”—was the crucial factor in the decision to pursue a doctorate. Their research also found that this decision was motivated and informed by a web of reasons, including confirming or bringing about structural change to the person's identity. Further, Fenge (2009) pointed out that, while the split between intrinsic and extrinsic factors is helpful in analyzing motivational factors, these motivators are often blurred, with people sometimes stating an extrinsic reason for pursuing the advanced degree (e.g., a promotion or the need to keep their job), while also pursuing the degree for intrinsic reasons (e.g., making others proud or being seen as a good provider for their family).

As for professional doctorates in particular, Scott, Brown, Lunt, and Thorne (2004) find that the primary motivation of professional doctorate students varies by the identity they wish to project and enact; the relationships, beliefs, and values that are important in their lives; and the stage at which they find themselves in their career. In general, Scott et al. (2004) reveal three broad categories of motivators: two extrinsic, based on where professionals are in their career, and one intrinsic. Extrinsically, people early in their careers view the qualification as a professional initia-

tion and a catalyst for career development and accelerated promotion. More established individuals on the other hand see the degree as a professional continuation and a way to enhance their career development both upwards and sideways. Intrinsically, both those early in their careers and more established professionals were motivated by several factors including personal development; the identity they wish to project and enact; and, their key relationships, beliefs, and values.

Expanding upon these findings, Gill and Hoppe (2009) identify five desires that could—individually or in combination—lead an individual to pursue a doctorate: entry into academia, professional development, professional advancement, entry to a new career, and self-enrichment.

Finally, as Wellington and Sikes (2006) and Neumann (2005) describe, part of the decision to pursue a professional doctorate rather than a PhD includes such factors as;

- the social interaction provided by most professional doctorate programs' cohort structure;
- the structure present in these programs;
- the link to professional practice;
- the prospect of investigating a specific business problem;
- the ability to continue working while pursuing the degree; and
- the time required to earn a traditional PhD, coupled with the low likelihood of actually receiving one.

Indeed, a recent study found that only 57% of doctoral students in the United States (U.S.) complete their programs within 10 years of enrollment (“The disposable academic,” 2010).

Education Process

As Weidman (2006) points out, educating professional and graduate students is a socialization process wherein prospective students enter with certain motivations and expectations, go through a learning and socialization process, and emerge with particular personal and professional outcomes. Weidman, Twale, and Stein (2001) describe this course as a “perilous passage”—an interactive I-E-O (input, environment, outcome) process involving the graduate academic program's *normative context* (teaching, research, service); *socialization process* (interaction, integration, learning); and *core elements* (knowledge acquisition, investment, involvement).

To build academic programs that can successfully educate and socialize students, institutions throughout the world have developed various professional doctoral programs that differ in form, function, and desired outcomes from the traditional PhD. Whereas both traditional PhD and professional doctoral programs aim for students to acquire the skills needed to design and carry out a research project that will make an original contribution, the PhD student focuses on contributing to knowledge in a particular discipline, whereas the professional doctorate student focuses on contributing to knowledge of practice in the business management field. Further, PhD programs' career focus is often on entry into academia, whereas professional doctoral programs claim to focus on students' career needs in general (Bareham, Bourner. And Stevens, 2000). Indeed, of the 72 business professional doctoral programs they reviewed, Banerjee and Morley (2013) found that only three universities mentioned academia as a career objective for their programs.

Business professional doctoral programs themselves also vary widely in form, function, and outcome, including the degree designation a graduate receives. These degrees currently include Executive Doctorate of Management, Doctorate of Business Administration, Executive Doctorate of Business Administration, and Doctorate of Professional Studies (Gill & Hoppe, 2009). Further, the programs utilize a variety of teaching and learning methods for personal and professional development, including individual supervision, lectures, communication and information technolo-

gies, presentations, independent study, workshops, a residential format, block study, seminars, and action learning (Bourner, Bowden, & Laing, 2001). Still, most business professional doctoral programs accredited by the AACSB have certain commonalities, including a duration of two to five years; research methods courses complemented with content courses; and a requirement to complete and defend a research project, thesis, or dissertation (Bourner et al., 2001; Banerjee & Morley, 2013; Fink, 2006). In addition, many of these programs are more structured than the traditional PhD, utilizing a cohort structure that focuses on enhancing peer support to avoid the PhD's lone researcher syndrome and promote a cross-fertilization of ideas (Neumann, 2005).

Graduate Outcomes

Perhaps because the programs are relatively new, limited research literature exists that empirically measures success outcomes for graduates of business professional doctorates such as post-graduation career paths, income premiums, job mobility, increased employment, and job satisfaction. It thus remains to be discovered how these outcomes align or differ from those of traditional PhDs, where most graduates are satisfied with their post-graduation employment situation but where other career outcomes vary considerably over time, by country, and by industry (Project OECD-KNOWINNO, 2012).

Like traditional PhDs, academia appears to be a career path for many business professional doctoral graduates. In an international survey of 46 part-time business professional doctoral programs, 50 percent of the schools reported that their graduates reached academic positions during or after their programs (Graf, 2014). For both professional doctorates and traditional PhDs, however, academic career paths are now less clear than they once were. From 2005–2009, only 16,000 new professorships were created in the U.S., though more than 100,000 doctoral degrees were granted (“The disposable academic,” 2010). Indeed, in one of the few post-graduation studies of professional doctoral holders, Spain's labor market was shown to not yet value post-doctoral education: doctors of humanities and social sciences (including economics and business administration) reported experiencing low job satisfaction and low expected wages (Canal Domínguez & Muñoz Pérez, 2012).

Methodology and Results

This study employed a mixed-method approach to obtain a fuller picture of the personal and professional motivations and outcomes of business professional doctoral graduates, as well as to illuminate the process of creating these outcomes (Meyers, 2009, p.10; Yin, 2009, p. 8–10).

To encourage participation, the researchers developed a short questionnaire consisting of 12 questions for students and 17 for alumni (see Appendix A). The core survey was designed to capture the respondent's status (student or alumna/us), school attended, expectations upon entering the program, and level of interest in participating in a post-graduate association. For alumni respondents, the survey asked five additional questions: year of graduation, how and to what extent the program had a positive impact on their career, personal fulfillment gained from the program, and current involvement in or future plans for teaching. The survey was an on-line survey so where possible, a sliding scale of 1-100 was used for certain questions to improve respondents interaction with the survey instrument and provide for a greater breadth of answers. The survey was sent electronically to more than 500 students and alumni, distributed by administrators of various business professional doctoral programs throughout the world.

Based on the survey results and guided by the work of Weidman (2006), Scott et al. (2004), and Gill and Hoppe (2009), questions were then developed for two types of interviews: eight in-depth interviews that lasted at least an hour each conducted with graduates of business professional doctoral programs; and 12 shorter interviews with both alumni and students (see Appendix B). These

interviews gave alumni and students an opportunity to share their personal stories and their reasons for pursuing a doctorate. They also encouraged participants to consider the true impact of the degree on their professional and personal lives and let them comment on the program factors that they found helpful or of little consequence to those outcomes.

Survey Results

In all, 167 students and 130 alumni from 12 business professional doctoral programs responded to the questionnaire. Of those respondents, 75% attended programs in the U.S., and 51% of the alumni respondents had graduated within the past two years. Demographic information of gender, age, income, and years of experience, and was not gathered from the survey respondents.

Current students expected their business professional doctoral degree to facilitate their professional development in a variety of ways, but no single expectation stood out. Of the three possible responses—advancement within their current organization, changing companies within their same industry, or changing industries or career focuses—none dominated, with responses averaging 50-60 for each result on a continuous scale of 1–100.

In terms of actual professional outcomes, a somewhat different picture emerged, with 66% of alumni experiencing some change in their careers. Of those alumni who experienced a change, 50% changed career paths or were promoted, while an additional 16% remained in their same professional role but changed industries or companies. 22% of alumni respondents experienced no professional change, remaining in the same position with the same organization. The remaining 12% responded “Other” and provided various explanations, such as being self-employed or in transition (see Figure 1).



Figure 1: Career Transition

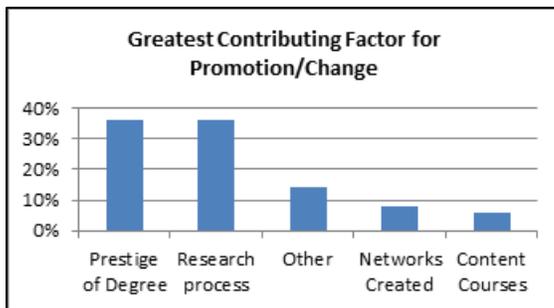


Figure 2: Greatest Contributing Factor for Promotion or Career Change

For alumni respondents who experienced a change, 85% felt their degree somewhat or greatly facilitated their promotion or career change. In defining the greatest contributing factor for the promotion or change, prestige of degree (36%) tied with research process (36%), including the dissertation process, academic writing skills, and research methods learned. Other factors reportedly contributing to career change included networks created through the program (8%), content courses (6%), and other (14%), which included factors unrelated to the professional doctorate (see Figure 2).

Regarding research and publishing capabilities post-graduation, 47% of graduates reported having published, co-published, submitted, or actively worked on at least two or three articles. The strongest reasons for those not researching and publishing were simply a lack of time (72 on the 1–100 scale), lack of access to a network of fellow researchers (52), little or no access to library or research facilities (49), and other (75), including social isolation, burn out, and problems accessing research data in their field.

When asked to indicate the extent to which their program benefitted them professionally and personally, alumni said their professional business doctorate and program participation helped them both personally and professionally. Results showed that the personal benefit was greater, with an average of 80 for personal benefit and just over 70 for professional benefit on a 100-point scale (see Figure 3). Student respondents averaged 66 for personal fulfillment or reasons other than professional development.

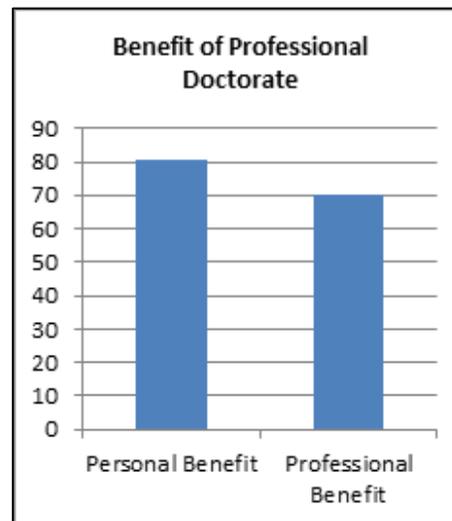


Figure 3: Benefit of Professional Doctorate (Alumni)

Teaching figured prominently into career expectations and outcomes of business professional doctoral students and graduates, but was only a moderate motivator for students. When asked the extent to which they wanted their degree to facilitate their entry into academia, the students surveyed averaged only 57 on a continuous scale of 1–100. This contrasts with the actual results among alumni, with 74% either currently teaching or planning to teach in the future and 24% currently teaching full-time at the university level.

Interview Results

To further support the research and learn more regarding the motivations, career outcomes, and personal stories of the students and alumni, the research included a qualitative component of in-depth interviews. The interviewees disclosed a variety of reasons for pursuing a professional doctorate degree. Intrinsic motivations included intellectual challenge, self-enrichment and transformation, personal pride, and intellectual stimulation. Extrinsic motivations included career advancement; professional development through learning rigorous new research methods and honing skills (one respondent, for example, expressed a desire to “sharpen my game...since what once worked in the past has now greatly changed”); and the career flexibility provided by having the degree itself.

All interviewees expected their professional careers to advance in some way, but many were uncertain when they started about how the degree would tangibly impact their career. Most alumni interviewed mentioned a desire for the degree to advance their current career in academia or provide a door to academia, either upon graduation or later in life when one “loses the passion for working” in industry. When asked why they chose to pursue a professional business doctorate over a traditional PhD, the majority said that pursuing a traditional PhD was “not an option given personal and financial commitments” due to the PhD programs’ full-time structure and longer duration. Many suggested they might have pursued a PhD—which they believe “carries more weight,” at least within academia—if the time commitment had been shorter and they had the option to continue working.

Interviewees singled out non-research coursework, the cohort structure, and student networking as key elements that facilitated personal growth, but did not necessarily directly help their professional careers. As one interviewee remarked, “It’s that conversation you have with someone while in line for lunch” that was particularly helpful, while another said it was “knowledge created through interactions.” Working within groups in the programs facilitated student networking and was a “real-world lesson in collaboration,” though one interviewee described it as a “nightmare.” One leadership course had a “tremendous effect” on one individual and opened him up to “new ways of thinking.” Indeed, even after an alumnus described his non-research coursework as “fluffy MBA [Master of Business Administration] courses,” he went on to point out that the courses nonetheless provided essential scaffolding for the program.

It was the research-related courses, the research process, and the networking and interactions with faculty; however, that interviewees believed benefited them professionally. The research-related courses “improved the rigor” of one alumnus’ work and provided the “most useful tools” for another. For his dissertation, one student interviewed several top managers in his company, resulting in excellent visibility within his organization that was “hugely advantageous” for his career and yielded a significant promotion shortly after he completed his professional doctorate. Through her research process, one alumna became an expert in her industry on a “hot topic”, while another used his dissertation to develop a web-based course for which he charges a subscription fee.

All interviewees who experienced career transformation agreed that both the knowledge gained from their dissertation research and the research process itself were instrumental in their career development and advancement. In fact, in reflecting on the importance of her dissertation’s chosen area and her post-graduation career aspirations, one interviewee said she wished she had “focused my dissertation research clearly towards the direction I envisaged my career taking.” Lastly, alumni viewed faculty networking and interactions as very important to their professional development. This was particularly true when a faculty member or dissertation sponsor played a mentoring role to a student, suggesting alternate career avenues, providing advice and contacts, and being available even after the degree’s completion.

All alumni said that their professional doctoral programs offered the personal, intrinsic outcomes of personal satisfaction, intellectual stimulation, and at least a partial transformation. One person described the personal transformation as an “enrichment/quality of life element.” Another interviewee said that, “it’s a vanity thing, but I do value just having achieved the degree.” Others said their programs helped “increase my emotional self-confidence,” “opened up new ways of thinking,” and offered a “great experience, though I wouldn’t do it again given the rigor and commitment.” Professionally, interviewees said the degree helped them in a variety of ways, including to open doors to academia and help them switch industries and careers, advance within their organization, move to a tenure track within academia, and improve their consulting business.

Profiles: U.S. Doctoral Graduates

Following are brief profiles of three graduates of U.S. business professional doctoral programs that illustrate various motivations, experiences, and outcomes.

Madelyn: Personal satisfaction and career transformation

Madelyn was a successful senior executive at her company, which is a world-renowned global leader in its industry. She wanted to pursue a doctorate because she foresaw a future career in academia and dreamed of a solid work–life balance. Madelyn would have preferred to pursue a PhD due to the credibility given the degree in academia, but because of her significant travel

schedule and family commitments, she instead chose a professional doctorate program in the major metropolitan area where she lived.

Madelyn had years of leadership training—including in Six Sigma—with major multinationals, so she thought she had experienced it all. However, after completing her business professional doctorate, she profusely complimented the program’s non-research courses for furthering her leadership skills: “I refer back to the material constantly, perhaps almost daily.” She also felt the program strongly supported her career development through the dissertation process, the quantitative underpinnings, and especially her choice of dissertation topic. Because she chose a very hot topic in her industry and had access to substantial and relevant data, she has become known as the leading expert in her field on that topic.

Madelyn’s company paid for the degree, and she had a commitment to remain there for at least one year after she completed it. After that year ended, she accepted a teaching position at a major research institute. Then, within six months, she was offered a once-in-a-lifetime opportunity to return to industry as a practitioner at a dynamic company. She took the opportunity, although she believes she will return to teaching in the future. Overall, when reflecting on her degree’s outcome, Madelyn estimates that her professional doctorate will prolong her career by 10 years by providing her the credibility to write, consult, or teach. On the personal side, she found the experience personally satisfying and credits it for enriching her quality of life.

Charles: Intellectual stimulation and career advancement

Charles has run a successful consulting practice for more than 30 years. Although he wanted to be an academic all of his life, he was “bid away” from academic pursuits and has worked in business throughout his career. His extrinsic motivation for pursuing a doctorate was to improve the rigor of his consulting work, as well as to increase his credibility. Although he had negative experiences with his research advisor, as well as a lack of contribution from other students on a significant group research project, he still had a very positive overall experience in his professional doctorate program. He noted that the research structure and statistical analysis training were “invaluable” for his career and work. In addition, he said that the ethics and leadership courses opened him up to “new ways of thinking.”

Charles describes the program as “a wonderful experience,” and—although he currently does not teach—the program helped him in the training he does as one component of his consulting practice. He also noted that the “Doctor” designation and the program’s credibility have helped him in promotional presentations for his consulting practice. He feels he is engaging in higher-quality work and currently is working on his second book.

John: Intellectual stimulation and academic career

John is a chemical engineer with master’s degrees in both management and statistics. For years, he had worked his way up in the corporate world, eventually becoming a plant manager supervising more than 100 people. When his plant’s work was outsourced to an overseas operation, it closed down and John’s position was terminated. However, John had always been interested in a career in academia, so he began teaching management courses full-time at a state university, as well as doing business consulting on the side. Three factors motivated John to pursue a doctorate: he enjoyed intellectual challenge, he wanted to advance his academic career, and he wanted to improve his future career options. He specifically sought out a professional doctorate, as he needed the income his teaching and consulting provided and thus could not attend school full-time.

After graduating, John was promoted to a tenure-track position at his university and is beginning to consult in the healthcare industry, which he credits to his degree from an AACSB-accredited program with good research rigor. Still, he admits, “The older faculty at his institution still are

skeptical of the business professional doctorate degree, and I may not have been offered the job if they didn't know me before receiving the degree." He adds that academia still sometimes considers the professional doctorate as "all engaged and no scholarship" and prefers a traditional PhD.

John believes the content courses and peer networks in his doctorate program were not crucial to his professional outcomes, but that through them he learned how to read academic journal articles and gained helpful knowledge on globalization. Personally, he enjoyed the significant challenge of the process, the personal relationships formed, and simply having the degree itself ("It's a vanity thing"). For John, the research skills learned, the dissertation process itself, and his relationship with his doctoral sponsor were extremely important to his career, including his advancement within academia.

Discussion and Practical Implications

Based upon the above results, the researchers developed a comprehensive model to explain the motivations, experiences, and outcomes described by survey respondents and interviewees. This model adopts the I-E-O socialization and learning process structure proposed by Weidman et al. (2001) but, unlike Weidman et al.'s (2001) model, focuses on career outcomes and does not directly incorporate his concepts of normative context and core elements. It does integrate, however, the work of Scott et al. (2004) and Gill and Hoppe (2009) in developing the defined antecedents and motivators (See Figure 4).

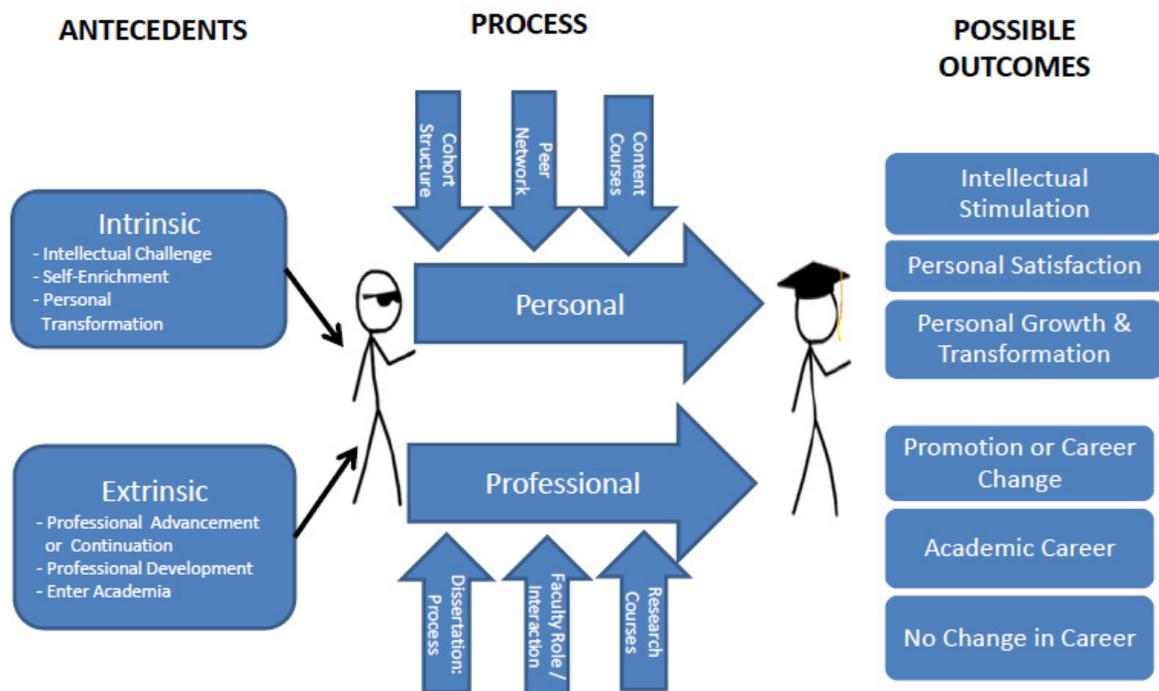


Figure 4: Process Model for Professional DBA (adapted from Weidman et al., 2001)

Personal Factors: Antecedents, Process, and Outcomes

As Brailsford (2010) revealed, students enter doctoral programs for a variety of intrinsic and extrinsic reasons. The survey average of 66 on a scale of 100 suggests intrinsic desires are strong; indeed, many interviewees said they entered their business professional doctorate programs primarily for intellectual challenge, self-enrichment, and personal transformation. This finding on the importance of intrinsic motivators is consistent with Leonard et al.'s (2005) research, in which

doctoral students' concern for personal development and intellectual interest even outweighed vocational concerns. It also mirrors Wellington and Sikes' (2006) findings on the great need for programs to help bring about structural change and transformation to a student's identity.

Interviewees said the factors that contributed most to satisfying their intrinsic motivators and creating positive personal outcomes were the content courses, peer network, and the cohort structure, which aided their interactions. They perceived the content or non-research method courses as helping them create new ways of thinking and improving their leadership skills. Although only 10% of survey respondents perceived peer networks to be of value to them professionally, many felt that the cohort structure helped them develop these networks, which they said benefitted them personally. This finding is consistent with research on adult learning in cohort groups, which reveals that, while learning in cohorts may not produce significant gains in the cognitive domain, it has been shown to lead to learning gains in the affective domain related to attitudes, self-concepts, and values. Further, cohort members tend to enjoy being part of a collaborative group and have positive feelings about their learning experience (Imel, 2002).

It is important to stress, however, that while this research did find that the factors affecting personal development were not perceived as immediately and directly helpful to a graduate's professional development, this study did not measure their indirect or long-term professional effects—a key point given that 51% of the graduates surveyed were within two years of graduation. Lastly, on a scale of 1–100, the perceived positive personal outcomes for alumni were valued 10 points higher than professional benefits. The interviewees' responses indicate that these benefits centered on intellectual stimulation, personal satisfaction, and personal growth and transformation.

Professional Factors: Antecedents, Process, and Outcomes

Extrinsically, as posited by Scott et al. (2004) and Gill and Hoppe (2009), motivators for students and alumni include professional advancement or continuation, professional development, and a desire to enter academia. One motivator not found to be prevalent in pursuing a business professional doctoral degree, however, was a preference for the professional degree over a traditional PhD. In fact, given the *perceived* inferiority of the professional doctorate in academia and the goal of many professional doctoral students to enter academia at some point, it could be argued that the PhD would have been preferred but for the possible adverse financial and personal consequences of the longer duration and full-time commitment required.

The factors that respondents perceived as a direct and immediate positive influence on their professional outcomes were research method courses; the dissertation process, including the area of focus; and the role that faculty played. Learning research methods is a primary objective of pursuing a business professional doctoral degree; it is therefore not surprising that students in these programs clearly saw the research courses' benefit to their professional development. Likewise, 36% of the interviewees believed that the greatest positive professional effect was the learning gained from the dissertation process itself, especially when the chosen topic involved or aligned with a student's current or future career, company, or industry—as in interviewing top management or researching a hot industry topic.

Finally, respondents perceived faculty interaction and relationships as very important to their professional outcomes. Among the ways they felt faculty contributed to these outcomes was by suggesting alternate avenues to students, providing advice and contacts, and being available even after the completion of the degree if there was a need. These results echo the findings of Schlosser, Knox, Moskovitz, and Hill (2003) that satisfactory relationships with graduate student sponsors were typically characterized by faculty members that, in addition to being dissertation advisors, offered their students career guidance, encouraged them to join conferences, and introduced them to important people. Lee (2009) also found that faculty nurses seeking professional doctor-

ate degrees want advisors and faculty members who are experienced, accessible, able to explain the ropes, and sensitive to the need for both emotional care and academic advice. Likewise, recent empirical research shows that when college faculty play this mentoring role it can positively impact a college student's academic achievement and persistence (Crisp & Cruz, 2009).

In terms of professional outcomes, promotion or career advancement was typically achieved, with 71% of business professional doctoral graduates reporting a change in their professional lives. That said, business professional doctoral programs report that incoming students have an average of 15 years of professional experience (Graf, 2014) and, given that students are in programs for three years or more, it is not surprising that a high percentage of alumni reported advancement. However, it is significant that 85% believed their degree somewhat or to a great extent facilitated that advancement. This high level of personal and professional satisfaction for professional doctorates is similar to the levels found among traditional doctoral graduates (Project OECD-KNOWINNO, 2012).

As we noted earlier, 74% of responding graduates reportedly are involved in teaching or aspiring to teach at some point, so an academic career is certainly a desired and actual outcome for many of the graduates, even if only part-time or non-tenured. A similar outcome is not true in relation to publishing, however; only 47% of alumni report having published, co-published, submitted, or actively worked on two or more articles since graduating.

Finally, 22% of respondents experienced no change or advancement in their career after the program. Perhaps, in part, this lack of change is due to 51% of the alumni surveyed being within two years of graduation. Further, as some people articulated in the interviews, it might also be due to factors such as academia perceiving the professional doctorate as inferior to the PhD (Ellis, 2007; Neumann, 2005); the difficulty and longer duration for job searches involving a career change; and industry's uncertainty about how to value the professional doctorate degree. Indeed, in her study on Australian professional doctorate programs, Neumann (2005) found, surprisingly, that in fields such as management and law, such a doctorate could be more of a hindrance than an asset.

Practical Implications

In terms of practical implications, this research suggests that candidates considering business professional doctoral programs can expect to experience both personal and professional benefits from their programs. If their experience is similar to those in this study, they will feel a sense of personal transformation and satisfaction, as well as enhance their chances for career advancement or change. If a person considering these programs desires to enter academia with the professional degree, however, they should consider that a professional degree might open some doors, but academia still seems to prefer a traditional PhD though this advantage must be weighed against the longer duration and full-time structures of traditional PhD programs.

During professional doctoral programs this research suggests students in business professional doctoral programs might wish to make strong efforts at establishing relationships with peers and faculty. They also should be very diligent in choosing their dissertation topic, and align their research focus not only with their personal and professional interests but also with their desired post-graduation career. Furthermore, they should carefully consider their dissertation sponsor, selecting a faculty member who is not only familiar with the chosen research methods and topic, but also who is someone with whom they are personally compatible and who will act as a mentor to their personal and professional development.

The study also has implications for administrators of business professional doctorate programs. As the findings highlight, students value content courses structured to offer new perspectives and alternative ways of thinking but these course should differ from typical MBA courses, which might be more appropriate for professional initiation than professional continuation. Administra-

tors might also consider electives and labs that give students experience in teaching a class toward the end of the doctoral studies, as a significant percentage of students want to teach at some point. Later electives might also include courses that offer executive coaching and setting up or improving consulting businesses. These courses may be helpful to students embarking on the difficult journey of changing jobs or industries late in their careers.

Further, administrators might consider providing numerous networking opportunities—both during and after the program—among students, faculty, and the practitioner-scholar community. The cohort structure and group work are helpful in this regard, but other efforts might also be beneficial. One possible pathway to enhance networking might be to establish formal mentoring programs with alumni, faculty, and key executives in industry, and to encourage students and graduates to attend appropriate industry and academic conferences. As this research illustrates, graduates view the dissertation, its process, and the sponsor as key to their professional success. Hence, administrators should closely examine the choice of advisors for the program and the process in which students and advisors are matched, with the goal of having advisors act as mentors for both academic and career purposes.

Finally, the success of business professional doctoral programs ultimately will be based not only on the program's perceived personal benefit to graduates and students—which this study shows to be strong averaging 80 on a sliding scale of 1-100—but also on graduates' actual success, the degree to which they publish, and how the degree is perceived in industry and academia. Post-graduation support is therefore essential and can be accomplished in various ways, including active alumni organizations, research centers and networks, industry forums, continued professional education and access to research facilities, and post-graduation career counseling and mentoring programs.

Conclusion

Prior research on professional doctorate programs has focused primarily on their composition and management rather than on students' motivations and how the degree impacts their careers after graduation. This study used a mixed-methods approach to glean insights into several key issues, including why people pursue business professional doctorates; the personal and professional outcomes upon degree completion; and the aspects of business professional doctoral programs that meet students' expectations and facilitate the achievement of their desired outcomes. With insights from this empirical data and guided by the literature, the researchers developed a comprehensive process model to assist in explaining the sometimes transformative process that graduates of these programs undergo.

The study, however, is not without its limitations. First, the data derived from the study is biased toward the perspectives of graduates from U.S. programs and recent graduates of business professional doctoral programs. Second, because the sample was not selected at random, the potential for self-selection bias exists and thus the results might not be representative of those students who chose not to complete the survey or participate in the interviews (Heckman, 1979). Third, despite the effort to reduce these difficulties through a mixed-method approach, interviews have inherent pitfalls and problems, including Hawthorne effects, constructing knowledge, and artificiality (Meyers, 2009, p.126–128). Future studies are encouraged, including those that look more carefully into how demographic factors affect motivations and outcomes of students and alumni; specific career outcomes, including job satisfaction, sector employment, income premium, job mobility, and employment levels; longer-term outcomes of business professional doctoral graduates; comparative reviews of the outcomes and expectations of participants from various programs and program structures throughout the world; and how academia and industry view business professional doctoral programs and their graduates.

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Appendix A: Survey for Professional Doctorate Students and Alumni

1. Are you a student or alum of an Executive Doctorate program?

(Note: Executive Doctorate programs practitioner-researcher programs which result in awarding an Executive Doctorate of Business Administration, Doctor of Business Administration, Doctor of Management or other similar degrees)

- Current student
- Alumna/Alumnus
- Neither (discontinue survey)

Please note program and location.

STUDENT QUESTIONNAIRE:

2a. I am currently:

- First year student, or in first 25% of program
- Second year student, or 50% of program complete
- Final year student, or more than 50% of program complete
- Student in final stage of program, finished coursework and completing dissertation or similar

3a. Upon completion of my degree, I expect my degree to facilitate (if more than one, please rank in order of importance):

- Advancement within my current company/organization
- Change companies within same industry
- Change industry or career focus
- Enter academia
- Degree is for personal fulfillment or other reasons rather than professional development

Additional Comments: (Please include current industry and future career plans):

4a. Would the creation of a formal alumni organization be beneficial?

- No, I don't see a need for such an organization
- Yes, I like the idea, but with membership exclusive to the graduates of my program
- Yes, I like the idea, and it should be part of an international network of scholar-practitioner doctoral graduates
- Other – please describe

Additional Comments:

5a. Would the creation of a formal organization for current Executive Doctorate students be beneficial?

- No, I don't see the need for such an organization
- Yes, I like the idea for all current students
- Other – please describe

Additional Comments:

6a. Should there be a combined student/alumni organization at your university

- No, keep them as separate organizations
- Yes, combine them

Additional Comments:

7a. What would be the appropriate mission of such a student organization? Please rank in order of importance.

- Knowledge sharing/informal study groups
- Experience sharing about courses and curriculum
- Professional networking
- Program advice
- Joint research for scholarly publications
- Other, please specify:

Additional Comments:

8a. What would be the appropriate mission of an alumni organization be? Please rank in order of importance.

- Knowledge sharing/informal study groups
- Experience sharing about courses and curriculum
- Professional networking
- Program advice
- Joint research for scholarly publications
- Other, please specify:

Additional Comments:

9a. What activities do you envision by these organizations? Please rank in order of importance.

- Annual practitioner-scholar conferences
- Periodic informal meetings on topics of mutual interest

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- Collaborative research projects and dissemination of Executive Doctorate research
- Collaborative problem-solving events
- Periodic reports to program management on potential improvements to the program
- Recommendations for increasing the visibility and prestige of the program
- Marketing the Executive Doctorate degree to academia and industry
- Other, please specify:

Additional Comments:

10a. Would you like to join an organization affiliated with a broader group of scholar-practitioner doctoral graduates from other schools (e.g. Georgia State, Case Western, University of Maryland, Cranfield School of Management, and others throughout the world)?

- No, I don't see a need for such an affiliation
- Yes, I like the idea, but need to know more about it
- Yes, I would be interested in being a member of such an affiliated organization

Additional Comments:

11a. I am willing to participate in the following ways. Check all that apply.

- Attend sponsored conferences
- Prepare papers and present at sponsored conferences
- Serve as organizational support for meetings and/or conferences
- Attend sponsored conferences if held outside the U.S.
- Serve as a representative of my program to a broader scholar-practitioner affiliated group
- Other (please describe below)

12a. If you would like to be contacted and become part of any of these organizations, please provide your name and contact information.

ALUMNI QUESTIONNAIRE:

2b. I received my Executive Doctorate degree:

- Within the past 2 years
- 2-5 years ago
- Over 5 years ago

Please note program and location.

3b. Would the creation of a formal alumni organization be beneficial?

- No, I don't see a need for such an organization
- Yes, I like the idea, but with membership exclusive to graduates of my program
- Yes, I like the idea, and it should be part of an international network of scholar-practitioner doctoral graduates

Additional Comments:

4b. Should there be a combined student/alumni organization?

- No, keep them as separate organizations
- Yes, combine them

Additional Comments:

5b. What would be the appropriate mission of such an organization? Please rank in order of importance.

- Knowledge sharing/continued educational opportunities
- Experience sharing about courses and curriculum
- Professional networking
- Program advice
- Joint research for scholarly publications
- Other, please specify:

Additional Comments:

6b. What activities do you envision by this organization? Please rank in order of importance.

- Annual practitioner-scholar conferences
- Periodic informal meetings on topics of mutual interest
- Collaborative research projects and dissemination of Executive Doctorate research
- Collaborative problem-solving events
- Periodic reports to program management on potential improvements to the program
- Recommendations for increasing the visibility and prestige of the program
- Marketing the Executive Doctorate degree to industry
- Other, please specify:

Additional Comments:

7b. Would it be appropriate for graduates of your program to join an organization affiliated with a broader group of scholar-practitioner doctoral graduates from other schools (e.g. Georgia State, Case Western, University of Maryland, Cranfield School of Management, and others throughout the world)?

- No, I don't see a need for such an affiliation
- Yes, I like the idea, but need to know more about it
- Yes, I would be interested in being a member of such an affiliated organization

Additional Comments:

8b. I am willing to participate in the following ways. Check all that apply.

- Attend sponsored conferences
- Prepare papers and present at sponsored conferences
- Serve as organizational support for meetings and/or conferences
- Attend sponsored conferences if held outside the U.S.
- Serve as a representative of GSU's EDBA program to a broader scholar-practitioner affiliated group
- Other (please describe below)

9b. After completing your Executive Doctorate, did you change career paths? Please check the one which most closely applies:

- No. I remained with the same organization I was with before graduation and was not promoted
- Yes. I remained with the same organization, but was promoted
- No, but I changed organizations and remained in the same industry
- No, but I changed both organizations and industry
- Yes, but I remained with the same organization
- Yes, but I remained within the same industry
- Yes, I changed both career and industry
- Other (please describe below)

Additional Comments::

10b. <<Answered yes in 9b to promotion, career or industry change.>> What extent do you feel your degree facilitated that promotion or career change?

- A great deal
- Somewhat
- A little
- Very little
- Not at all

Additional Comments::

11b. <<If an answered "a little" or more in 9b>> Check what you believe is the greatest factor of your Executive Doctorate which contributed to that promotion or change:

- Prestige of degree/designation
- Non research-related coursework and curriculum (what was taught or read)
- Research (researching, writing, research methods learned)
- Networks created (professors and/or fellow students)
- Other (specify)

Additional Comments::

12b. Do you now teach?

- Yes, full-time and university level, as primary career
- Yes, part time/adjunct at university level
- Not currently, but I plan to in the future
- No

Additional Comments::

13b. How actively have you remained involved in research after graduation?

- Not at all
- Little active (published, co-published, submitted, or actively working on one article)
- Somewhat active (published, co-published, submitted or actively working on 2-3 articles)
- Active (published, co-published, submitted or actively working on 4-5 articles)
- Very active (published, co-published, submitted or actively working on 6+ articles)

Additional Comments::

14b. <<If you answered not at all or little active to 13b>> What do you feel is the greatest reason for your level of publishing activity?

- N/A
- Not interested in doing formal research
- No or little convenient access to library or research facilities
- Lack of time
- Lack of access to network of fellow researchers (both professors and fellow alumni)
- Other (Specify)

Additional Comments::

15b. Do you now sit on any for-profit or nonprofit boards?

- No
- Yes 1 board
- Yes 2-3 boards
- Yes 4+ boards

Additional Comments::

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16b. <<If your answer to 15b is yes>> **How many boards did you sit on before you received your Doctorate?**

- N/A
- None
- 1 board
- 2-3 boards
- 4+ boards

Additional Comments::

17b. Did your program benefit you?

- Absolutely! Both personally and professionally.
- Yes, primarily in my career.
- Yes, primarily for personal reasons.
- Yes, but not to the extent I expected
- No, not at all.

Additional Comments: (Please provide reasons for your answer above):

18b. If you would like to be contacted and become part of any of these organizations please provide your name and contact information.

Name:

Email:

Degree, University & Year completed

Current position

Appendix B: After the Professional Doctorate, Now What? Interview Questions

- 1) INPUTS/ANTICIPATORY (BACKGROUND, PREDISPOSITIONS, PREPARATION) WEIDMAN
 - a) Briefly describe your professional background before entering the EDB Program
 - i) Career/Organization/Industry just before attending
 - ii) Other careers/organizations/industries in your experience
 - b) Describe your educational background before entering the EDB Program
 - c) What motivated you to pursue a doctorate? (Wellington & Sykes)
 - d) Why did you choose a professional doctorate (Wellington & Sykes)
 - e) On a scale of 1-10 to what extent did you expect your degree to facilitate: Elaborate (Survey):
 - i) Continuing Development: professional development/advancement (Gill & Hoppe)
 - (1) Advancement within my current company/organization (Survey)
 - (2) Change companies but remain within the same industry, i.e. do not change career paths (Survey)
 - (3) Enhance your skills and reputation (e.g. degree for credibility or advancement within academia)
 - ii) Transition (Gill & Hoppe)
 - (1) Change industry/career focus (Survey)
 - (2) Enter academia (Survey)
 - iii) Personal Fulfillment (Gill & Hoppe)
 - (1) Extent to which the degree was for intrinsic reasons other than professional development or transition
- 2) ENVIRONMENT (INTERACTIVE STAGES OF SOCIALIZATION, FORMAL/INFORMAL) WEIDMAN
 - a) On a scale of 1-10 to what extent did each of these contribute to your post-graduation career path? How (describe)?
 - i) Normative Contexts (Weidman):
 - (1) Non research curriculum and coursework (i.e. what was formally taught)
 - (a) What courses in particular?
 - (b) Process of learning, challenge of overall coursework.
 - (2) Formal and Informal Networks
 - (a) Peer Groups Interaction (interaction with other students) and networks
 - (b) Faculty Interaction and networks
 - (3) Research and dissertation
 - (a) Research skill taught
 - (b) Research/Dissertation process
 - (c) Area of dissertation focus
 - ii) Personal Communities (Weidman)
 - (1) Family

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- (2) Non-school friends
 - (3) Employers/Professional Colleagues
 - iii) The prestige of the degree/designation (Survey)
 - iv) What changes would you recommend to help these contribute more effectively to future students' career aspirations? (Go through each of the above in i & ii)
- 3) OUTCOMES (WEIDMAN)
- a) How many years since graduation?
 - b) Describe your career immediately after graduation:
 - i) Career/Organization/Industry
 - c) Describe your career now (if different from b):
 - i) Career/Organization/Industry
 - d) What impact has your professional doctorate had on your professional life?
 - i) Continuing Development/Advanced Entry: professional development/advancement (Gill & Hoppe)
 - (1) Advancement within my current company/organization (Survey)
 - (a) I remained with the same organization and was not promoted (Survey)
 - (b) I remained with the same organization but was promoted (Survey)
 - (2) Change companies but remain within the same industry, i.e. do not change career paths (Survey)
 - (a) I changed organizations but remained in the same industry
 - (3) Enhance your skills and reputation (e.g. degree for credibility or advancement within academia)
 - (a) My degree helped me to advance in academia or enhanced my consulting practice through skills learned and the credibility afforded by the degree
 - ii) Transition (Gill & Hoppe)
 - (1) Change industry/career focus (Survey)
 - (a) I changed both organizations and industry but not career
 - (b) I changed careers but remained within the same organization
 - (c) I changed careers but remained in the same industry
 - (d) I changed career, organization, and industries
 - (2) Enter academia (Survey)
 - (a) I entered academic full time and was not in academia pre-degree
 - (b) I teach part time at a University Level
 - (c) I teach in other institutions other than University level
 - (d) I plan on teaching but do not teach now
 - (3) To what extent do you feel your degree facilitated your promotion or career change or career aspirations? (Survey) (e.g. great deal, somewhat, a little, very little, not at all)
 - (4) What was the greatest contributor to that success or failure?

iii) Personal Fulfillment (Gill & Hoppe)

- (1) To what extent personally (scale of 1 -10) did your program benefit you? (Survey)
- (2) What impact has your professional doctorate had on your personal life? (Wellington & Sykes)
- (3) How did it benefit you personally or not?

4) FINAL GUT QUESTIONS:

- a) In terms of helping you professionally, name the 3 things that helped you most in your career as a result of pursuing and receiving a professional doctorate?
- b) In terms of helping you professionally, name the 3 things that were of little help in your career as a result of pursuing and receiving a professional doctorate?
- c) If you had it to do over again, would you pursue a professional doctorate in business? Why or why not? Be specific. Discuss both intrinsic (personal) and extrinsic (professional) reasons.
- d) To anyone thinking of pursuing a professional doctorate, would you advise them to do so?
 - (1) If not, why not?
 - (2) If so, what specific advice would you give them? What would you tell them to expect personally and professionally both pursuing the degree and after receiving the degree?

QUESTIONS ARE BASED UPON:

- WEIDMAN, SOCIALIZATION OF STUDENTS IN HIGHER EDUCATION, 2011
- EDB SURVEY, 2013
- GILL & HOPPE, THE BUSINESS PROFESSIONAL DOCTORATE...., 2009
- WELLINGTON & SYKES, DOCTORATE IN A TIGHT COMPARTMENT..., 2006

Biographies



Dr. Louis J. Grabowski received his Executive Doctorate in Business from Georgia State University, an MBA from University of California-Berkeley, and a BA from Stanford University. He is currently with the Kennesaw State University Foundation and was a partner and executive in a medium-sized real estate firm in the Southeast for over 25 years. In the past he has published papers on decision making and organizational development and is a member of the Executive Doctorate in Business Administration Council.



Jeanette Miller is a strategy consultant and partner with the consulting firm, 360°td Transformational Development. She has a background in emerging market economic development and lived in over a dozen countries throughout her career. She holds an Executive Doctorate of Business Administration from Georgia State University, a M.A. in international business and international relations from Webster University in Vienna, Austria and a B.A. in Economics from the University of Texas at Austin. Her principal research areas are the dynamics of social enterprises, innovation networks of small businesses and motivations of independent consultants. Although the majority of her time is spent in the practitioner world, she is also an adjunct professor at Oglethorpe University.

Cite as: Dusek, G. A., Yurova, Y. V., & Ruppel, C. P. (2015). Using social media and targeted snowball sampling to survey a hard-to-reach population: A case study. *International Journal of Doctoral Studies*, 10, 279-299. Retrieved from <http://ijds.org/Volume10/IJDSv10p279-299Dusek0717.pdf>

Using Social Media and Targeted Snowball Sampling to Survey a Hard-to-reach Population: A Case Study

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Abstract

Response rates to the academic surveys used in quantitative research are decreasing and have been for several decades among both individuals and organizations. Given this trend, providing doctoral students an opportunity to complete their dissertations in a timely and cost effective manner may necessitate identifying more innovative and relevant ways to collect data while maintaining appropriate research standards and rigor. The case of a research study is presented which describes the data collection process used to survey a hard-to-reach population. It details the use of social media, in this case LinkedIn, to facilitate the distribution of the web-based survey. A roadmap to illustrate how this data collection process unfolded is presented, as well as several “lessons learned” during this journey. An explanation of the considerations that impacted the sampling design is provided. The goal of this case study is to provide researchers, including doctoral students, with realistic expectations and an awareness of the benefits and risks associated with the use of this method of data collection.

Keywords: sampling hard-to-reach populations, snowball sampling, sampling from social media, response rate, LinkedIn

Introduction

Response rates to the academic surveys used in quantitative research are decreasing and have been for several decades among both individuals and organizations (Baruch, 1999; Baruch & Holtom, 2008; de Leeuw, 2005). Johnson & Owens (2003) attribute this decline to: privacy issues, confidentiality issues, exploitation of personal information, and general cynicism. The results of a survey among non-respondents found the following reasons for not participating included too busy 28%, not relevant 14%, address unavailable to return the questionnaire 12% [a mail survey was used in this study], and company policy prohibits participation 22% (Baruch & Holtom, 2008).

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Given this trend, to provide doctoral students an opportunity to complete their dissertations in a timely and cost effective manner, it may be necessary to find ways to obtain funding for doctoral students. Alternatively, they may be allowed to use paid professional research firms such as Qualtrics or Survey Monkey for data collection. However, this is

Editor: Michael Jones

Submitted: June 2, 2014; Revised: November 21, 2014; Accepted: August 4, 2015

an expensive option for students and how much they learn about data collection techniques is debatable. Perhaps, we need to find more innovative and relevant ways to collect data while maintaining appropriate research standards and rigor. These may include the use of social media to collect data as well as mining the existing data available on social media and other big data sources.

Doctoral students often have limited funds and are faced with a limited timeframe due to completion deadlines to obtain their degree. De Leeuw (2005) suggests that these are frequently limitations in research and suggests, “When designing a survey the goal is to optimize data collection procedures and reduce total survey error within the available time and budget. In other words, it is a question of finding the best affordable method” (p. 235).

These constraints played an important role in this case study given that data was collected by a US citizen in the US and in Russia. Data collection from the targeted population in Russia was hampered by several constraints such as language, travel costs, travel restrictions and others. Due to the economic conditions in the industry in which he was employed, the researcher became unemployed and under significant pressure to complete his degree as soon as possible and obtain an academic position. Incurring travel costs for data collection in multiple countries was not a reasonable option. Therefore, the student and his dissertation committee considered, and employed, a method which was designed to balance reasonable time and cost constraints with an appropriate level of rigor for a dissertation.

The resulting study is presented which describes the data collection process used to survey a hard-to-reach population using social media. In this case LinkedIn was used to assess the study’s feasibility, to target respondents, and to facilitate the distribution of the web-based survey. A roadmap to illustrate how this process unfolded is presented, as well as several of the “lessons learned” during this journey. The goal of this case study is to provide realistic expectations and awareness of the data collection issues encountered that pose both benefits and risks with the use of the method described in this case study. Explanations of the data collection techniques used, and the adjustments required to these techniques for successful data collection, are presented to allow the reader to anticipate and plan for the difficulties that may occur when conducting this type of quantitative data collection. Continuous improvement, refinement, and adaptation of the data collection method described may be required in different circumstances. Data collection is, of course, predicated on the assumption that an appropriate dissertation topic has been chosen (Luse, Mennecke, & Townsend, 2012).

To make this paper easier for the reader to follow, we have underlined the sections which describe the specifics of the case study undertaken. The theoretical underpinning of this case study process and the concerns for the rigor of the process are discussed relative to the actions taken.

Background

Concern for Declining Response Rates

Since at least the 1990’s it has been noted that survey response rates have been steadily decreasing. This has led to concerns about the quality (defined as reliability and validity) of the resulting responses. This quality impacts the use of the data in drawing valid and reliable inferences and conclusions (Baruch & Holtom, 2008; de Leeuw, 2005; Murphy, Hill, & Dean, 2013). The decline in response rates is most troubling from the standpoint that the resulting sample may not be representative of the population to be sampled, and thus any inferences drawn from the sample data may not generalize to the desired population. Baruch and Holtom (2008), as well as those they reviewed, suggest that representativeness is the main concern and suggest that it is possible to have a low response rate and still collect a sample that is representative of the population from

which it was drawn. While the preferred method for dealing with a low response rate is to avoid having one in the first place, due to time and cost constraints as well as the possibility of a hard-to-reach population, this is not always feasible for doctoral students. Based on declining response rates, it appears that most populations currently used for survey research can be increasingly classified as “hard-to-reach” populations when employing traditional sampling techniques.

However, this study also faced additional factors that suggest it is a hard-to-reach population such as its target population is multinational. While Russia was not included in her study, Harzing (1997) reported international mail surveys have a typical response rate of between 6% and 16% after multiple mailings, suggesting that international populations can be classified as hard-to-reach populations for many researchers. The greater the geographical and cultural distance between the researcher sending the survey and the recipient of the survey, the lower the response rate achieved (Harzing, 1997). Russia has large distances both geographically and culturally (The Hofstede Center, n.d.) from the US doctoral student. However, the response rates achieved using this sampling design resulted in response rates of 31% in the United States and 29% in Russia. While researchers would always prefer a response rate greater than the one they achieved, achieving these rates in a situation where many experts felt that responses would be almost unattainable suggests that this method of data collection deserves further study. A timeline that outlines the following discussion of subject recruitment and the data collection procedure can be found in Appendix A. Given these challenges in collecting data for quantitative research, we examined the extant literature concerning hard-to-reach populations as a guide to improve survey response rates.

Snowball Sampling

One method that is becoming increasingly popular to recruit subjects is snowball sampling. Snowball sampling is undertaken when a qualified participant shares an invitation with other subjects similar to them who fulfill the qualifications defined for the targeted population (Berg, 2006). Historically, snowball sampling has been used in qualitative research where a qualified subject is contacted by the researcher and a social relationship developed (“Snowball Sampling – II,” 2006). Once the qualitative researcher has obtained responses of interest to the study from the subject, a referral to another qualified subject is sought (Coleman, 1958-1959). This technique is particularly useful in hard-to-reach populations (i.e., HIV patients) where a network of the qualified study subjects is assumed to exist and the researcher is hoping to be linked into this network through social interaction with the initial subject in the network (Atkinson & Flint, 2001; Faugier & Sargeant, 1997). These networks among hard-to-reach populations are not generally open to researchers who do not have social entrées into the hidden population. Surveys received from unknown researchers on sensitive topics will not be welcomed if no relationship, particularly a trusting one, exists. However, when sending quantitative surveys which can be forwarded to anyone, unlike the researcher interviewing subjects in qualitative research, the researcher has less ability to scrutinize the qualifications of the referred subject. Thus, additional rigor concerns may arise.

Targeted Sample for Survey Research

One documented approach to maintaining rigor when surveying hard-to-reach populations is the use of targeted sampling (Watters & Biernacki, 1989). “It [targeted sampling] draws from both survey and qualitative research methods... through an interactive process of adjusting research targets, recruitment methods, and research questions and instruments, inquiry can be focused on the most appropriate subjects for study” (Watters & Biernacki, 1989, p. 427). Snowball sampling or chain of referral is one such targeted recruitment method. “The creative application of deliberate recruitment activity is one of the more obvious distinctions between targeted sam-

ples and the asystematic recruitment of research subjects in convenience samples on the one hand and the more rigid cluster and stratified samples on the other. Unlike convenience samples, research subjects are selected for specific attributes that preliminary research has defined as targets for study” (Watters & Biernacki, 1989, p. 425). Targeted sampling allows the researcher to maintain greater control over both who initially receives the invitation to participate in the survey, as well as attempts to maintain some control over the resulting sample through adjusting all the available tools (research targets, recruitment methods, research questions, and instruments) to make the sample more closely mirror the population under study. “Nearly all studies of hidden populations are carried out in circumstances that do not permit true random sampling. Under these conditions, and if properly conducted and tied to what is known or can be learned about population parameters, targeted sampling provides a more powerful sampling mechanism than convenience sampling and a more feasible approach than random sampling” (Watters & Biernacki, 1989, p. 427). To determine if the targeting method was successful involves obtaining values for variables from external data sources and comparing these known values of the targeted population to those obtained from the sample. Significant differences in the values may suggest an adjustment in the targeting is needed. Baruch (1999) also reports this comparison procedure as a common method to indicate the sample’s representativeness of the population.

In this case study, demographic information was collected and used to compare the sample demographic statistics to those reported in the extant literature and industry reports of statistics, where available. This comparison indicated that the sample was representative of the population on several of these variables. For example, demographic variables such as age, gender, job tenure, and education level distributions were consistent with previous related studies and industry statistics. We felt that these were the variables that the literature suggests are relevant to the research model under study and thus are also potential control variables.

Targeted Sampling Using Social Media

Murphy et al. (2013) state that survey research is by definition “a social interaction between a researcher and a (potential) respondent – a ‘conversation with a purpose’” (p. 1). Additionally, they suggest that since the methods employed by individuals today to carry on such conversations have changed, so should the tools used for survey research. The conversation should take place using the tools the targeted population is currently using to carry on the conversation. Murphy et al. (2013) define social media as it relates to survey research as “the collection of websites and web-based systems that allow for mass interaction, conversation and sharing among members of the network.” (p. 3). Unlike Facebook and other more general social media, LinkedIn is a platform that connects professionals in various fields and, therefore, provides greater ability to target data collection to an appropriate social network.

PC Magazine identified LinkedIn as “the most important cross-industry professional network around” and made it an Editors’ Choice site (Duffy, 2013). Importantly, there is a free version available to anyone with an email address that provides mobile access for those without computers. They suggest, “It’s such an important place that we recommend everyone over the age of 20 have a LinkedIn account” (Duffy, 2013), thus increasing the ability to appropriately target study subjects.

LinkedIn’s membership grew steadily reaching 300 million LinkedIn members with more than half of the membership residing outside the US. The company announced a strategic shift to achieve their vision of “creating economic opportunity for every one of the 3.3 billion people in the global workforce (“LinkedIn reaches 300 million,” 2014). The company is expanding LinkedIn Groups and mobile access, suggesting potential access to a greater number of respondents and a reduction of the digital divide bias. Importantly for this study, on June 21, 2011 LinkedIn made its site available in the Russian language at <http://ru.linkedin.com> (Posner, 2011).

Although LinkedIn communities are not exhaustive populations of industry representatives, they might be considered suitable for initial targeting of subjects, an important step in snowball sampling technique (Goodman 2011; Handcock & Gile, 2011). Goodman (2011) argued that even in the case of populations which are not hard-to-reach, it is possible to collect a representative sample provided that the initial contact and requests for participation was made with appropriate individuals from the population of interest.

Case Study Process Description and Justification

Study Description

The dissertation topic that is the subject of this case study investigates turnover intentions and its antecedents such as the service orientation of hotel employees in the United States and Russia. Front-line employees are identified in previous hotel industry studies as possessing a high turnover rate (Hinkin, Holtom, & Liu, 2012). Thus, to target the appropriate population to answer the research question (Luse et al., 2012) the proper target population was defined as front-line employees of Western-based hotel operators. It was assumed that the management of Western-branded hotels would be more open to participation in a bi-national academic research project and be willing to provide assistance with data collection. Also, the use of Western Branded hotels allowed the organizational factors to be similar in the US and Russia. Eight Western hotel brands operating in Russia (Best Western International, Carlson Hotels Worldwide, Choice Hotels International, Hilton Worldwide, Hyatt Hotel Corporation, Marriott International, Starwood Hotels & Resorts, Wyndham Hotel Group) were identified as having hotels in both study locations.

Initial Recruitment Strategy

The initial strategy to achieve the targeted sample began with contacting properties which were located near the student's home, to discuss project feasibility and recruitment of targeted respondents. Manager's responses indicated that they required approval from their superiors to participate and further suggested contacting the human resource (HR) departments in the corporate offices. Responses from these HR representatives indicated they could not participate for various reasons including an excessive number of similar solicitations already received, the desire to avoid accusations of favoritism to some researchers, advice from the legal department against becoming involved in a survey project, and conflict with existing internal employee surveys. Many of these branded locations were franchisees and required individual inquires. The phone or email messages sent to franchisee operators were not returned. Similarly, a LinkedIn group discussion board posting made to US hotel operators and managers did not result in any interest to participate among the group members. Thus, the recruitment strategy needed to be adjusted to reach the targeted population.

A US hotel manager had mentioned cooperating on a limited number of academic projects with the International Council of Hotel, Restaurant and Institutional Education (ICHRIE), a leading organization in the hospitality industry supporting hospitality education and hospitality research projects. Potentially, ICHRIE's assistance in the survey distribution appeared to provide several advantages. Hospitality educators might be more inclined to help and may have students or graduates that would be potential subjects for the survey. Also, hotel operators that are members of ICHRIE may be more likely to have an interest in, and take part in, a hospitality research project. Thus, the data recruitment strategy was targeted to include contacting individual franchisees through support from the professional organization ICHRIE. To build social capital with ICHRIE the researcher agreed to fill a vacant board member position. The ICHRIE Director of Research distributed a message from the researcher to the membership with a link to the research survey. However, the response rate from the targeted ICHRIE membership was low (<0.1%) and no usa-

ble surveys were completed. Clearly, a recruitment strategy adjustment to reach the target population was necessary.

The same recruitment strategy used for contacting hotels in the US was attempted in Russia to determine whether it would succeed in a different context. Contact information for Western branded hotels operating in European Russia was obtained from the hotels' websites. A recruitment e-mail and FAX from the researcher, and the native Russian dissertation committee member, was sent in both English and Russian to each hotel. The involvement of the native Russian committee member was considered an important adaptation to ensure cultural sensitivity was observed.

Comments concerning data collection in Russia were received while attending an international business conference where the researcher's proposal was met with skepticism concerning the feasibility of collecting data in Russia. Concerns that Russians may be averse to participating in a US research project or with an unknown researcher were raised again suggesting this was a hard-to-reach population. This potentially could result in limited ability to collect data in Russia. Further, they suggested respondents might hesitate to complete the survey or be untruthful in their responses if it was presented to them by hotel management. They may feel that management could attain their responses. This perception may thwart the snowball/chain of referral recruitment strategy.

As was done in the US, General Managers of seventeen Russian hotels were contacted and only two expressed interest in the project and requested additional information. Ultimately both General Managers were unable to participate in the survey; however, one offered to provide expert advice concerning the Russian hotel industry. The disappointing response from direct contact with the hotels is consistent with Baruch & Holtom (2008) who found that using organizational responses results in a lower response rate. Thus, the lack of cooperation from the Russian and US hotel managers together with the feedback that management should not be involved in the survey distribution, particularly in Russia, the recruitment strategy was once again adapted to overcome these barriers. It was retargeted to the individual level rather than an organizational level to recruit participants. Although managers were ultimately used to distribute the survey link, the manager was not using their organizational authority, rather he/she was simply acting as a direct conduit to the researcher by forwarding the researcher's link to an external research website explaining the study. The survey link on the researcher's website stated that the survey responses were completely anonymous and de-identified. Building personal relationships with each potential respondent to ensure participation and accurate and honest responses was paramount. Thus, the use of social media to build the required relationships was explored.

Plan B – Social Media to Target Individuals

The Russian advisor suggested that social media usage was becoming very popular with many Russian people from a broad age range for personal and professional reasons. It also provides a way to build relationships with potential respondents in Russia. He explained that his hotel's parent company had created a LinkedIn group for use by managers and employees with about 16,000 members worldwide. A search on LinkedIn for this group, as well as groups for other targeted hotel chains, identified eight Western branded hotel related groups with members in either the United States and/or Russia. For the researcher to contact members of these groups, membership to the group was required. Group membership was requested by the researcher and all eight groups accepted his request within five days. Once granted, a group message introducing the researcher and thanking them for granting membership was posted on the group's discussion board with the goal to first establish a conversation/relationship with members. In every group, some members responded suggesting that a relationship was forming between at least some members of the network and the researcher.

Building a credible network and nurturing trusting relationships from a distance with both hotel managers who would be asked to simply forward the survey link to their front-line employees and self-identified front-line employees who would complete the survey directly on the research website was important but time consuming. This time factor was weighted against the costs of both attempting to collect data personally and the cost of not obtaining sufficient dissertation data. Trust building is important in data collection (de Leeuw, 2005) and particularly in the Russian context.

Despite the fact that the student researcher could not control to whom the network connections sent the referrals, the researchers built into the survey design questions to confirm the respondents were members of the targeted population. For example, a question concerning who employed the respondents was included as a target check. The researchers examined responses to this question to ensure the hotel listed matched the targeted groups. Other attributes of the target population such as job description were also verified to ensure that respondents were front line hotel employees.

Network Building, Development, and Targeting Adjustment

The researcher created a LinkedIn profile with the goal that individuals viewing the profile felt they learned something personal about the researcher. The profile included the fact that the researcher was a doctoral student conducting academic research to earn his doctoral degree, and his educational and professional background. The profile included a picture of the researcher on a trip to Russia taken several years ago to show his interest in Russia and to facilitate relationship building. It generated favorable comments from Russian network participants. The profile clearly indicated that the researcher was using LinkedIn for research purposes and this research profile was exclusively used to recruit network members in both subject countries.

In addition to the individual contacts solicited in the LinkedIn groups, individual members of the targeted population were identified on LinkedIn by searching using the keyword “hotel” and specifying country as “Russian Federation”. Over 4,200 search results were obtained, including large numbers of targeted employees. One hundred requests were sent to managers to join the researcher’s LinkedIn network with 45 acceptances. To limit accepted requests to persons in the target population, the LinkedIn default invitation was replaced with an invitation to join the doctoral student’s “research network”.

Based on the positive response to this approach, the researcher continued to send personalized requests via LinkedIn to both Russian hotel employees and managers to join his research network. Once they responded a personalized note was sent thanking them for joining. These documents can be found in Appendix B. To further build and maintain relationships, personalized emails were sent to network contacts on special occasions.

Early results from Russian subjects indicated that the individual requests were far more successful than prior group mailings. It was decided that US hotel managers and employees would be recruited using a process corresponding to the one used for the Russian network. This maintained a consistency of sample recruitment and data collection across both subject countries.

Data Collection and Invitation Adaptations

Invitations to participate in the survey were developed for managers and employees (see Appendix C). The management invitations included the study purpose, the anonymous and voluntary nature of the survey, both the English and Russian language survey links and a request that they forward the e-mail to their subordinates or other contacts that were members of the targeted population of front line hotel employees. Employee invitations contained the same information, however, the employee was asked to complete the survey prior to forwarding it.

Data collection in the Russian LinkedIn network had the subject line “<NAME>, will you please give me your opinion?” This approach was suggested by a Russian contact who explained that Russians welcomed the opportunity to be heard. From Table 1 it can be seen that only eight surveys were started and five completed out of 61 invitations sent yielding 5% response rate.

The poor response rate was again discussed with Russian contacts and it was suggested that the request should stress a call for their professional opinion, rather than for their personal opinion. From February 12th to the 14th, twenty-nine additional invitations to participate were sent to Russian network contacts with a slightly altered subject line asking for their “expert” opinion (see Appendix D). As a result, response rates improved considerably (48% response rate). At this time data collection in the US also began with a nine percent response rate.

It was noted that participants seemed most likely to respond on the day the invitation was sent. Culturally sensitive reminder e-mails, which avoided any perception of aggressiveness or hard deadlines, were sent to Russian invitees. The researcher was informed that Russians do not appreciate pushiness and deadlines, preferring to be asked respectfully for their participation. The reminder subject line was modified to: “A gentle reminder and a plea for help”. The reminder acknowledged the subject’s busy schedule, noted the e-mail previously sent, reassured the subject of anonymity and requested if they were managers they forward the link to hotel employees. If they were employees, they were asked to complete the survey and to forward it to fellow hotel employees.

Simultaneously, US membership in the LinkedIn research network rapidly expanded and as a result 222 invitations to participate were sent to US members with 36 surveys completed (16% response rate). Although there was some improvement in the Russian response rate, further improvement was needed. Thus, the subject line was modified to reflect an appeal for sympathy (as the doctoral student’s deadline for meeting graduation requirements was rapidly approaching). The subject line “<NAME> please help me graduate this April” was used (see Appendix E). Eighty-three invitations were sent to Russian members with only 6 surveys began and 4 completed (5% response rate).

Russian contacts advised that Russians highly respect the pursuit of education, thus, the subject line was subsequently changed to “<NAME>, will you please help with an education project?” Russian response rates improved dramatically. From February 25th to the end of the data collection period on March 15th, 2014, 210 Russian invitations were sent and 88 surveys were returned completed (42% response rate). US response rates during this period remained strong: Two hundred four invitations were sent and 110 usable surveys were returned (54% response rate).

Figure 1 presents the dynamics of the collection process and indicates the number of survey requests sent to network members and the responses received (surveys completed). Table 1 summarizes the response rates obtained with each adaptation.

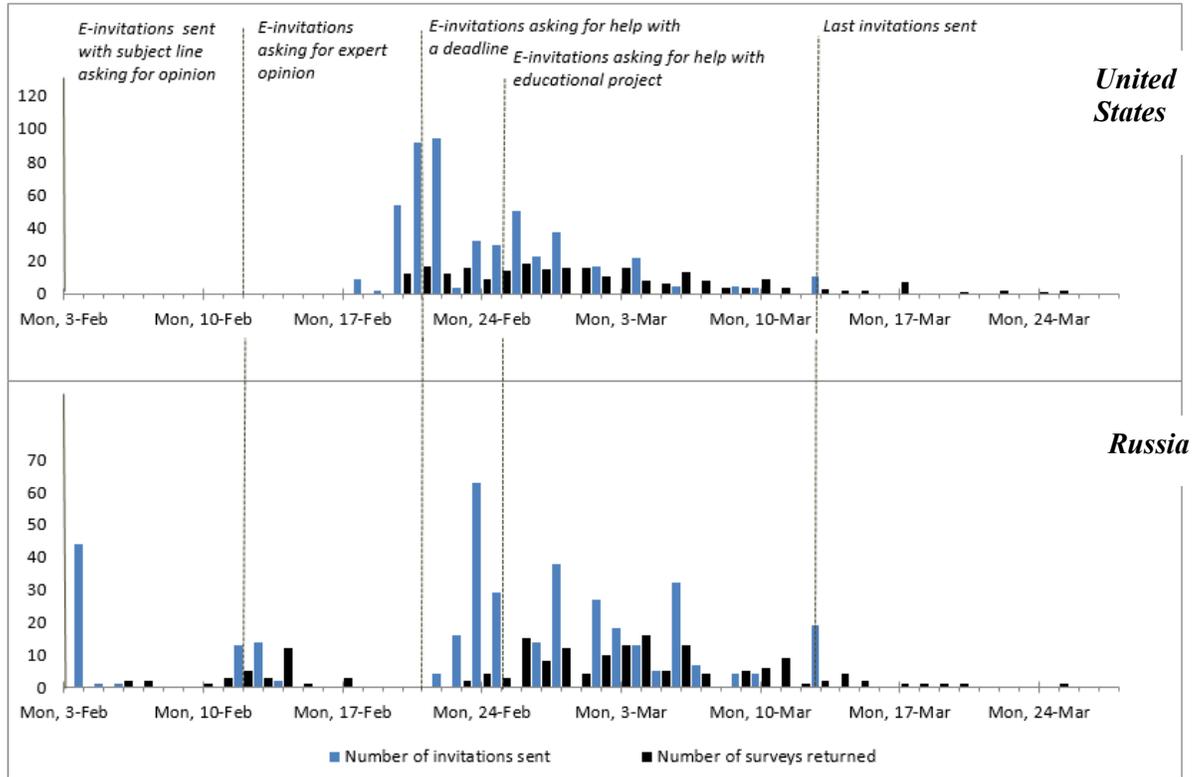


Figure 1. Invitations sent and responses received

Table 1. Distribution of response rated

	Total		E-invitations "<NAME>, can you please give me your opinion?"		E-invitations "<NAME>, can you please give me your expert opinion?"		E-invitations "<NAME>, please help me graduate in April"		E-invitations "<NAME>, will you please help with an education project"	
	US	Russia	US	Russia	US	Russia	US	Russia	US	Russia
Number of invitations sent	491	383	61	65	29	222	83	204	210	
Numbers of responses received	229	166	8	10	24	49	5	170	129	
Response rate for responses received	47%	43%	13%	15%	83%	22%	6%	83%	61%	
Number of completed usable surveys	152	111	5	6	14	36	4	110	88	
Response rate for usable surveys	31%	29%	8%	9%	48%	16%	5%	54%	42%	

Representativeness of the Targeted Population

We examined the representativeness of the sample to the targeted population as well as examined responses to demographic questions designed to assure target population membership. A total of 111 properly targeted responses from Russian network and 152 properly targeted responses from US network were collected prior to graduation deadlines. As presented in Table 2 below, both

samples consisted mainly of full-time, front-line employees of Western-branded hotel operators. A comparison of sample demographic characteristics with those reported previously in the literature was conducted to assess the representativeness of the targeted sample of the targeted population. As seen in Table 2, the Russian sample has considerably greater proportion of women ($\chi^2 = 8.696$, $df = 1$, $p = .0032$). Similar results were reported by Swerdlow & Cummings (2000) who conducted a paper-based survey of Russian and US hotel employees and found 73% and 55% of females in their Russian and US samples respectively. Additionally the author's personal interviews and visits to hotel properties further support for this finding. There were a significantly larger number of respondents with undergraduate and graduate degrees in the Russian sample compared with the US sample ($\chi^2 = 6.702$, $df = 1$, $p = .0096$), a result also supported by Swerdlow and Cummings' similar findings. The proportion of employees with a university degree was high in the US sample as well (68%) and this fact is consistent with Lin, Wong, & Ho (2013) who surveyed 587 frontline employees of leisure industries in the US and reported 68.5% respondents with professional or college degrees.

Table 2. Demographic characteristics of US (n = 152) and Russia (n = 111) samples

	Frequency (%) US	Frequency (%) Russia		Frequency (%) US	Frequency (%) Russia
Gender			Years in hotel industry		
Male	77 (51)	36 (32)	less than 3 years	28 (18)	54 (49)
Female	75 (49)	75 (68)	4 to 6 years	35 (23)	28 (25)
			7 to 10 years	33 (22)	16 (14)
Age			more than 10 years	56 (37)	13 (12)
Mean	34.24	29.41	Occupation		
Range	20 - 65	21 - 55	Bell hop	-	1 (.01)
Education			Concierge	30 (20)	9 (8)
High school or less	5 (3)	7 (6)	Front desk clerk	77 (51)	65 (59)
Some college/tech degree	44 (29)	13 (12)	Housekeeping	10 (7)	4 (4)
Undergraduate or higher	103 (68)	91 (82)	Maintenance	2 (.01)	1 (.01)
Full/ Part Time Status			Pool attendant	1 (.01)	-
Full time	145 (95)	110 (99.9)	Restaurant	27 (18)	29 (26)
Part time	7 (5)	1 (.01)	Room service	5 (3)	2 (2)

The average age of respondents was 34.2 and 29.4 years in the US and Russian samples respectively suggesting a dominance of young employees with short tenure. About half of the Russian respondents (49%) have worked in the hospitality industry 3 years or less compared to 18% in the US sample. Similar composition of the hotel workforce was reported by Swerdlow and Cummings (2000), Lin et al. (2013), and Sverdlin (1998). In particular, about 27% of the US respondents in Lin et al.'s (2013) study had worked in the industry less than 2 years and 48.9% of respondents were under the age of 30. Sverdlin (1998) studied work compensation systems and motivation in a Russian hotel. Out of the 202 employees surveyed, about 30% had worked three years or less in the industry, 51% were under the age of 34; and 52% had college or university degree. The method of targeted recruitment appears to have resulted in a sample that we believe appropriately represents the targeted population.

Findings

Lessons Learned

The researcher's profile on social media should reflect that he/she is an academic researcher. Many people indicated they participated since the researcher's profile made it clear that he was not someone from their company collecting data. This was an equal concern in both countries.

If you are using LinkedIn to collect data from populations, verify that there is an adequate number of potential respondents available in the targeted population. For example, several smaller cities in Russia had no hotel industry presence on LinkedIn. Assess study feasibility by investigating subject availability using LinkedIn's advanced search capability using the fields "industry & location". This will provide insight into the potential of using this process to gather data. It will also guide you in identifying and refining the existence of a population for your study.

When you are sending network invitations develop a personalized message rather than sending the default LinkedIn invitation. Once connected personalize your response with their first name to establish a closer, less formal relationship. No one in our sample overtly stated an objection to being addressed on a first name basis.

Discussion board traffic is dense. LinkedIn members generally scan the subject lines and delete messages without reading them. If you send individual responses to network members, they receive a personalized email rather than an email announcing a "New LINKEDIN DISCUSSION POST". In our experience, posting the link to your survey on a group discussion board will not result in many responses and may identify respondents outside your targeted population.

To reduce survey dropout rates, the surveys were developed with a completion bar to indicate the portion of the survey completed. Survey drop rates indicated that as participants perceived progress towards completion, they were more likely to continue and complete the survey. However, upon reaching the last page of the survey where the demographic questions were located, dropout rates increased as shown in Table 3.

Table 3. Drop-out points

	Page 1 (accepting survey terms)		Page 2 (survey instruments)		Page 3 (survey instruments)		Page 4 (demographic questions)		Total completed surveys
		%		%		%		%	
United States (229 respondents)	46	20.09%	18	7.86%	3	1.31%	10	4.37%	152
Russia (166 respondents)	37	22.29%	12	7.23%	1	0.60%	5	3.01%	111

Perhaps respondents were sensitive to personal demographic questions. Carefully word demographics questions to minimize potential sensitivity issues and thus increase the rate of survey completion. Remember, these demographic variables are instrumental in ensuring your respondents are part of your targeted population and your resulting sample is representative.

Interestingly, the doctoral student continued to receive messages from network members inquiring as to whether he has been successful in completing his dissertation. Apparently, these mem-

bers were motivated by helping the student succeed and have taken an interest in his success and the possibly they had contributed to it.

Since the researcher cannot control external factors, try to avoid short data collection timelines. Expect long timelines and hope you do not need them. During the data collection period, external, uncontrollable factors included issues regarding Internal Review Board approval of translated surveys, the Sochi Olympic Games in Russia, and the Crimean Peninsula Crisis in Ukraine. The official translations and back translations (Brislin, 1970; Watkins, 2010) are time consuming. In addition to translating, translations must be scrutinized by someone who understands the target population and culture so the translated measures will correctly identify the intended constructs in the targeted population. Sometime the questions need to be altered to make them culturally appropriate to ensure the equivalency of the construct measurement.

While time was allocated for translation, the Institutional Review Board (IRB) approval exceeded timeline expectations causing the data collection to occur during the Olympics. The IRB reviews all proposals to conduct research to be sure it is “adhering to basic ethical principles underlying the acceptable conduct of research involving human subjects” (Institutional Review Board of Nova Southeastern University, 2015). To meet graduation deadlines data collection was necessary during the Olympics, which created an abnormally busy time for front-line hotel workers around Sochi, including some of whom had come from hotels in Moscow to provide service during this rush period. This may have contributed to lower response rates from hotel workers than anticipated.

Additionally, the Crimean Peninsula Crisis in Ukraine began immediately after the Olympics had concluded, producing another unforeseeable event that involved the forced resignation by Kiev protestors of the Pro-Russian Prime Minister of Ukraine. These events raised tensions among Russian hotel workers and resulted in a three-day period during which no Russian responses were received. These events, all of which the researcher could not control or foresee, had unanticipated impacts on data collection in Russia.

The questions designed to validate the respondent’s membership in the targeted population are very important and can provide unexpected but interesting results. While the number of respondents from Russia used for the dissertation was 111 (see Table 3) the student received an additional 41 completed surveys from Russia. The survey’s targeting question concerning citizenship allowed us to determine that these respondents were actually immigrants working in Russian hotels, which represents another hard-to-reach population. The Russian advisor reported that if we had directly asked immigrants to participate, they would not have done so. This provided the student with another interesting data set. The importance of well thought out targeting questions cannot be underestimated when using this technique. Don’t expect all completed surveys will be from your targeted population and thus, be useable for the original purpose.

LinkedIn Caveat for Research Network Development

LinkedIn’s original purpose was to connect people that are already acquainted or are referred by a friend. If three LinkedIn members complain that they have received invitations from the same person they do not know, the person sending the invitations may be placed on probation. The result of being reported is that you are limited to inviting only those for whom you have an email address. Persons connecting to subjects through LinkedIn should be aware of this possibility, personalize their network invitations and be clear about their purpose to minimize the possibility people will be offended and report the activity.

Conclusions

To increase doctoral completion rates the required dissertation must be completed in a timely, efficient and cost effective manner while still maintaining appropriate rigor (Byers et al., 2014). Students should be able to choose a topic that interests them so they remain motivated to finish, even if the topic choice requires gathering data from hard-to-reach populations. This was the situation in this case study. The student in this case study had a strong interest in studying a Russian business. He has studied the Russian language for several years and made many Russian friends in his area of residence in Texas, USA. Cost and time constraints, which are major issues for most doctoral students, represent major factors which impact dissertation completion.

The research literature suggests that methods of gathering data have been changing over time as the way we communicate has changed and response rates have declined. Today data collection can potentially be global with the use of these new communication capabilities and thus improve generalizability. However, new communication capabilities such as the use of social media poses rigor issues since there are currently no widely established standards for the use of these methods. This introduces some level of risk, particularly for publishing in high-level journals, which are required by some schools. Thus, careful planning of the study and attention to study design are very important to minimizing this risk.

The declining response rates currently being observed using traditional methods of surveying the population also introduce risk by challenging the validity and reliability of the study. Traditional survey methods also require careful design and documentation to demonstrate the representativeness of the targeted population. This often requires additional costs and time. Among the advantages of the newer methods of communication are that they may be able to improve response rates by reaching the targeted population more effectively, providing respondents with greater privacy for sensitive questions, providing easier access to the survey, lowering data collection costs and reaching traditionally hard-to-reach populations. However there may be disadvantages to the newer methods such as difficulty in obtaining and documenting the target population, difficulty in following-up with non-respondents due to confidentiality, and providing less control over who responds when a snowball technique is used.

This case study documents the process used to survey a hard-to-reach population, at a reasonable cost and in a reasonable length of time for this particular doctoral student. In this case the cost associated with data collection was reduced since no targeted contact lists were purchased; no specific monetary contact costs were incurred and the only cost was to post the survey on Survey Monkey for a period of time. However, it was very consumptive of non-monetary direct costs related to the researcher's personal time. At least five hours each day were devoted to building and maintaining the network. Developing the network by issuing invitations to join via LinkedIn and building relationships prior to inviting the subjects to participate in the study required a significant time and effort commitment. Since the researcher was unemployed, it was an appropriate personal tradeoff for the doctoral student's situation at the time. Thus, it is important to note that this method is not without costs and commitments, which must be identified and weighed relative to the student's personal and professional situation.

Since this data collection process represents a tradeoff, planning and diligence are necessary. The earlier in the doctoral program the networking process begins, the better the position of the student at dissertation time. It can be argued that conducting research by examining discussion boards, particularly professional ones, to identify possible research needs/topics and networking should be a part of the doctoral student's academic knowledge and professional development. In this case, LinkedIn was the appropriate social media tool for this international business student. Given the diversity of people on the LinkedIn network, there are individuals and groups in many fields of research.

This case study presents a targeted snowball approach through social media to target hard-to-reach populations at a reasonable cost and in a reasonable time frame. While this methodology may not be appropriate in all situations or for all students, it provides an example of the approach taken by this student when faced with numerous obstacles. The traditional approaches of surveying a company or a professional organization or contacting a random sample did not reach the targeted population in sufficient numbers. This case study shares a method to minimize out-of-pocket cost and time constraints and allow the student to complete his dissertation while maintaining appropriate rigor.

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Appendix A

Timeline for Data Collection

Date	United States	Russia
12/15/2011		Began search for American branded hotels in Russia.
3/12/2012		Began recruiting Russian hotels to request participation in the survey.
5/7/2012	Began recruiting executives at national headquarters of US hotel brands that were operating in Russia for participation in survey.	
6/1/2012	Created English research website to make project details available to persons considering taking part in the survey.	
8/1/2012		Added Russian versions of English pages to research website.
10/14/2012	Began recruiting US franchisees of US hotel brands operating in Russia to participate in the survey.	

Media and Targeted Snowball Sampling

Date	United States	Russia
7/16/2013	Began searching for hotel themed LinkedIn groups and requesting membership.	Began searching for Russian hotel or hospitality themed LinkedIn groups and requesting membership.
8/1/2013	Began posting recruitment message to discussion boards of US LinkedIn hotel groups, which I was a member.	
8/8/2013		Began posting recruitment messages to discussion boards of Russian LinkedIn groups, which I was a member.
10/24/2013 through 10/27/2013		International business conference.
11/6/2013		No responses from Russian LinkedIn group discussion board postings. Began personally recruiting Russian hotel managers and employees to join the research network.
11/14/2013	Only one response from US LinkedIn hotel group discussion board postings. ICHRIE agrees to distribute survey to US membership upon IRB* approval of project.	
12/10/2013		To build relationships, all Russian contacts are sent personalized Christmas/New Year's messages.
12/22/2013	IRB* approval granted to send survey to US hotel managers and employees. Survey distributed to US ICHRIE membership.	
2/3/2014		IRB* approval granted to send survey to Russian hotel managers and employees. Began sending surveys to Russian LinkedIn contacts. Subject line asks for contacts opinions.
2/6/2014	No ICHRIE responses. Began recruiting US hotel managers and employees to join the research network.	
2/10/2014		Subject line changed to a request for expert opinion.
2/17/2014	Began sending survey to US LinkedIn contacts. Subject line asks for expert opinion.	
2/21/2014	Subject line change. Asking for help with a deadline included.	
2/25/2014	Subject line change. After advice from a Russian contact, deadline removed and subject line changed in US and Russia. Now asking for help with an education project.	
3/13/2014	Last invitations are sent to the US and Russia.	
3/24/2014	Survey closed.	

*IRB refers to the Institutional Review Board, which reviews studies of human subjects for their protection.

Appendix B

Invitation to join the researcher's network

LinkedIn research network

Discussion board subject line: "HOTEL MANAGEMENT AND OWNERS – I am doing a doctoral project and need your help".

I need to administer a confidential, voluntary survey to hotel employees. The only action I need of you is to forward an email to your employees that will direct them to the survey website. You will have the opportunity to view the survey questionnaire prior to forwarding the email to your employees, if desired. I appreciate your help. I cannot move forward with my dissertation until I have confirmation of hotels willing to participate.

Request to join LinkedIn research network

"I'd like to add you to my research network on LinkedIn.

- Gary"

Thank you for joining LinkedIn research network

Subject line: Greetings!

Hello <NAME>

I hope you are well. Thank you for accepting my connect invitation. You work for an interesting company. I am on LinkedIn for both research and career purposes. I hope we can help each other. Thanks again for joining my network.

Gary

Appendix C

Invitation to participate in survey

First e-invitation (Sent to Russian network participants)

Subject line: <NAME>, can you please give me your opinion?

Good morning, <NAME>.

I hope you are well and that you are staying warm this winter. As you know, I am doing research on the hotel industry and I desperately need help with one final project to earn my doctoral degree. Could you please help me with my final project entitled "The Hotel Employee Work / Life Study"? The study is designed to collect on-line survey responses from hotel employees, and is available in both Russian and English.

In letter to employees:

All I am asking is that you ask your friends or non-management employees working in the hotel industry to complete the survey. I also encourage you to take the survey, too. The survey should only take 10-15 minutes to complete.

In letter to managers:

All I am asking is that you ask your non-management friends or non-management employees working in the hotel industry to complete the survey. I can forward you a copy of the survey for you to review prior to asking others to complete it. The survey should only take 10-15 minutes to complete.

The goal of the Hotel Employee Work/Life Study is simply to measure the effects of hotel employees' job and life satisfaction on job quality. No questions are asked regarding hotel operations. Furthermore, participant responses are completely anonymous and voluntary, and will be kept strictly confidential with no identifiable information being collected. My study design and survey have been approved by The Institutional Review Board of Nova Southeastern University to assure protection from harm to participants.

When you ask your friends or employees working in the hotel industry to help me out by completing the survey, please provide them with the appropriate link below:

To take the survey in English, please visit: <https://www.surveymonkey.com/.....>

To take the survey in Russian, please visit: <https://ru.surveymonkey.com/s/.....>

Thank you very much for your help. Your help is very important toward the completion of my doctorate. Please let me know if there is anything you need.

Your friend, Gary

Appendix D

First revision of invitation to participate in survey

Second e-invitation (sent to both Russian and US network participants)

Subject line: <NAME>, will you please give me your expert opinion?

Good afternoon <NAME>,

Thank you for joining my research network. I am earning my doctorate with a hospitality concentration and need 200 survey responses for my dissertation by <DATE>. Without these responses, I cannot graduate.

In letter to employees:

Would you please help me by taking a short, anonymous, online survey? So far, I haven't received many survey responses by people in your position, so it would be important to receive your input. It would also be very helpful if you could forward this request to friends or non-management co-workers that work in hotels and ask them to take the survey.

In letter to managers:

It would be very helpful if you could forward this request to non-management friends or non-management co-workers that work in hotels and ask them to take the survey.

If you have any suggestions after completing the survey, I would appreciate your feedback.

When you ask your friends or employees working in the hotel industry to help me out by completing the survey, please provide them with the appropriate link below:

To take the survey in English, please visit: <https://www.surveymonkey.com/...>

To take the survey in Russian, please visit: <https://ru.surveymonkey.com/...> <for Russian participants>

When you take the survey, please continue to the end and select the "Done" button. An incomplete survey cannot be used for the analysis, so I ask that you please complete the entire survey.

I would like to thank you in advance for completing the survey. Since it is anonymous, I will not be able to send you a personal thank you. Please know that I am very grateful for your help!

Gary

Appendix E

Second revision of invitation to take survey

Third and fourth e-invitation (Sent to both Russian and US network participants)

Subject line in third e-invitation: <NAME>, please help me graduate in April

Subject line in fourth e-invitation: <NAME>, will you please help with education project

Good morning <NAME>.

I know your job keeps you very busy, but I hope you will take 10 to 15 minutes to help me graduate. I am earning my doctorate with a hospitality concentration and need 200 survey responses for my dissertation. Without these responses, I cannot graduate. Would you please help me by taking a short, anonymous, online hospitality survey?

To take the survey, you may either click on the appropriate survey link below or copy and paste it into your browser's address bar.

To take the survey in English, please visit: <https://www.surveymonkey.com/...>

To take the survey in Russian, please visit: <https://ru.surveymonkey.com/...> <for Russian participants>

When you take the survey, please continue to the end and select the "Done" button. An incomplete survey cannot be used for the analysis, so I ask that you please complete the entire survey.

I would like to thank you in advance for completing the survey. Since it is anonymous, I will not be able to send you a personal thank you. The anonymous nature of the survey also prevents me from knowing if you completed the survey earlier in the week. If you have, thank you very much for your help. Please know that I am very grateful for the help of my <Russian> friends!

Gary

Biographies



Gary A. Dusek earned his Doctor of Business Administration degree from Nova Southeastern University with a concentration in International Business in 2014. His Masters of Business Administration in Management and undergraduate degree in Finance were earned from Texas State University. Dr. Dusek's research interests include the study of Eastern European transitioning economies, employee turnover, service orientation theory and data collection through social media. Dr. Dusek currently serves on the editorial review board of the *Journal of Organizational Culture, Communication and Conflict* and as the Director of Membership and Development for the International Council of Hotel, Restaurant and Intuition Education's West Federation.



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Cite as: Zahl, S. B. (2015). The impact of community for part-time doctoral students: How relationships in the academic department affect student persistence. *International Journal of Doctoral Studies*, 10, 301-321. Retrieved from <http://ijds.org/Volume10/IJDSv10p301-321Zahl0672.pdf>

The Impact of Community for Part-Time Doctoral Students: How Relationships in the Academic Department Affect Student Persistence

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Abstract

This study examines the ways that part-time Ph.D. students develop community within the academic department and how a sense of community is related to persistence. This study included 12 participants (ten students and two program chairs) in two academic departments at one urban research institution. This qualitative study followed a descriptive case study design and provided three levels of data: the institution is the bounded system; the academic departments are the cases; and the participants are embedded cases. Positive relationships with peers and faculty served as a source of encouragement and supported persistence, particularly during challenging semesters and later phases of the doctoral program. However, it was often difficult for the participants to develop and/or maintain relationships, due to limited proximity, limited access to faculty, and changing cohorts. Participants did not consider full-time doctoral students to be part of their community, due to perceived differences between part-time and full-time students. The participants also perceived that faculty catered to full-time students and preferred to conduct research with them rather than part-time students.

Keywords: doctoral education, part-time Ph.D. students, community, graduate study, persistence

Introduction

Projections of the number of doctoral students who leave their programs range from 30 to 70% (Berelson, 1960; Council of Graduate Schools [CGS], 2008; Hawley, 2010; Lovitts, 2001; Nettles & Millett, 2006; Tinto, 1993). Despite many national programs (e.g., Carnegie Foundation for the Advancement of Teaching, 2008; CGS, 2008; Woodrow Wilson National Fellowship Foundation, 2005) and institutional efforts to decrease attrition of doctoral students, there has been little to no change in attrition rates in the past 50 years (Berelson, 1960; CGS, 2008).

Pursuing a Ph.D. as a full-time student is correlated with persistence and degree attainment (Clewell, 1987; Girves & Wemmerus, 1988; Nettles & Millett, 2006; Ott & Markewich, 1985

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because full-time students have more opportunities to interact with faculty and peers. However, the number of part-time students pursuing doctoral degrees continues to grow. According to the Council of Graduate Schools, approximately 33% of all Ph.D. students in the United States are enrolled part-time, with some disciplines reporting numbers as high as 57% (CGS, 2012). Despite these percentages, part-time students are

Editor: Ahabab Chowdury

Submitted: April 24, 2014; Revised: May 5, 2014, August 7, 2015; Accepted: August 10, 2015

rarely included in the literature on the doctoral student experience (Berelson, 1960; Golde, 1998, 2005; Hawley, 2010; Lovitts, 2001; Lovitts & Nelson, 2000; Tinto, 1993; Weidman, Twale, & Stein, 2001; White & Nonnamaker, 2008).

The increasing numbers of part-time doctoral students combined with attrition rates of up to 70% (Berelson, 1960; CGS, 2008; Hawley, 2010; Lovitts, 2001; Nettles & Millett, 2006; Tinto, 1993), warrant special attention on this population of doctoral students. A line of research that holds promise to improve attrition rates revolves around a sense of community between the student and the academic department. Accordingly, this study examined the ways that part-time Ph.D. students develop community within the academic department and how a sense of community is related to student persistence. Specifically, this study investigated two questions: 1) In what ways do part-time doctoral students develop a sense of community within their academic departments? and 2) How does a sense of community influence the persistence of part-time doctoral students?

Literature Review

Many researchers have found a strong link between attrition and a lack of community between the student and the department of study (Antony, 2002; Lovitts, 2001; Lovitts & Nelson, 2000). A lack of interaction with faculty and peers can lead to a graduate student experience characterized by loneliness, stress, isolation, and confusion (Gardner, 2008; Hadjioannou, Shelton, Fu, & Dhanarattigannon, 2007; Lovitts & Nelson, 2001; Weidman et al., 2001). However, frequent positive interactions produce strong connections to the department and create a system of supportive relationships (Weidman et al., 2001). Research indicates that the highest attrition rates are found in the humanities and social sciences (average ten year attrition rate of 32% (CGS, 2008)), where programs of study are typically individualized and students are expected to conduct research independently. Conversely, the lowest attrition rates are in the sciences (average ten year attrition rate of 26.2% (CGS, 2008)), where students are often required to conduct collaborative research and meet regularly with laboratory groups (Baird, 1990; Deem & Brehony, 2000; Lovitts & Nelson, 2000; Nettles & Millett, 2006).

Defining Doctoral Student Community

Community in educational contexts is frequently associated with foundational ideas of belonging and mattering as they relate to meaningful relationships with others and becoming a valued member of a sustained, collective group (Tinto, 1993; Wenger, 1998; White & Nonnamaker, 2008). For this study, *community* is defined as the development of social networks through relationships in the academic setting. Kadushin (2004) defines social networks as relationships that one can draw upon as resources during graduate study. Social relationships with faculty and peers serve as important resources to assist students in working through social, emotional, and academic problems they are likely to encounter while pursuing the doctorate (Golde, 1998, 2005; Hawley, 2010; Lovitts, 2001; Lovitts & Nelson, 2000; Tinto, 1993; White & Nonnamaker, 2008).

Tinto's Theory of Doctoral Student Persistence

Tinto's (1993) book on student attrition includes a foundational model of doctoral student persistence and describes community during doctoral study. While Tinto did not intend to explain the development of community, this research provides a foundational lens to view social and academic systems (the department) as the student's primary community throughout graduate study. Tinto's model proposes that doctoral student persistence depends on how individuals function within social and academic systems. The extent and quality of the interactions in these systems determine the degree to which doctoral students become integrated and ultimately persist to complete the program. One criticism of Tinto's model and other models of doctoral student persistence and socialization (e.g., Weidman et al., 2001) is that all students are assumed to fit the

model in the same way (Golde, 2000). This “one size fits all” approach fails to address the needs and experiences of certain groups of students, particularly part-time students.

Socialization and Integration into Program Culture

Socialization is widely accepted as a framework to describe the experiences and development of doctoral students during graduate study (Antony, 2002; Austin, 2010; Gardner, 2007; Golde, 1998, 2000; Weidman et al., 2001). The four-stage model of doctoral student socialization (Weidman et al., 2001) points to the significance of community during doctoral study by emphasizing program culture and the development of supportive relationships with peers and faculty in the department. The foundation of this model is that graduate students experience a developmental metamorphosis that is often accompanied by discomfort, insecurity, and uncertainty. While acquiring new information and accepting the role of doctoral student, individuals proceed through four interactive stages (anticipatory, formal, informal, and personal) of socialization. In order to advance through all four stages students must cultivate and maintain strong networks to provide academic, social, and emotional support throughout graduate study.

The academic department is the environment where community begins for doctoral students since the majority of their interactions take place there (Berelson, 1960; Gardner, 2007; Tinto, 1993; White & Nonnamaker, 2008). This is particularly true for part-time students who typically do not spend much time on campus, other than class meetings and activities. The extent of a student’s integration, or fit, into the social and academic culture in a department is strongly connected to persistence and the quality of the doctoral student experience (Gardner, 2008; Hall & Burns, 2009; Hawley, 2010; Lovitts, 2001; Tinto, 1993; Watts, 2008). As students recognize commonalities and experience engagement with faculty and peers, they develop a sense of joining and integrating into a large supportive intellectual community (Jazvac-Martek, 2009).

Relationships with Faculty

Researchers consistently indicate that regular interaction with faculty advisors and mentors is a strong predictor of doctoral student satisfaction, persistence, and productivity (Golde, 1998, 2005; Lovitts & Nelson, 2000; Spaulding & Rockinson, 2012; Tinto, 1993; White & Nonnamaker, 2008). In fact, Lovitts (2001) found that a student’s relationship with an advisor is “probably the single most critical factor in determining who stays and who leaves” (p. 270). The amount of time spent, frequency of the interactions, trust, and a sense of care from an advisor are crucial to student success and satisfaction (Austin, 2010; Barnes, Williams, & Archer, 2010; Golde, 2000; Lovitts, 2001).

Most of the recent literature on the doctoral student experience differentiates between faculty advisors and faculty mentors as these can be two very distinct roles (Golde, 2005; Nettles & Millett, 2006; Weidman et al., 2001). Advisors are usually formally assigned by the academic department to approve coursework, whereas mentors are typically selected based on interests or personality similarities and are often “faculty to whom students turn for advice...or for general support and encouragement” (Nettles & Millett, 2006, p. 98). For part-time students, a faculty advisor and/or mentor may be the only departmental connection since they do not spend much time in their departments outside of required classroom attendance (Deem & Brehony, 2000).

Relationships with Peers

Interactions with peers are just as important as interactions with faculty in facilitating doctoral student success (Gardner, 2007, 2008; Golde, 1998, 2000, 2005; Lovitts & Nelson, 2000; Tinto, 1993; Weidman et al., 2001; White & Nonnamaker, 2008). Interactions with peers shape a student’s community during doctoral study by providing support, challenge, mentoring, and ac-

countability (Gardner, 2007; Jairam & Kahl, 2012; Weidman et al., 2001). Peer interactions also blend social and academic components, whereas faculty relationships can often be strictly academic in nature (Golde, 2000). Students who are not connected to their social peer community in the department often consider leaving their program because they feel they are missing a significant piece of the overall doctoral student experience (Gardner, 2008; Golde, 2000; Lovitts, 2001). Many part-time students experience difficulty creating and maintaining peer relationships from one semester to the next due to academic demands and balancing other commitments in their lives (Austin et al., 2009; Smith, 2000). For these part-time doctoral students, consistent peer relationships can make a significant difference in the decision to persist through the program.

This study fills two significant gaps in the literature. First, this is one of very few studies focused entirely on part-time Ph.D. students. Second, the existing literature indicates that the development of community during doctoral study is important to student persistence and overall program satisfaction. However, existing studies do not address *how* doctoral students develop community. The present study fills this gap by investigating the process of relationship development and a sense of community with faculty and peers in the academic department.

Methods

This research study followed a descriptive case study design (Merriam, 2009; Stake, 2003) with embedded subcases and multiple units of analysis (Yin, 2012). Case studies investigate a particular phenomenon within a specific context, particularly when it is difficult to separate the phenomenon's variables from the environment (Merriam, 2009). Semi-structured interviews (60-90 minutes) were conducted with ten part-time Ph.D. (research based) students from two departments (four from Nursing and six from Education) at one urban research institution. Focusing the sample to a single institution followed the case study design of investigating a phenomenon within a single, bounded system (Merriam, 2009; Stake, 2003) and controlled for differences based on institutional type (Golde & Dore, 2001). This case study provided three levels of data: the institution is the bounded system; each department is an embedded case; and each student is an embedded case within each department.

At the institution where this study was conducted, full-time graduate study is defined as eight or more credit hours in a semester and part-time is defined as enrollment in fewer than eight credit hours. These guidelines led to the definition of *part-time* enrollment for this study: a doctoral student enrolled in less than eight credit hours. The students were at or near the qualifying examination phase of their program in order to participate in this study (they were allowed to have up to two courses remaining). Limiting the sample to students at the qualifying examination phase provided data regarding their persistence in their programs and controlled for differences based on current stage in the program. Department Chairs in Nursing and Education sent a study notification to all part-time Ph.D. students who matched the criteria. However, the Department Chairs only facilitated the contact; they did not know which students actually participated. The identity of potential research participants was not revealed to the researcher unless the students contacted the researcher after receiving the notification from the Department Chair. To ensure that students met the criteria of the study, individuals who contacted the researcher were screened via telephone prior to arranging an interview.

The department heads (Department Chair or Graduate Program Chair) from both cases were interviewed (see Appendix A) prior to the student interviews (see Appendix B) to provide context and information about departmental culture, norms, and values. While this study included 12 interviews, the two interviews from department heads were used for context only. Including two departments in this study provided data for comparisons between the cases and led to a set of implications and recommendations for administrators, faculty, and students in both departments. A

sample size of ten students provided sufficient rich, descriptive data because of the longer in-depth interviews with the participants. Sample sizes for many of the qualitative studies that informed this study ranged from three to 12 participants (Austin et al., 2007; Golde, 2000; Jazvac-Martek, 2009) so the sample size of ten students is in line with standards in the field.

Transcriptions of interviews were continuously reviewed for emerging themes and data were grouped into categories for each theme using open coding, axial coding, and then selective coding (Corbin & Strauss, 2007) and entered into the NVivo qualitative software database. After themes were identified and developed, they were linked to form empirical conclusions. Inductive analysis during data collection ensured that a point of saturation had been reached.

Trustworthiness

Respondent validation ensured that participants' responses were captured accurately and that interpretation of the data was free of bias (Merriam, 2009; Rossman & Rallis, 2003).

Participants reviewed interview summaries from their own interviews to provide feedback on emerging findings and verify that the interpretation of the interview and the representation of their stories were correct. Additionally, the findings from the field notes and document analysis were cross-checked with conclusions from the interviews.

To protect the identities of participants, pseudonyms are used for the students and the institution. Approval of this study was obtained from the Institutional Review Board before the participants were secured.

Limitations

This was a case study of part-time Ph.D. students in two academic departments at a single institution. While the smaller sample size and in-depth interviews provided rich descriptive data that is transferable (Lincoln & Guba, 1985) and can be extrapolated (Merriam, 2009), part-time Ph.D. students at other types of institutions may have different experiences than those represented in this study. Utilizing Department Chairs to help identify potential participants may also be a limitation. In some cases, the Department Chairs may have had close relationships with certain students, which could have made students feel that they must participate in the study. However, students were anonymous participants and department chairs did not know who participated and who did not, so this was in fact a voluntary study. Additionally, the Nursing program included a combination of face-to-face and online courses. Some of the issues related to proximity and limited community articulated by students in the Nursing sample were due to this hybrid program structure and may not apply to traditional classroom environments. Since this study includes two disciplines, differences in academic culture may affect the results. Conducting the study within one institution helped control these differences, but departmental characteristics play a role in one's sense of community. Lastly, some of the participants had limited familiarity with the researcher due to previous interactions at the institution used for the study.

Results

Three major themes emerged in the data: (a) the ways that part-time doctoral students define a sense of community within academic departments, (b) the impact of relationships with peers, and (c) the impact of relationships with faculty.

What is Community for Part-time Ph.D. Students?

Participants discussed several concepts of community: feeling connected to the academic department, a sense of belonging and trust, scholarly community of practice, and relationships with peers and faculty. The concepts presented in this section are multi-faceted and are discussed in

more detail throughout this article, but they are presented here to provide context to the meaning of *community* for the participants in this study.

Feeling connected to the academic department

All of the participants indicated that developing a sense of community must involve feeling connected to the academic department. Their connections largely involved forming relationships with peers and faculty, but some students also described connectedness simply based on the culture of the academic environment. Interactions with other people are the key element in most descriptions of academic culture (Gardner, 2008; Hall & Burns, 2009; Hawley, 2010; Lovitts, 2001; Tinto, 1993; Watts, 2008). However, in some ways, participants' descriptions of connections based on the culture did not necessarily involve having a relationship with persons in the department, but stemmed from general feelings of a supportive space. For example, many students described a community as a place where "it feels like you are not alone" or "an informal culture that tells me there is community." These descriptions involved people, but did not necessarily involve knowing those people on a personal level. These statements suggest that the participants would know there is a community simply by walking through a space and observing the way that others behave there.

Sense of belonging

A sense of belonging was described as feeling valued and appreciated by others in the community, developing mutual trust and encouragement, and knowing that you genuinely matter to someone else. Henry, a part-time doctoral student in Education, described a sense of belonging in this way: "It feels like you have a group of people that empathize with you. They understand the struggles of finishing your doctorate which includes some, you know, self-doubt, fatigue, all that stuff. They can encourage you; you encourage each other." Other participants noted that a sense of belonging stems from finding a common purpose, developing mutual respect, and feeling that "we are all in this together" and "part of a team."

Scholarly community of practice

Over half of the participants described a sense of community in the academic department as a scholarly community of practice (Wenger, 1998). Wenger's definition of a scholarly community of practice includes learning together, relying on each other, and sharing similar values and goals. Students conceptualized this as an open environment where people of similar values and beliefs around a certain topic or field gather to collaborate with other scholars and share ideas related to research and practice. The participants indicated that there are significant structural barriers for part-time students that limit scholarly engagement, but the scholarly community of practice served as a resource to help them overcome those barriers. Jacob referred to this when he stated,

Some of the parameters of our program fracture us slightly, but I still think that the ability for us to rally together on important issues in higher education brings us together. It's a group of peers coming together, or a community of learners or scholars coming together to better the field and the profession. I think my desire to do the work that I do got further fueled by being here and being in the presence of these people.

This subtheme is multifaceted in both cases: some of the participants described themselves as a member of a scholarly community of practice; others noted that this type of community was absent in their own academic department; and two participants described it as something they experienced only at certain points during their program. The participants who focused on scholarly interactions with faculty described an inconsistent or absent scholarly community of practice. Conversely, those who focused on scholarly discussions with peers (rather than faculty) described themselves as members of a scholarly community of practice throughout their program of study.

Notably, all of the students who explained this as an absence attributed it to their status as a part-time doctoral student; they described it as a characteristic of doctoral study that only applies to the full-time student experience.

Relationships with Peers

When describing interactions during doctoral study, the participants articulated clear differences between peers and faculty. Connections with other students played a role in many different environments—in the classroom, in informal learning spaces, in social settings, and in professional environments (conferences and work). Notably, almost all of the participants interacted with their academic peers in their career settings as well, so they knew their peers as professional colleagues as well as peers in their academic program. This phenomenon was viewed both positively and negatively by the participants because it was often difficult to manage both of these roles simultaneously within the same environment.

Support and understanding

Every participant discussed the importance of peer relationships and described their peers as one of the reasons for their persistence in their programs. All of the students experienced a stronger sense of community with other part-time students because they could understand the unique circumstances they encountered due to their student status. Megan described her part-time peers as a support network:

It was really important to me in terms of balance and being productive to find confidants in the program. Particularly building a relationship with...those folks that were in my [professional seminar] group because I knew that there were others that were dealing with some similar challenges. And sometimes it was really helpful just to say to someone, 'it is really frustrating that I have all of this to do and not enough time to do it in.'

Peers served as personal and academic resources and provided encouragement to overcome challenges they encountered during doctoral study. In fact, most participants indicated that they “wouldn’t have known what to do” in certain courses or at specific points in the program, had they not been able to rely on their peers as a source of information. For example, several Nursing students had to repeat a specific course in the program and relied on peers for support during this challenging process. In every case, the students cited peer support and encouragement as the reason they successfully completed the course and developed a strong sense of community with their peers as a result of working through this challenge together. Caroline described the way that her peers encouraged her to persist in her program:

I don’t think you would want to get to that end goal unless you had had those relationships and had that time together. Because I could see that without that I probably would not have been able to get through some of the harder times.

Peer relationships mattered even more in the later stages of the doctoral program as students were nearing the end of coursework and preparing for the qualifying examination. The students who had finished coursework noted that, due to the independent nature of qualifying examinations, they had not interacted with their peers as much as they did when they were in classes together. As a result, they felt more isolated during a time when they needed significant guidance and support, which led to a weaker sense of community with their peers during this phase of doctoral study. However, when a peer made an effort to reach out to another student individually during this time, those efforts had a significant positive impact on one’s sense of community. The results of this study suggest that, during periods of loneliness or isolation, the supportive actions of just one peer can create a sense of community not only with that individual, but with the broader academic community as well.

When support is removed. Two students described specific points in their program when they felt a lack of peer support and an absence of community. In both situations, they had already established strong peer relationships, but specific circumstances challenged those relationships. Their stories are particularly poignant because they illustrate how painful separation from peers can be for a part-time doctoral student. Cynthia began the program with a cohort of seven Ph.D. students, but the cohort shrank to only three people. When each person dropped from the program, it had a detrimental effect on her relationships as well as her faith in her own ability to complete the program. She described a specific moment when one of her peers told her that she was leaving the program:

When she emailed us and told us she was quitting I just remember thinking ‘oh man I don’t know if I can continue’...so each time I think that that has an impact on you because your support is getting smaller and smaller.

Diane described a specific semester when she felt isolated from her peers because she did not have the minimum number of hours required to take a capstone course with the rest of her cohort. She described feeling left out and missing an opportunity to reflect on the program with the peers she had relationships with since the beginning of her program:

I was excluded from taking that class. So most of my cohort took that class together, and being that it did have an education piece to it, there was a lot of reflection. I wasn’t getting to participate in a class with a group that I have been with and that next summer when I get to take it, because it is only offered in the summer, I won’t be in a class with people that I have known all along.

Because she missed the course, she had to take it the following year with a different group of students. These two examples illustrate the negative consequences of feeling removed from peers after developing strong connections to them as part of an academic community. Diane and Cynthia felt completely removed from the peer community they had developed over time. In Cynthia’s case, she began to doubt herself and her abilities to persist in the program each time another one of her peers dropped out. These stories suggest that losing members of one’s peer community can have a negative impact on a student’s rate of persistence in the program because the student’s departmental connections are reduced.

Difficult to develop peer relationships

Nine of the ten participants described the process of creating and/or maintaining peer relationships as very difficult due to perceived differences in levels of commitment/experience, changing cohorts, and limited proximity.

Differences in level of commitment/experience. Many of the students found it difficult to engage in scholarly discussions with peers due to differences in the level of commitment between themselves and their peers. Students noted that they were drawn to certain peers in the program because they had similar purposes for pursuing the Ph.D. and they were committed to maintaining a similar high level of quality in discussions and assignments. Eric recalled that the perceived lower level of commitment from his full-time peers was very surprising because he was often envious of those who attended full-time. He said, “Even with this opportunity of being supported or going full-time, which I would have preferred to have done, they just, not all of them seemed to be as committed as I was, which was kind of a shock.”

Participants attributed a higher level of commitment for part-time students to differences in age and years of prior work experience, specifically having at least a few years of work experience between the masters and the doctorate. Megan attributed her success in the program to finding and socializing with peers who “have a similar approach to work” as she does because they are

reliable and maintain a level of rigor in their courses. She noted that the variance in commitment level due to age and/or professional experience often divides students:

I think that sometimes it creates tension between the students, right? There is no ‘good enough’ in my world. And I feel sometimes, maybe it is about age too. That some of the younger students in the program that tend to be the full-time students are not perhaps as rigorous in their work.

These differences affected how the participants perceived their peers and who they considered part of their academic community. They developed a stronger sense of community with their peers who were similar to them in age, professional experience, and approach to coursework. In addition to the dichotomy between full-time and part-time students, Megan made a distinction between her peers who were “doers” and those who were “thinkers.” The “doers” tended to focus more on the applied portions of the program and were obtaining a credential, while the “thinkers” were those who were more theoretical or wanted to conduct research. She noted that the “research versus applied” dichotomy can create tensions when doing group work or having discussions in class because students tend to identify with either the “doers” or the “thinkers,” but typically not both. These distinctions have significant implications for the development of community with peers. If “doers” and “thinkers” identify and interact primarily with others who are like them, students are likely to experience community in pockets rather than widespread community with all of their peers. This finding also presents an interesting tension regarding the lack of consensus around the role of part-time doctoral students. Many see them as solely focused on practice, yet some of the participants in this study pursued the doctorate because they aspired to research or faculty careers. Another way to view this tension is through the lens of research (i.e., “thinker”) and applied practice (i.e., “doer”).

Changing cohorts. Almost half of the participants found it difficult to connect and develop community with their peers because they lost track of their cohort during the program. Because of the pace in which they enrolled in courses as part-time students, they began their Ph.D. with a certain cohort, but eventually ended their coursework with an entirely different group of students. Participants expressed concerns about not seeing anyone from their original cohort after their first year and noticing that their full-time peers got “way ahead” of the part-time students. One student described shifting among multiple cohorts and noticing that all of the other students from his original cohort were already finished with the program:

I have had like 2 or 3 different cohorts since I have been here, the original and then maybe the folks that started a year, maybe a year after I did and then there was another one that started a little further beyond that. That first cohort, most of them have actually finished.

The participants who shifted between cohorts were attempting to develop several different peer communities rather than one large peer community. The challenge of assimilating into multiple peer groups increases the difficulty of developing a general sense of community within the academic department.

Proximity. Almost all of the participants described difficulties connecting with peers due to limited proximity (time, place, or occurrence). The Education participants noted that they interacted with peers regularly during class meetings, but it was very rare to interact with them outside of the traditional classroom environment due to their part-time status. The classroom environment was structured to include peer interaction through group work, peer feedback, and organized class discussions. Outside of those required interactions, it was rare for the students to interact with each other except for seeing each other occasionally in passing. Henry noted this when he stated,

Inside the classroom it’s, I mean, I think we are a lot closer. I mean just because of the nature... We like to share our opinions and all that other stuff so that was never a problem. But unless it was someone in

the class that I knew personally, once we left that classroom that was pretty much it as far as correspondence and engagement.

Since all of the participants worked full-time, they did not have the opportunities to engage in the same social activities that full-time students did. The Nursing participants described a sense of community during the structured summer intensive sessions, but noted a lack of connection with peers during the rest of their educational experience.

Relationships with Faculty

Interactions with faculty were described as very different from peer relationships for many reasons, but primarily because peers were described as “equals” or “colleagues” while faculty were described as mentors to “look up to,” or senior scholars that students were “in awe of” due to their accomplishments. In all cases, faculty members were viewed as knowledgeable, experienced scholars who had the potential to serve as resources for the students.

Support via advising/mentoring

All of the participants described a supportive relationship with at least one faculty member during their doctoral program. Faculty members were described as “encouraging,” “understanding,” and “very dedicated” to their work in the field and helping students succeed. Many of the participants specifically mentioned their primary advisor/program chair as a fairly consistent form of support. However, for most of the participants, a specific faculty member who was not the assigned advisor served as their greatest advocate. Notably, four of the Education participants mentioned the same faculty member as their biggest source of support, specifically because she was a known advocate for part-time students. One of the participants described feeling supported by this particular faculty mentor because she was “...very willing to meet you where you are regardless of your family situation or maybe just taking that into context: taking into context your family situation, taking into context your individual interests as a student.” It was evident that the participants had a stronger connection with the faculty member they identified as a mentor; it was almost as if they took pride in choosing that person as a mentor and made additional efforts to develop community with him/her. Relationships with mentors also supported accountability and persistence.

Difficult to develop faculty relationships

Participants pointed to the difficulties of developing and maintaining relationships with faculty members. Students cited various reasons for this lack of connection with faculty, but concepts that came up consistently were limited availability and proximity, catering to full-time students, and a lack of research opportunities.

Faculty unavailable. Developing relationships and community with faculty was challenging because faculty were often not available to provide support, have conversations, or even respond to email requests. This was a considerable disappointment and quite different from their original expectations of their doctoral program. Henry illustrated that he was surprised by the lack of interactions between students and faculty because he expected a more collegial environment:

It doesn't seem as collegial as I thought it would be. I always envisioned folks just kind of sitting around in the middle of the room or the middle of the floor discussing this or discussing that and collaborating in that way. It seems like a lot of people are in their offices doing their own thing. So I don't necessarily feel as connected.

The participants acknowledged that faculty members were very busy and had “more important” things to do and projects to manage. However, it became evident that this was a point of frustration for the students. Interestingly, the participants often described immense respect and awe to-

ward their faculty members in regards to their research and service, but faculty commitment to their scholarly work also led to feelings of disconnection and frustration for the students. For example, Rebecca explained that she would have felt a stronger sense of community in her program “if professors weren’t so busy and weren’t out there saving the world” instead of being present and available to students.

Faculty cater to full time students. Some of the participants noted that faculty members made themselves more available to full-time students, and therefore were not accessible to the part-time students. There was a sense that faculty preferred to work with full-time students because they assumed they were more committed, would finish the program faster, and needed/wanted more opportunities to interact with faculty. Further, the students perceived that faculty catered to full-time students because they had more free time on campus and could just “drop in” to faculty offices, attend presentations, and interact with faculty socially. Eric said, “Because I am part-time, I don’t expect to be catered to. You know, I am not the primary or the most preferred constituency in terms of doctoral students...But, half time is not only half effort.” Cynthia concluded that faculty members cater to full-time students because they are more likely to enter academia after they complete the program:

I think there is an assumption that, as a part-time student, you are not going to be in academia and you are so busy with your career that, I don’t think they intentionally do it, but they focus on the people that are going to replace them someday in the future. So the students with academic potential, I think, get more attention if you will and get a different program than what I have. As far as actual coursework we are getting the same things, but it is the extra learning experiences and opportunities that are not the same.

The perception that faculty were unavailable or preferred to work with full-time students negatively impacted the participants’ sense of community because the students did not feel that they mattered as much as the full-time students.

Proximity. A lack of proximity made it challenging to develop relationships and community with faculty. The students interacted with faculty regularly during classes, but it was very rare to interact with them outside of the traditional classroom environment. Further, the participants rarely spoke with faculty before or after class regarding topics unrelated to the course curriculum (e.g., research opportunities, social conversations, etc.). Interactions had to be formalized and planned in advance because the part-time students did not have the luxury of the “stronger and closer access to faculty” as did full-time students. Eric, an Education student, noted that faculty may not consider the needs of part-time students as much due to the “out of sight, out of mind” phenomenon. Interestingly, three additional Education students described similar concerns of feeling removed and even overlooked by the faculty due to their part-time status. I asked the Education Program Chair about part-time students’ interactions with faculty and how proximity affects access to faculty. The Chair noted,

At the doctoral level, this is about making your own experience, making your own way. There are students here...who take the initiative to get to know and get some experiences with the faculty members that are around. Faculty members aren’t doing things too actively to, kind of, make sure everybody is getting equal time. We’re waiting for others to take the initiative; we’re not doing a lot of the initiative on our own due to schedules and busyness.

This comment suggests that faculty are available to students, as long as the students initiate the connection. However, the students in this study indicated that they had been intentional about trying to connect with faculty, but still felt removed from them. This dichotomy indicates that differences in expectations between the students and program faculty can hinder the development of community and affect student persistence. Some of the Education students felt so removed from faculty that they began developing their dissertation research without having a chair or

committee in place. Ultimately, this delayed their formal dissertation process and affected their rate of persistence.

The participants in Nursing discussed a lack of proximity to faculty, primarily as it relates to mentoring and/or advising. The Program Chair described mentoring and advising as “highly individualized” and “very important for students and faculty in keeping engaged.” However, the students perceived discrepancies between how full-time and part-time students were mentored. Full-time students received in-depth, frequent mentoring from multiple faculty members throughout their program, whereas the part-time students received sporadic mentoring, typically from only one faculty member. Cynthia explained, “The full-time students get a lot of intensive mentoring and a lot of interaction with different faculty. Many of the others who are [part-time], are having to find their own opportunities or just trying to get through the program.”

Limited access to research opportunities. Formal and informal research opportunities are very important to the doctoral process, particularly as students are transitioning from the role of student to scholar. The participants shared that access to research opportunities was very limited, and attributed these limitations to their status as part-time students. The students described conducting research with faculty as “impossible” due to their part-time status. They indicated that their full-time peers had more opportunities for research with faculty through assistantships, conference presentations, and writing grant applications or articles. Further, the participants noted that faculty often offered research opportunities to the “preferred” full-time students first. Henry said, “We are just not on their radar...I doubt [faculty] would try to identify students from our part-time student pool first.” Eric’s description of research opportunities for part-time students was very similar:

Full-time doctoral students that are supported through assistantships in the school or in school related units. Those sort of students are certainly, you know, the preferred constituents, the preferred students, because they see them, and because they tend to go through in a timelier manner than part-time students.

Eric indicated that he thought faculty viewed him as “sort of a hanger on out there on the side” since he was a part-time student and did not have opportunities to interact with faculty as much as his full-time peers. It became clear that access to research opportunities supported the development of community, while a lack of access hindered community.

Discussion

The study participants defined a sense of community as feeling connected to the academic department, a sense of belonging and trust, being part of a scholarly community of practice, and relationships with peers and faculty. These ideas are fairly consistent with previous studies about community during doctoral study, with one exception. Existing research in this area indicates that departmental communities shape the doctoral student experience through academic and social interactions with faculty, peers, and professionals in the field (Golde, 2005; Lovitts, 2001; Tinto, 1993; Weidman et al., 2001). In this study, participants did not mention professionals in the field as members of their community. While their peers were professionals and the students held professional positions themselves, the existing literature focuses on external professionals as part of the academic community. This difference is most likely due to the fact that the previous studies included full-time students only; part-time Ph.D. students are professionals themselves, and therefore, are exposed to their profession simply by working within it rather than interacting with external professionals through their coursework.

The foundational requirement for developing a sense of community was feeling connected to the academic department. Connections were formed primarily via relationships with peers and faculty, but some students also described connectedness based on the general culture of a supportive

academic environment, or the way that simply being within the space made them feel. The descriptions involved people, but did not necessarily involve knowing those people on a personal level. This finding adds to the literature on doctoral student community because most of the studies focus specifically on relationships as a means to build connections in the academic department. According to Weidman et al. (2001), students must develop relationships with other people in order to experience strong connections to the department. Interestingly, the participants in the current study described connections based on brief interactions that did not necessarily lead to relationships. Further, some of the participants experienced feelings of connectedness based on observations alone, without interacting with people at all.

Revisiting Tinto's Model of Student Persistence

Tinto's (1993) model of student persistence proposes that doctoral student persistence is dependent on how individuals become integrated and function within social and academic systems. Tinto's model does not include part-time students and fails to address the unique experiences of this population, particularly as the model relates to a sense of belonging and fit in academic and social systems. Because existing studies focus on the traditional, full-time student experience, researchers often assume that a student moves to a new location to begin the Ph.D. and therefore, needs to develop a new social life in addition to his/her academic life. The present study indicates that academic and social spheres overlap for part-time Ph.D. students. Because of their limited availability to participate in social activities outside of class, part-time doctoral students develop social connections and relationships primarily inside the classroom, while completing academic activities such as group work or projects. Based on the results of the current study, it is clear that academic and social integration is directly correlated with persistence. However, for the part-time Ph.D. students in this study, there is only one integrated system: their academic and social spheres overlap.

Peer Relationships

Many part-time students experience difficulty creating and maintaining peer relationships from one semester to the next due to academic demands and balancing other commitments in their lives (Austin et al., 2009; Smith, 2000). This was certainly true for the participants in this study; they cited their part-time status as the reason they experienced difficulties connecting with their peers. However, the participants drew a clear distinction between their relationships with their part-time peers and their relationships with full-time peers. Most of the participants found it difficult to relate to and develop connections with their full-time peers, citing differences in level of commitment and professional experience. Previous research indicates that a lack of interaction with peers can lead to loneliness and isolation in the academic department (Gardner, 2008; Hadjioannou et al., 2007; Lovitts & Nelson, 2001; Weidman et al., 2001). While the students in this study could relate to their fellow part-time peers, many of them described isolation from their full-time peers. Further, the participants mentioned obvious divisions and/or tensions between the two groups of students. Because of this, they experienced a strong sense of community with their part-time peers, but very limited community with their full-time peers.

Distance education

Students in distance learning programs may be more likely to experience isolation and/or separation from the academic department because of their lack of proximity to the institution and their peers (Exter, Korkmaz, Harlin, & Bichelmeyer, 2009; Horn, 1994; Liu, Magjuka, Bonk, & Lee, 2007; Morgan & Tam, 1999; Palloff & Pratt, 1999). This was true for the Nursing participants in the present study, who described difficulties connecting with peers in their online classes. The face to face summer sessions were very structured and included required group work and partner

activities, which supported a sense of community. However, participants struggled to maintain those connections with their peers outside of the required summer intensives.

Faculty Relationships

Researchers consistently indicate that regular interaction with faculty advisors and mentors is a strong predictor of doctoral student satisfaction and persistence (Golde, 1998, 2005; Lovitts & Nelson, 2000; Tinto, 1993; White & Nonnamaker, 2008). Further, Lovitts (2001) suggests that a student's relationship with a faculty advisor is the most important factor in a student's decision to persist or leave the program. While the students in the present study described their primary advisor/program chair as a source of encouragement, almost all of the students (9/10) identified at least one faculty member, other than their advisor, who served as a mentor and/or advocate during their doctoral program. This finding affirms Lovitts' (2001) conclusion that a strong, supportive relationship with a faculty member is critical, but that person may be someone other than the assigned advisor.

Faculty cater to full-time students

Participants perceived that faculty members made themselves more available to full-time students, and therefore were not accessible to part-time students. There was a sense that faculty preferred to work with full-time students because they assumed they were more committed to the program. The concept of full-time students as "preferred constituents" was present throughout all of the interviews. Differential faculty support is a very significant to the development of community for part-time Ph.D. students.

Comparisons to Doctoral Socialization Model

Part-time students are not included in existing doctoral socialization models; therefore, it is important to provide some comparisons from this study in order to address this gap in the research. Since doctoral programs prepare students to be professionals in the field, most of the literature combines socialization into the roles of student and professional (Antony, 2002; Austin, 2010; Gardner, 2007; Golde, 1998, 2000; Weidman et al., 2001). The results of the current study refute this assumption. Every participant in this study was already employed full-time in the professional area in which he/she was pursuing the doctorate; the participants had already been socialized into their professional roles in the field prior to beginning the Ph.D. Therefore, the role of doctoral student was a specific role in itself for these part-time students. The results of this study indicate that part-time Ph.D. students experience two distinct socialization processes – socialization into the professional role and socialization into the student role during graduate study. Their socialization processes cannot be lumped together into one general model of doctoral socialization. Thus, part-time Ph.D. students do not fit into the existing socialization frameworks. Researchers (Austin, 2010; Gardner, 2007, 2010) have called for a study that addresses socialization at the degree level and noted that this is a significant gap in the literature. This study addresses this gap by examining socialization exclusively at the student level rather than viewing student and professional socialization as one combined process.

Implications for Practice

There are several ways that faculty and administrators in academic departments can support the unique needs of this population and cultivate a sense of community.

Include purposeful, supportive interactions with faculty

The students in this study articulated difficulties accessing faculty and developing relationships with them. Due to the nature of the part-time student experience and balancing multiple life

roles, doctoral programs need to include purposeful required events and meetings with faculty to foster community.

Provide more equitable research opportunities for part-time students

This study brought forth evidence of a perception that faculty preferred to conduct research with full-time students rather than part-time students. This concept has major implications for academic programs that accept part-time Ph.D. students. Even if this is a perception rather than a proven fact, the perception alone led to discouragement and frustration, and hindered the development of community with faculty. Academic programs must provide more equitable access to research for part-time and full-time students. For example, adding research projects to topical courses or seminars would provide an opportunity to conduct research with a faculty member.

Plan/revise program structures to accommodate part-time students

The participants consistently pointed to structural and procedural barriers that impeded their sense of community. First, it is important to consider the timing and rotation of course offerings. Second, it is important for academic programs to consider the implications of the cohort model for part-time Ph.D. students. Since part-time students are taking fewer courses than their full-time peers, they often lose track of their cohort and “start over” with a different group of students each semester. Program administrators could consider creating doctoral cohorts specifically for part-time students only; this structure would allow students to create and maintain connections and community with the same group of students throughout their program.

Emphasize the importance of peer connections

All of the part-time Ph.D. students in this study articulated the importance of their peers, describing them as a resource and source of support. While some of the students struggled to connect with a tangible community (ongoing interactions and connections through relationships), the ability to be part of a perceived community (a feeling that a community exists based on observations and available resources) was very meaningful and created feelings of a supportive space. Academic departments should consider developing peer mentoring programs or peer support groups to foster the development of community. It is also important to encourage students to participate in graduate student organizations or social groups within the academic department.

Implications for Research

The results of this study provide a foundational understanding of the ways that part-time Ph.D. students develop community and how a sense of community supports student persistence, but more research is needed to cultivate additional understanding of this population. First, a study of multiple institutions would provide additional data to determine if the themes presented in this study are supported in a larger sample of part-time Ph.D. students in different academic programs at other types of institutions. Second, a comparison study of persisters vs. non-persisters would provide a wealth of information on success factors and challenges within the same institutional framework. Next, the results from this study indicate a need to conduct a large scale study that compares the experiences of part-time and full-time doctoral students. Future research should focus on access to research opportunities and the perception that faculty prefer to work with full-time students. Lastly, as more doctoral programs offer online courses and/or distance accessible options, it is important to conduct research specifically focused on the doctoral student population. Further, it is necessary to investigate how part-time doctoral students might experience online environments differently from their full-time peers.

As the numbers of part-time Ph.D. students continue to increase, institutions must acknowledge the unique needs of this population. The results of this study indicate that part-time doctoral stu-

dents may struggle to cultivate relationships with peers and faculty. Academic departments can develop intentional academic and social resources for this population in order increase their sense of community and support persistence during doctoral study.

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Appendix A

Interview Protocol for Department Chairs

Introduce self and review the Study Information Sheet with the participant. Advise that the interview will take 60 to 90 minutes.

Interview Questions:

1. Tell me about the Ph.D. program in (department/program name). Potential probes:
 - a. Program/Chair/Coordinator's role in the program
 - b. Number of students, part-time vs. full-time numbers
 - c. Number of faculty, faculty involvement in Ph.D. program
 - d. Activities, resources, supports for Ph.D. students
2. Tell me about a typical day in your academic department. What types of things happen there? Potential probes:
 - a. Student interactions with faculty *inside* the classroom? *Outside* the classroom?
 - b. Student interactions with peers *inside* the classroom? *Outside* the classroom?
 - c. Interactions with student services staff?
 - d. Do you believe students feel a sense of connection to the faculty and peers in your academic department? Why/why not?
3. How do you define a sense of community within an academic department? Potential probes:
 - a. What do you think students look for in the departmental environment?
 - b. Do you feel that there is a sense of community here, the way you just described it?
 - c. What role should the program department have to foster a sense of community?
4. What do you think motivates students to continue in the program each semester? Potential probe:
 - a. What recommendations would you share with part-time doctoral students to help them be successful?
5. Do you think there are differences in the experiences of part-time students vs. full-time students?
6. Are there any other important things for me to know about this Ph.D. program?

Appendix B

Interview Protocol for Student Participants

Introduce self and review the Study Information Sheet with the participant. Advise that the interview will take 60 to 90 minutes.

Interview Questions:

1. Tell me about yourself before you entered your doctoral program.
2. What factors and/or experiences in your life brought you here? Potential probes:
 - a. Family, relationships, previous experiences
 - b. Motivation
3. What factors influenced your decision to pursue your Ph.D. program on a part-time basis?
4. What expectations did you have of your doctoral program? Potential probes:
 - a. Who discouraged/encouraged you, if anyone?
 - b. Have your experiences differed from your expectations? If so, in what ways?
 - c. Have your relationships changed since being a doctoral student?
5. When you arrived on campus, what were your initial impressions about the academic department? Potential probes:
 - a. Impressions about the faculty and staff?
 - b. Impressions about the students?
6. Tell me about your personal support system. Potential probes:
 - a. Family, friends, others...
 - b. What role do they play in your life?
7. Tell me about a typical day in your academic department. What types of things do you do and see there? Potential probes:
 - a. Interactions with faculty *inside* the classroom? *Outside* the classroom?
 - b. Interactions with students *inside* the classroom? *Outside* the classroom?
 - c. Interactions with university administrative staff and student services staff?
 - d. Do you feel a sense of connection to the faculty and peers in your academic department? Why/why not?
8. How do you define a sense of community within your world as a doctoral student? Potential probes:
 - a. What would you look for in the departmental environment?
 - b. Do you feel that you are part of a community, the way you just described it?
 - c. Do you feel that you have to go out of your way to develop relationships with peers and faculty?
 - d. What role should the program department have to foster a sense of community?
9. Talk about how you balance coursework, work, personal commitments, etc.?
Potential probes:
 - a. How did your other roles impact your role as a student?

10. What motivated you to continue in your program each semester? Potential probes:
 - a. Was there a time when you considered leaving your doctoral program?
 - b. What strategies did you use to continue through your program?
11. Do you think there are differences in the experiences of part-time students vs. full-time students?
12. What recommendations would you share with other part-time doctoral students to help them be successful?
13. Are there any other important things for me to know about your experiences as a part-time doctoral student?

Biography



Sarah B. Zahl, Ph.D., is the Director of Educational Assessment, Assistant Professor of Family Medicine, and Assistant Professor of Education at Marian University in Indianapolis, Indiana. Dr. Zahl earned her Ph.D. and M.S. in Higher Education from Indiana University and a B.S. degree in Journalism from Butler University.

In addition to her administrative roles, she has taught courses in Education, Qualitative and Quantitative Research Methods, and College Teaching and Learning. She has ten years of experience in academic and student affairs in higher education.

Dr. Zahl has presented her work at national and international conferences and has earned grants, awards, and fellowships for her scholarship and practice. Her academic interests include tracking student success factors during graduate study, competency based assessment, and mapping the curriculum.

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Cite as: Bagaka's, J. G., Badillo, N., Bransteter, I., & Rispinto, S. (2015). Exploring student success in a doctoral program: The power of mentorship and research engagement. *International Journal of Doctoral Studies*, 10, 323-342. Retrieved from <http://ijds.org/Volume10/IJDSv10p323-342Bagaka1713.pdf>

Exploring Student Success in a Doctoral Program: The Power of Mentorship and Research Engagement

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Abstract

The study explored features of an educational doctoral program that enhances doctoral student success. Doctoral student success is defined broadly to include not only completion and retention rates, but also the ability of the program to produce effective scholars in the field. The study utilized a mixed-method approach, incorporating quantitative and qualitative data from both alumni and current doctoral students. A total of 113 students participated in the survey and another 20 students participated in two parallel focus group discussions. A factor analysis of the 31-item-survey identified six dimensions representing different aspects of the doctoral program with an internal consistency measure of reliability ranging from 0.76 to 0.97. Quantitative and qualitative findings converged in highlighting the importance of Program Support/Program Structure, Advisor Support/Faculty Mentorship, and Research Engagement/Formation of Scholars on doctoral students' success. These features incorporate effective socialization activities within the program. The study recommends that doctoral programs incorporate research engagement and effective mentorship activities into the program's structure for sustainable scholarship.

Keywords: mentorship, doctoral programs, research engagement, doctoral student success, formation of scholars, retention rates

Introduction

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Debate on student success has primarily focused on undergraduate students and programs; in this case, student success is measured in terms of dropout and graduation rates, and the length of time to degree completion. However, there is little research on graduate student success, particularly in doctoral programs, where there is anecdotal evidence that a large number of students who begin doctoral programs end up only as "All

Editor: David Kahl Jr.

Submitted: February 7, 2015; Revised: July 23, 2015; Accepted: August 5, 2015

But Dissertation” (ABD). For instance, The Chronicle of Higher Education indicated there is a need for push for ABD’s to ‘cross the finish line’ (Leatherman, 2000). Studies on student success in doctoral programs will need to begin by defining success in the context of doctoral programs. For example, Walker, Golde, Jones, Conklin Bueschel, and Hutchings (2008) discussed the issue of the formation of scholars as a measure of program effectiveness.

Doctoral students’ success may then be seen in two ways. First is the quantitative one that ensures that students do not remain as ABD. When a large proportion of doctoral students end up as ABD, it denies academic fields sufficient scholars with terminal degrees. Second is the qualitative one that emphasizes the formation of scholars. Pushing the ABD doctoral students to cross the finish line is necessary but not sufficient without producing scholars who are sufficiently grounded in the content and research in the field. Successful doctoral programs may then be defined as those that will produce effective scholars in the field as well as providing mechanisms and resources that will reduce attrition rates. The question, then, pertains to the identification of program features, as well as program practices, that promote the formation of scholars which increases the chances of students’ completion rates. It is important to identify programs that incorporate aspects such as successful program mentorships and doctoral student engagement in research as part of their program activities.

It is estimated that approximately 50% of entering doctoral students fail to obtain their degree (D’Andrea, 2002; Johnson, Green, & Kluever, 2000). These numbers are closely related to undergraduate students’ completion rates (Berkner, He, & Cataldi, 2002). The Chronicle’s online academic discussion forum held on January 15, 2004 (“Why Do Graduate Students Drop Out?” 2004) addressed the question of why doctoral students drop out of the program. Though the forum generally acknowledged the lack of data on the subject, views of participants varied widely. One point of convergence among discussants was the fact that doctoral students, unlike during their prior years of schooling, work in an environment that is unstructured, requiring a great deal of independence. Without proper guidance and mentoring, such an environment can be disorienting for some students. Contact and interaction between students with peers and faculty members have been shown to be a factor in doctoral student completion rates (Pascarella & Terenzini, 1977; Terenzini & Pascarella, 1977). However, this contact need not just be with classroom or advising activities, but ought to go beyond that (Nagda, Gregerman, Jonides, von Hippel, & Lerner, 1998; Pascarella & Terenzini, 1977). For instance, Cockrell and Shelley (2011) revealed a positive relationship between doctoral students’ satisfaction and the relationship with their advisor. Mason (2012) seemed to validate these findings but, in addition, found a positive relationship between students’ feelings of autonomy over their research and their motivation to continue graduate school, highlighting the importance of mentorship while providing mentees academic space to form their own research identity.

Gardner (2008) argued that a “lack of socialization” in doctoral programs increases the risk for doctoral student attrition. The less a student fits the “expected” socialization pattern, the more likely a student is at risk of not finishing the doctoral program; this is especially true for students from underrepresented populations (women and students of color). Gildersleeve, Croom, and Vasquez (2011) stated that it is not uncommon for underrepresented students to experience “racialized aggressions” (p. 110), which may heavily impact students’ emotional states. Ali and Kohun (2006) discussed students’ feelings of isolation at four program stages of the Ph.D. study process including the following: a) preadmission to enrollment, b) the first program year, c) the second year until candidacy, and d) the dissertation stage. According to the authors, each program stage has its own unique stressors that can contribute to isolation. They stated, “confusion about program requirements can quickly turn into feelings of [being] overwhelm[ed] and being ‘left behind’” (Ali & Kohun, 2006, p. 24).

Gardner (2008) concluded that not only did historically underrepresented students have difficulty with the socialization pattern, but so did nontraditional students (older students and/or students with children). Academic discipline and the educational environment of the academic institution (“institutional context”) seem to also determine the impact of socialization (the problems of one school or department may not be the problems of another). Gardner suggested that institutions ought to offer more support, and that students should seek to become more involved (through student organizations and departmental committees), which would in turn help students find their place in the socialization “mold” of doctoral study programs.

According to Gildersleeve et al. (2011), faculty guidance is experienced through “socialization”, which is defined as “...the process by which doctoral students learn the customs, traditions, and values of any given discipline or field through mentoring and advising relationships as well as by engaging in research, service, and teaching” (p. 94). How this process is put into place—and the aspects of its focus—varies within programs and institutions. The literature has discussed the presence of faculty-student mentorship, research engagement, and peer mentorship activities as examples of program features that can be effective in the formation of scholars as well as in enhancing doctoral students’ completion rates.

Mentorship

A method of socialization utilized within graduate study programs is mentorship. In general, mentoring relationships can be either formal (as assigned by the program) or informal (naturally developing between the mentor and mentee). In doctoral programs however, most academic advisors evolve into the dual role of advisor and mentor, with a majority of them providing a wide range of support, including psychosocial and career mentorship. Mentorship activities are often shaped by the outcome needs of the program and the training needs of the students (Ali & Kohun, 2006; Harty, Kormanyos, & Enochs, 1983; Ward, Johnson, & Campbell, 2004). Mentorship involves teaching, coaching, and giving personal and professional guidance (Dobie, Smith, & Robins, 2010) usually for a fixed period of time (Hayes, 2005); for example, during the time that the student is working through the requirements of the graduate program (Dobie et al., 2010) or during a specific phase of the student’s training (Hayes, 2005). University programs often have a heavier reliance on research-based mentorship activities (Ward et al., 2004).

Hu, Thomas, and Lance (2008) also looked at the factors that appeared to promote the formation of mentoring relationships. They hypothesized that there were three factors that were most influential in the initiation of the mentoring relationship: similarity in race, sex, or age between the mentor and mentee; how the mentee views membership in his/her social group (defined by race, sex, or age), in terms of how their group has generally been treated by society; and how proactive the person appears to be with accomplishing tasks and goals in the eyes of others (the appearance of power, in the case of the mentor, or potential for success, in the case of the mentee).

Mentoring relationships can offer benefits for both the mentor and the mentee. For the mentee, the mentor can help increase the student’s self-confidence and self-efficacy; give the student increased protection, support, and guidance during the socialization process; increase the level of the student’s academic and professional progress; and provide unique opportunities for professional and personal growth in the culture of the organization (Hayes, 2005; Warren, 2005; White, 2007), as well as in the profession of choice (Cho, Ramanan & Feldman, 2011). For the mentor, the relationship can help with “validating the mentor’s efforts and status” (Hayes, 2005, p. 442) as the mentor observes the mentee’s growth and encourages self-efficacy in the mentee (Hayes, 2005). The mentor also gains a future colleague and ally in the organization (White, 2007), as well as assistance with his or her work and greater exposure within the organization (Warren, 2005). The mentor, mentee, and organization all benefit from the student’s socialization and guidance with the workings of the specific organization or institution (Hayes, 2005). The mentor

is also a professional role model for the student in terms of professional involvement and behavior (White, 2007).

Research Engagement

Another important feature of doctoral student success, though seldom mentioned in the literature, is the level of engagement in academic research (Nagda et al., 1998). Although studies that have explored this issue of student engagement primarily utilized undergraduate students, results convey compelling evidence that student engagement in academic and educational activities should be considered when discussing doctoral students' success. For example, Hughes and Pace (2003) conducted a study with college students, concluding that students who are less engaged in such activities leave college earlier or without completion. Similarly, a more recent study with college students showed that student engagement had a significant impact on students' persistence and grades (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). More recently, Lambie, Hayes, Griffith, Limberg, and Mullen (2014) showed that doctoral students' levels of engagement in research activities, including publishing manuscripts, have significantly higher levels of research self-efficacy, which is also related to research knowledge and productivity. Given that preparing scholars in the field is the primary goal of Ph.D. programs, it makes doctoral students' engagement in research activities critical in the formation of scholars.

Peer Mentorship

Reflexive conversations among graduate students and, in particular, doctoral students have revealed the extreme challenges, barriers, and hurdles of doctoral education and the pursuit of a doctoral degree: the infamous three letters doctoral students so adamantly strive to achieve – the Ph.D. In the seminal work of *The Formation of Scholars*, Walker and colleagues (2011) revealed the importance of moving doctoral education into the future. The challenges to doctoral education include high attrition rates, lack of financial resources, mismatch between opportunities and experiences, difficulties establishing support in addition to domestic responsibilities especially for non-traditional students. Creating opportunities and an environment that promotes scholars who are able to be successful and productive participants in the greater academic and educational research community is a challenging task that requires unwavering dedication (Hadjioannou, Shelton, Fu, & Dhanarattigannon, 2007).

A new perspective is required when approaching doctoral student challenges. A key component in doctoral student success is the socialization process (Gardner, 2007) among peers and the support they provide each other. In addition, as Gardner (2007) points out, the majority of the extant literature encompasses all graduate school socialization, rather than examining the socialization and peer support by degree level. The importance of researching and understanding peer support by degree level is illustrated by Conrad, Duren, and Haworth (1998) in their work examining the dramatic differences in the structure and culture between master's and doctoral level education. Weidman, Twale, and Stein (2001) described four developmental stages of socialization in doctoral education: anticipatory stage, formal stage, informal stage, and personal stage. Within each of these stages, doctoral students are navigating their social experiences to foster developmental growth as a scholar by gaining knowledge, skills, and values necessary for completing their degrees and advancing their careers in the field.

Support is a vital factor for doctoral student retention and graduation. Although support can be operationalized in various forms, support for the purpose of doctoral education socialization will be viewed as peer support. In a qualitative study where Gardner (2007) conducted semi-structured interviews with 20 full-time (twelve female and eight male) chemistry and history doctoral students, ranging from first-year to sixth-year study in their respective programs, a substantial proportion of these students identified peer support as a factor that plays a role in retention

and completion. Gardner revealed that students approached more advanced students and sought information about the program and previous educational experiences they may have encountered. In addition, they sought guidance and support when determining which research groups to join and which professors were approachable and/or most informative.

Formally, peer-mentoring programs match novice students with more advanced students in their doctoral program to provide academic support, emotional support, and guidance as they maneuver through their own personal experiences (Brown, Davis, & McClendon, 1999; Gardner, 2008). In addition, a study conducted by Grant-Vallone and Eshner (2000), concluded that peer-mentoring provided additional support for students. The additional support provided by students may be a necessary socializing support system set in place for overworked and overbooked faculty members, dissatisfaction with the quantity and quality of supervision or guidance received, and feelings of isolation or frustration that will surely ensue during doctoral education and training (Hadjioannou et al., 2007).

Peer mentoring may also be established informally, as students socialize more frequently and begin to relate their frustrations, anxiety, and fears to one another on a level that family members, partners, or friends may not understand. Hadjioannou et al. (2007) created "co-travelers" who provided support and encouragement as they navigated the doctoral student process. This co-experience provided an avenue for students to share their worries without the fear of being evaluated by their program.

Peer-mentoring encourages cohesiveness, inclusion, and support while refuting feelings of isolation that lead to failing to complete doctoral training. To examine the importance of cohort models, the University of California conducted a case study researching peer mentoring among students and faculty interactions (Dorn & Papalewis, 1997). Students were assigned an individual peer mentor from an existing cohort and were advised to form a supportive, working relationship. This form of peer mentoring relationships is considered to be a cornerstone for the preparation and formation of scholars.

Regardless of the delivery model (cohort versus non-cohort, full versus part-time, residential versus commuter, etc.), the literature identifies several features that can be effective in doctoral students' success (program completion and formation of scholar with research skills). These features include but are not limited to faculty mentorship arrangements, research engagement, and peer mentorship activities. Programs often incorporate these features into their program through a variety of ways, including providing opportunities for teaching and research assistantships, linking students with faculty mentors, and promoting research partnerships between and among faculty and students. Effectively incorporating these features and practices into specific doctoral programs can be an important predictor of doctoral students' success.

Purpose of the Study

The purpose of the study is to explore doctoral program practices and features that enhance doctoral students' success, thus lending more information on how to make doctoral programs more effective. In the context of the study, program features include but are not limited to specific program requirements, organization, and human and physical resources provided to students. Specifically, the following research questions are addressed:

1. To what extent does the quality of faculty-student mentorship predict the success of doctoral students?
2. To what extent does student engagement in academic research predict doctoral students' satisfaction with the program?
3. Does peer mentorship have any influence on student success?

4. What are some of the important features (requirements and resource provisions) of the doctoral program that enhance doctoral students' success?

Significance of the Study

Butz, Bloom, Gross, Kelly, Kofner, and Rippen (2003) analyzed the award of doctoral degrees in six broad fields between 1975 and 1999 and found Ph.D degree awards generally increased for 15 years and then leveled off and started to fall in 1998. Though studies to analyze recent trends beyond 2000 are scarce, Butz et al. (2003) noted that the awards of Ph.D to non-citizens in America in science, engineering, and health doctoral degrees has been increasing and may therefore account for a substantial proportion of overall degrees awarded. The number of doctoral degrees awarded to American citizens in these disciplines may be dropping.

An important benefit of increasing the quantity and quality of doctoral degrees completed is the link between research production and innovation in a society. Any nation will argue for increasing number of researchers in order to increase research output in various fields, in order to enhance development, innovation, and effective delivery of goods and services. Increasing doctoral students' completion rates as well as employing program features and activities that produce effective scholars should therefore be a desirable objective of doctoral programs.

Research Methodology

Introduction

The study utilized a mixed-method approach, incorporating quantitative and qualitative data from both alumni and current doctoral students. A survey was used to collect primarily quantitative data from alumni and current students. This method was considered effective in collecting data from participants (program alumni and current students) some of whom were geographically widely dispersed. In order to collect more detailed data from both current and graduate students, a qualitative methodology was also considered effective in examining the unique experiences of these participants while in the program. The use of qualitative data was beneficial in further understanding and validation of the quantitative findings as well as examining the role of non-quantifiable features of doctoral programs.

Participants

Participants for this study included current students enrolled in a traditional educational doctoral program at an urban university in the Midwest. In addition, alumni students who had graduated from the program over a fifteen-year period were also included in this study. Students in the specializations of Leadership and Lifelong Learning, Learning and Development, Policy Studies, Counseling Psychology, and School Administration were represented in the study. Table 1 presents the number and percentage of participants by various demographic characteristics. A total of 115 participated in the survey, of whom 80 (or 69.6%) were current students and 33 (or 30.4%) alumni. Seventy-three percent of the survey participants were female. Breakdown by employment and student status shows that 81 (or 70.4%) were employed full-time and 51 (or 44.3%) were full-time students, indicating that a substantial proportion of these doctoral students were full-time in both employment and doctoral studies while pursuing their doctoral studies. Twenty-seven (or 23.5%) of the participants were on graduate assistantship while pursuing their studies. In addition to the 115 survey participants and addition 20 students participated in two parallel focus group discussions.

Table 1: Number and percentage of survey participants by various demographic characteristics

Characteristic	Levels	Number	Percentage
Participant Status	Current Student	80	69.6
	Alumni	35	30.4
Gender	Male	30	26.1
	Female	83	72.2
	No answer	2	1.7
Race	White	81	70.4
	Black	23	20.0
	Other	11	9.6
Student Status	Full-time	51	44.3
	Part-time	64	55.7
Employment Status	Full-time	82	71.3
	Part-time	19	16.5
	Not employed	14	12.2
Graduate Assistantship	Yes	34	29.6
	No	81	70.4

Instrumentation

The survey monkey instrument used in the study had five sections in addition to one section of demographic characteristics and another on graduate assistantship experience. The five sections with a combined 41 items covered students' perceived involvement and experience in groups interactions (faculty and/or other students), doctoral program support, level of research engagement, and overall satisfaction with the program experience and were rated on a four-point Likert-type scale: (1) Strongly Disagree (2) Disagree (3) Agree (4) Strongly Agree.

Data Collection Procedure

Once necessary permissions and IRB approval was granted, a survey was distributed to all alumni and current students of the program. In order to triangulate the data in the study, two focus groups were held: one for alumni and one for current students. A series of questions were provided in each focus group to prompt an open discussion regarding their personal experiences regarding research engagement, faculty mentoring, group and peer interaction, and perceived levels of support. Each of the focus group discussions were administered by individuals outside the research team. Notes were taken and concurrently digitally recorded for validation purpose in transcription of the data.

Data Analysis

The principle component factor analysis was used to identify dimensions of student experience in the program, including research engagement, faculty mentoring, peer mentoring/interaction, program support, and the overall perception of student success. In this case, dimensions are defined as constructs that capture aspects of the program that were used as predictors of student success. These dimensions are treated as primary predictor variables of the study. Consequently, a multiple linear regression model was used to determine the extent to which these dimensions (constructs) of the program predict doctoral student success and satisfaction in the program.

The approach to the qualitative data used the Consensual Qualitative Research model (Hill, Knox, Thompson, Nutt Williams, and Hess, 2005). This approach was employed to explore the qualitative data analysis for several reasons. The semi-structured focus groups were open-ended allowing for a more in-depth examination of individual and group experiences. The data collected was analyzed by three separate researchers that allowed for multiple perspectives on the overarching domains and codes embedded in each student experience. Once a consensus was reached regarding the domains and codes, an outside, fourth researcher audited the transcripts to ensure the quality of work (Hill et al., 2005).

The mixed method approach provided researchers with a better understanding of the extent to which variables play a role in student success, as well as, how their unique experiences impacted the way they interacted with peers, faculty, and their overall doctoral studies environment.

Findings

Quantitative Findings

A factor analysis of the 31 items from five sections of the survey identified six dimensions representing different aspects of the doctoral program. Based on the items that loaded into each of these factors, the following dimension were identified:

1. **General Quality and Structure of the Program:** This dimension captured the general structure and organization of the program, including effective communication with program leadership. The item on the availability of courses when needed also loaded into this dimension.
2. **Group Interaction:** Items that represented intra- and inter-specialization interaction with colleagues within the program, as well as collaboration with other graduate students across the university, capture the main features of this dimension. Items in this factor also included those that linked these interactions with persistence in the program and fostering positive relationships with other graduate students.
3. **Quality of Program Support:** The six items that loaded into this factor captured the quality of support students received from program staff and interactions with faculty who taught doctoral courses. Some items in this factor showed the value of prompt feedback from faculty.
4. **Quality of Advisor Support:** The two items that defined this dimension focused on the quality of advisor support and availability. Accessibility of the faculty advisor and willingness to spend time with the student are important aspects of this dimension.
5. **Research Engagement:** The items that captured this dimension were related to aspects that encouraged and provided support to engage in research activities. Items that captured the extent to which students are provided with opportunities to collaborate with faculty and other students in doing research loaded into this factor. Some items in this factor assessed the value of opportunities the present at research conferences and publishing in refereed journals.
6. **General Satisfaction:** The items that captured students' level of satisfaction with the overall doctoral experience, skills so far acquired, as well as quality on mentorship received were represented in this dimension.

Each of these six dimensions was internally consistent with the Cronbach's Alpha reliability ranging from 0.76 to 0.97 (see Table 2). Items that loaded into each of these factors were used to create composite variables representing the six dimension of the doctoral program. These dimen-

sions represented important variables of the study along with certain participants' demographic characteristics.

Table 2: Cronbach's Alpha reliability coefficients for the six dimensions of the doctoral program

Dimension	# of items	Alpha
General Quality of the Program	6	0.875
Group Interaction	8	0.812
Quality of Program Support	6	0.934
Quality of Advisor Support	2	0.968
Research Engagement	5	0.770
General program Satisfaction	4	0.762

The multiple linear regression model was used to determine the extent to which various aspects of the doctoral program (Dimensions 1-5) can predict students' satisfaction with the overall doctoral program (Dimension 6). The findings presented in Table 3 show that the general quality of the academic program ($\beta = 0.37, p < 0.01$), quality of program support ($\beta = 0.28, p < 0.01$), advisor support ($\beta = 0.18, p < 0.01$), research engagement ($\beta = 0.13, p = 0.026$), and gender ($\beta = 0.13, p = 0.030$) were significant predictors of the overall satisfaction with the doctoral program. However, group interaction ($\beta = 0.07, p = 0.293$) was a positive though not a statistically significant predictor of the overall satisfaction with the doctoral program. All the significant predictors were positively related to the overall satisfaction with the doctoral program. In addition, the data shows that female doctoral students had a significantly higher level of satisfaction with the program than their male counterparts. The model accounted for approximately 67% of the variance in doctoral students' overall satisfaction with the program.

Table 3: Multiple Regression results for the prediction of overall satisfaction with the doctoral program by five aspects of the program

Predictor	Regression Coefficients		
	<i>B</i>	Beta	<i>p</i> -value
Gender (0 = male, 1 = female)	0.14	0.13	0.030
General Quality of the Program	0.36	0.37	0.000
Group Interaction	0.07	0.07	0.293
Quality of Program Support	0.25	0.28	0.002
Quality of Advisor Support	0.18	0.25	0.000
Research Engagement	0.13	0.14	0.026
			$R^2 = 0.67$

Qualitative Findings

A consensual qualitative analysis of the focus group data identified seven domains that represent important features of the doctoral program. Domains are part of qualitative research lingo and are comparable to dimensions or constructs identified in the quantitative portion of analysis. Domains are defined as key topics or themes extracted from the qualitative data collected. In this study domains that emerged were 1) cohort model, 2) program structure, 3) formation of scholars, 4) faculty mentorship, 5) dissertation process, 6) program funding, and 7) traditional versus nontraditional students.

Cohort model

The cohort model was developed as a response to a decline in student retention and graduation rates in United States and United Kingdom, as well as to increase general success of higher education students (Lei, Gorelick, Short, Smallwood, & Wright-Porter, 2011). Basically, a cohort is a group of students, ranging anywhere from 10 to 25, that start a given doctoral program at the same time and experience the educational process together, finishing roughly around the same time (Barnett, Basom, Yerkes, & Norris, 2000; Maher, 2005; Nimer, 2009). In addition, cohort model programs offer planned courses (which could potentially ease students' anxiety and save time), professional development opportunities, faculty mentoring, group collaboration, social and emotional support, as well as guided dissertation process support (Nimer, 2009).

In addition to the above-mentioned benefits of the cohort model, the cohort model domain in this study provided doctoral students with an opportunity for peer mentorship, which gave them an additional support system. In general, a cohort system provides a learning space where doctoral students can present their personal work, as well as review and critique their peers' work (De Lange, Pillay, & Chikoko, 2011). In this study, the cohort model domain consisted of two distinct levels of peer mentoring, namely, intra and inter cohort peer mentoring. An extension of peer mentorship referred to as "peer couples," emerged as an added advantage of the cohort model, which will be further explored in future research projects. Below is an example of an intra and inter cohort subcategory statement, as provided by a student who graduated from the program:

Well, I thought it was a good experience. Particularly liked the cohort system [and] work with colleagues to get me through rough spots in [statistics] from time to time. Plus it seems at least [that for] much of the course work the professors were in tune to what was good instructional process and techniques, which allowed for a lot of collaborative learning and [professors] knew that worked well to motivate the students.

The "cohort" domain and "peer mentorship" sub-domain, as is contained in the qualitative descriptions given by participants in this study, highlight the importance of the intra- and inter-cohort interactive feature inherent in cohort models.

Program structure

The "program structure" domain consisted of the following subcategories: scheduling issues, multidisciplinary learning experience, and organization and accessibility of the program. An example of the scheduling issues domain would be:

At times frustrating when needed classes aren't offered, but required, but not available. Attempting to schedule your life around a program that said it's going to be available for evening doctoral students.

Multidimensional learning concerns itself with different fields of study being united through this specific program. All of the before mentioned tracks of study would be united through common

class work required of all the attending students, regardless of the track of study. Some examples embodying this subcategory would be:

I'm interested [in] nursing. For the psych[ology] people, they didn't feel "drawn in" by the non-psych[ology] faculty. There are so many factors.

Frustration. Wondering why we're taking specific courses. ... The connection between the courses and our specialization.

Professors need to address the syllabus of the class to meet the needs (specialization) of the cohort.

The "organization and accessibility of the program" subcategory reflects the general organization of the program, as well as accessibility of resources. A current student stated the following about organization and accessibility:

We know of people who have left. Lot of frustrations about classes. You can't meet with your advisor in the evening because the advisor can't work in the evening.

Formation of scholars

The "formation of scholars" domain included research skill building, networking, publishing, practice in the field, and degree of fit for graduate assistant/teaching assistant (GA/TA) and students' interests categories. Such scholarly involvements, especially research engagement, have been identified as fundamental factors in doctoral student success (Gardner, 2007; Pyhältö, Vek-kaila, & Keskinen, 2012). In addition, the perceived fit between students and their working environment (whether GA/TA position or voluntary research position) tends to govern their general educational engagement (Leech, 2012). This domain is mainly concerned with the creation of scholars and future professionals. Examples embodying this domain and its subcategories are as follows:

I think at the dissertation stage, when I was doing qualitative [research], it required a lot. The time and effort it involved in trying to finish it up and work so there were times when I said 'eh' you know, but for me it was closure. I never start something I can't close out. I am going to see this through. So I worked through [the statistics]. I stuck it out.

I presented with different professors at conferences. We have a paper we're tweaking for publication.

I've been able to use the strategies learned in class in my profession, especially stats. I was able to practice and make it relevant in my field instead of in a hypothetical situation.

Faculty mentorship

The "faculty mentorship" domain included faculty encouragement of participation with scholarly endeavors, as well as the provision of emotional support through academic and non-academic challenges. These factors have been deemed as important throughout the literature, underscoring the importance of faculty involvement (Brailsford, 2010; Sambrook, Stewart, & Roberts, 2008). Examples of statements related to the "faculty mentorship" domain in this study were as follows:

I thought the push to present your work is beneficial...for your resume.

I've had a lot of trouble with people on my dissertation committee. I was not notified that one of my committee members no longer works here. Another person got a Fulbright—they wanted me to wait to defend for a year. I said no. I don't know if there's a policy

when someone leaves [the University]. It's extremely frustrating at the end. I have to change advisors now. No one has ever told me.

I think that is a part of the faculty teaching. One past faculty member didn't like psych[ology] students. Depending on the luck of the draw, they are going to be less amenable to psych students.

Dissertation process

The “dissertation process” domain concerned itself with the entire dissertation process. It included the categories of peer and faculty support during dissertation work, and the dissertation initiation process. Statements embodying the dissertation process were as follows:

People who are GA's, it's easy to put their dissertation committee together. Putting together the committee was difficult for me. If you have the right advisor that's helpful. And the cohort is helpful.

When we get to the prospectus and dissertation, can we have a time limit that the professors look at?

I think that the progression of classes is good. I think some professors have structured their classes toward comp[rehensive exams]. That is beneficial. Some professors have really emphasized from the start of the program to do the work you're going to [do] your dissertation on.

Program funding

The domain of “program funding” included financial concerns that accompany the process of doctoral program study. In one mixed-method study, doctoral program faculty (doctoral student supervisors) had identified financial issues as the key resources and /or challenges in the doctoral program process (Pyhältö et al., 2012). Another qualitative study exploring school and work balance in doctoral students found that students perceived financial support as one of the key elements in managing different roles and achieving balance (Martinez, Ordu, Della Sala & McFarlane, 2013). Examples of opinions given by current and alumni students follow:

No benefits, no unemployment, [they] don't last the duration of the program. You can't live off of \$800.00 a month—that's below the poverty level. It's difficult!

I think back now, the paper for the questionnaires (and I color coded), postage alone, self-addressed envelopes, and some of the committee members encouraged me to include a pen so that they had no excuse to not fill it out. One participant's pen was damaged and he left me a note so I sent him another pen. But you are right that [there are] expenses at the end. If you are not working that can certainly be a challenge to overcome because you are planning to finish but data collection is on hold because of no funding.

Traditional versus nontraditional students

This domain focused on the similarities and differences of traditional (full-time day students) and nontraditional (part-time, evening, and mostly off campus students). Part-time doctoral program attendance has been somewhat discouraged (Gardner & Gopaul, 2012); however, for some, this is the only option as they struggle to balance school, work, and personal life (Martinez et al., 2013). Subcategories for this domain were personal stressors, academic stressors, and balancing roles as categories within this domain. Examples illustrating this domain and its subcategories were as follows:

I can only take one class at a time. I live so far away I can only get in contact with professors by e-mail or phone.

The representatives were always full-time people at [the University]. How are they representing me, a commuting student? Maybe there needs to be a "commuter representative".

There are commuter students and people who work here at [the University] as a GA or an employee. They get to know professors in different areas.

We had one person leave our cohort because they got a job promotion. They felt they couldn't balance the two.

Convergence of Quantitative and Qualitative Findings

Although the quantitative and qualitative approaches offered different perspectives, the findings converged to a great extent. The quantitative approach identified the Quality of Program Support as a significant predictor of student success, as well as did the qualitative analysis. Both approaches identified support in the program, whether from the faculty or other students, to be an important determinant of student success. Another convergence occurred between the quantitative dimension of Quality of Advisor Support and the qualitative domain of Faculty Mentorship, as well as the quantitative dimension of Research Engagement and the qualitative domain of Formation of scholars. The later pair of factors is concerned with research engagement of students that include features such as, support for research, providing opportunities for conference presentations, and publishing.

Summary

Research on student success has primarily focused on undergraduate students. In that context, student success is viewed in terms of student retention and graduation rates, as well as time to completion. Research on graduate student success is rather challenging in multiple ways. First, there is the scarcity of research in this important area. Secondly, there seems to be a lack of a universal acceptable definition of graduate student success, particularly at the doctoral level. Retention, graduation rates, and time to completion do not accurately reflect a doctoral student's educational success. For instance, a doctoral student who may take longer to complete a program but ends up publishing multiple articles prior to completing his/her dissertation may be viewed as more successful than one who completes the program in the shortest time possible, but with little research or mentorship experience.

In this study, there are three important findings that converged, through examination of the quantitative and qualitative findings that highlight the most important features of doctoral students' perceived success. They include program support and structure, opportunities for research and research formation, support on faculty and student level, as well as the general structure and organization of the program.

1. *Program Support/Cohort Model*
The aspect of program support, highlighted in the quantitative findings, converged with the qualitative finding inherent in the cohort model domain.
2. *Advisor Support/Faculty Mentorship*
The aspect of advisor support, highlighted in the quantitative findings, converged with the qualitative findings of faculty mentorship.
3. *Research Engagement/Formation of Scholars*

The aspect of research engagement, highlighted in the quantitative findings, converged with the qualitative findings of formation of scholars. These findings highlight the importance of the formation of scholars as a fundamental purpose of doctoral education.

As previously discussed, the quantitatively identified Quality of Program Support dimension is a significant predictor of student success, as well as is the qualitative domain of the Cohort Model. Both of the qualitative and quantitative student success predictors are defined by additional support, whether from the faculty and staff or other students. The second identified convergence of data occurred between the quantitative predictive factor of Quality of Advisor Support and qualitative predictor of Faculty Mentorship. Both significant factors are referring to faculty and advisor involvement and support throughout the program duration. The third convergence of data outcomes occurred with the quantitative dimension of Research Engagement and the qualitative domain of Formation of scholars. Both of these significant factors were concerned with research engagement of students, which, as previously stated, refer to such qualities as encouragement, support, opportunities for research, as well as necessary skills and confidence building. The fourth and last convergence between the qualitative and quantitative data was evident with the General Quality of the Program, which emerged from quantitative data, and the Program Structure from qualitative data, both concerning themselves with general structure and organization of the program, such as available courses and scheduling concerns and organization and accessibility of the program and program leadership. These factors are further linked to students' level of satisfaction with their doctoral programs and contribute to student persistence, retention, and successful program completion.

Discussion

The features we have identified that make doctoral programs more effective involve necessary socialization activities within the program (e.g., personal interaction, which may involve faculty and students attending conferences together, meeting in small groups to discuss research, and one-to-one guidance with reviewing research skills and techniques required for presentation or publication). Hlebec, Kogovšek, and Ferligoj (2011) conducted a quantitative study that demonstrated social support, via the doctoral student's academically related network of colleagues and/or supervisors within the doctoral program, as the most statistically significant predictor of successful work completion.

The concept of socialization is here seen as an underlying theme in doctoral student success, whether with faculty or among student peers. Lei et al. (2011) discussed the concept of "social interdependence" (p. 498) and building a network, within the cohort structure, of community members providing continuous academic and emotional support for students to achieve learning goals in their programs of study more easily. These same views are highlighted in Gardner (2007). Maher, Falluca, and Mulhern Halasz (2013) also investigated the implementation of this concept through the process of doctoral writing groups. Writing group activities have been offered as an option for doctoral candidates within programs of study, as well as through face-to-face resources outside of the program context (Leatherman, 2000; Offerman, 2011). There is also a great deal of verbal and nonverbal professional role modeling by faculty members that takes place during such interactions, which cannot be replaced by technology (Cockrell & Shelley, 2010; Hlebec et al., 2011).

Previous studies have demonstrated the importance of socialization into the culture of the doctoral program (Gardner, 2007; Pyhältö et al., 2012). While difficulties with gaining face-to-face meeting time can also be a disadvantage in traditional programs—where a student and a faculty member may, for a period of time, have difficulty meeting due to scheduling conflicts and constraints—the aspect of increased isolation and separation from personalized academic guidance

over an extended period may be detrimental to the program satisfaction factors defined by this study. There is also the disadvantage of diminished opportunity for immersion into the culture of the academic environment (Pascarella & Terenzini, 1977; Terenzini & Pascarella, 1977).

The Non-Traditional Doctoral Student

Offerman (2001) stated that structured development of cohort model doctoral programs is “designed to create a clear path to success” (p. 29), particularly for the non-traditional doctoral student. This brings the dilemma of the non-traditional student to the forefront of our discussion. The non-traditional student is often older, typically in the age range of 30s to 40s (Pearson, Evans, & Macauley, 2004); within the past decade, the average age of the doctoral student was 33.3 years (Offerman, 2011). The non-traditional student often has limited time and access to offerings within the format of traditional doctoral programs, often due to occupational and/or family-based demands. Many have the responsibilities of professional occupations, partners, children, and/or aging parents in addition to academic study (Martinez et al., 2013; Offerman, 2011), which often leads to a preference for seeking a doctoral degree through part-time study. In order to create more accessible doctoral programs for this population, however, we may compromise the benefits of mentorship and faculty support that have become an integral part of traditional doctoral program structures, which leads to the non-traditional student meeting with advisors and/or mentors on a “part-time, intermittent basis” (Offerman, 2011, p.27) instead of full immersion into the world of academia—a standard expectation of traditionally-designed Ph.D. programs (Martinez et al., 2013; Offerman, 2011).

Recommendations

Program Structure

The development of flexible instructional opportunities (the combination of face-to-face and online instruction) needs to be continuously emphasized, so as to not lose sight of socialization aspects of the doctoral program. Interaction with peers (as, with our study example, inter- and intra-cohort experiences) and faculty mentorship opportunities (particularly co-publishing and co-presentation opportunities) are valuable aspects to incorporate for doctoral student success, while directing attentiveness to aspects of program access and program accommodation aspects for non-traditional students. Non-traditional students may benefit most from the intra- and inter-cohort aspects of doctoral programs, due to the variations in student perspectives based on socially-related aspects such as ethnicity, employment, and family experiences (Martinez et al., 2013; Pearson et al., 2004).

The cohort aspect, in our study, proved to be a related benefit to all students—traditional and non-traditional—to promote student success and program completion. The richness of multicultural instruction, defined by the varied experiences of faculty in research and practice perspectives, also provides a strong foundation for students to see examples of professional modeling from more diverse perspectives along the mentorship journey. In the features of the aspect of the program studied, the diversity of faculty mentors from various research and practice specializations adds to the richness of perspectives presented to students during their course of study. Students expressed possible benefits from multicultural and multidisciplinary experiences provided by faculty mentors within the context of a defined academic community, particularly when faculty members offered mentorship opportunities within a flexible framework that allows the student to balance academic, professional, and personal demands more easily (Leatherman, 2000; Martinez et al., 2013; Pappas & Jerman, 2011; Pyhältö et al., 2012).

Emphasis on Formation of Scholars

The emphasis on activities relating to the formation of scholars and research engagement (e.g., joint publications, joint presentations, mentoring (by peers and faculty), and introduction into the professional culture) contributes to what we refer to as “sustainable scholarship.” For example, in the program studied, students who were mentored in their first year in their cohort often become mentors to the newer students that follow, creating a hierarchy of mentorship activity.

Limitations of the Study

This study was limited by the fact that the research was conducted on one doctoral program located at a medium-sized Midwestern university, which may limit generalizability to other university populations. Also, the doctoral program examined was one based on the experiences of students within the university’s College of Education; therefore, the experiences of these students may not be aligned with other doctoral students in non-educationally based programs of study (e.g., scientifically-based programs of study such as neuroscience, biology, or chemistry). Since this study was conducted with alumni and current students of the program, one possible limitation is that the accuracy of information from the alumni depends on long-term memory of their experiences while in the program. However, there are fundamental similarities across doctoral programs regardless of discipline.

Recommendations for Further Research

One aspect in particular that emerged from the qualitative findings—discussion regarding the development of cohort member peer-to-peer support—will be examined in the context of what our research team has identified and named as “Ph.D. Couples.” Interestingly enough, these peer-support relationships appeared both within the same cohort (intra-cohort) as well as across cohorts (inter-cohort), depending on the doctoral course of study and aligned goals of the students involved.

Based on the findings of this study, more studies involving a mixed-method research approach should be considered. While the statistical rigor of the findings allows for further exploration and investigation in the quantitative realm, qualitative investigation incorporated in this study provided the richness of response needed to emphasize important aspects that emerged from questions that were not specifically asked by the researchers. The focus group format especially provided the depth of detail related to significant aspects of student success that may not have otherwise been discovered. Although “group interaction” was not found to be significant in the quantitative realm, it was closely connected to a significant element of the qualitative findings that will likely emerge as a fundamental aspect of a future study. In the process of qualitative exploration in this study, the cohort model aspect of doctoral study was a significant contributor to the element of student success and program satisfaction. In future research, these aspects of the cohort model—intra-cohort, as well as inter-cohort activities—will be further explored. In the case of this study, both approaches were necessary and integral parts of exploring the research questions presented, and convergence of the quantitative and qualitative findings enhanced the research investigation.

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Biographies



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Cite as: Joy, S., Liang, X., Bilimoria, D., & Perry, S. (2015). Doctoral advisor-advisee pairing in STEM fields: Selection criteria and impact of faculty, student and departmental factors. *International Journal of Doctoral Studies*, 10, 343-363. Retrieved from <http://ijds.org/Volume10/IJDSv10p343-363Joy0711.pdf>

Doctoral Advisor-Advisee Pairing in STEM Fields: Selection Criteria and Impact of Faculty, Student and Departmental Factors

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Abstract

Unlike the doctoral programs in places where students are paired with advisors at the time of admission itself, most US programs require the students to choose their advisors, and the advisors to formally accept the students as advisees. Little research has been done to understand how students and faculty approach this mutual selection and pairing process. This paper examines this process in STEM departments (Science, Technology, Engineering and Mathematics), with specific focus on factors influencing the decisions. Based on focus groups and interviews of doctoral students and faculty from STEM departments in an American university, we identify criteria applied by students and faculty in making their choices. Students were found to assess faculty on available funding, area of research, personality, ability to graduate students fast, and career prospects for students, and faculty to assess students on their qualifications/credentials and perceived ability to contribute to research. We also found that this mutual assessment was not objective, but influenced by perceptions associated with faculty gender and career stage, and student nationality. In the end, whether students and faculty were actually paired with persons of their choice depended on departmental factors including prevalent pairing practices, restrictions on student numbers per faculty, and reward structure. We discuss implications of the findings for research and practice.

Keywords: Doctoral education, advisor/advisee selection, gender, nationality, career stage

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Introduction

Advisor-advisee relationship is core to the doctoral education in America as elsewhere. It is through this relation that students are socialized into “the academic field, university setting, research, ethics, and many other important aspects related to being an academic professional” (Wrench & Punyanunt, 2004, p.225).

Editor: Victoria Wise

Submitted: May 31, 2014; Revised: February 9, 2015; Accepted: September 11, 2015

Having the right advisor leads to greater student satisfaction and faster degree completion (de Valero, 2001). Having a wrong one is a key reason for student attrition (Herzig, 2002; Lovitts, 2001), which is estimated to be quite high at 40-50%, (Golde, 2005). Advisors benefit from this relation when advisees contribute to their research, sometimes leading to long-term collaborative relationships (Wang et al., 2010) and lessen workload by taking on teaching and grading (Offstein, Larson, McNeill & Mwale, 2004). Incompatible advisees drain faculty resources (Knox, Schlosser, Pruitt & Hill, 2006).

Jones (2013) reports that 15% of journal articles published from 1971 to 2012 on doctoral issues focus on advisor-advisee relations. Much of the empirical literature however dwells on issues after advisor/advisee selection has been done, such as factors affecting the success of the relationship (e.g. Schlosser & Kahn, 2007; Zhao, Golde & McKormick, 2007) and outcomes (e.g. Herzig, 2002); little is known about how the advisor/advisee selection is done in the first place. Unlike some other places where the students are assigned to advisors when they are admitted to the program, most US doctoral programs require the students to choose their advisors at some point, and the advisors to formally accept the students as advisees. Except for Zhao et al. (2007) (and Ray, 2007 in the Indian context), we have not come across any study that looks at how advisor selection is done. We argue that advisor-advisee selection and pairing warrants more researcher attention, not only because ensuring the advisor-advisee pair is the right match in the beginning itself may contribute to its eventual success, but also because, once made, it is a decision difficult to reverse. Golde (2005) has found that choosing and switching advisors are processes of public and political nature, and as a result, students find it easier to move to another university than to switch advisors. This paper aims to contribute to the scant literature on this topic by bringing to light the dynamics involved in the advisor-advisee pair formation in the US context and the factors affecting the process.

Literature Review

Advisor-Advisee Selection and Pairing

Compared to the UK and Europe, doctoral education in the US is highly decentralized and unregulated (Zhao et al., 2007). Unlike the doctoral programs in the UK, Australia, and some of the European countries where the student is paired with an advisor/supervisor by the department at the time of admission, advisor-advisee pairing in the US usually involves the student identifying the faculty that they are interested in working with at some or other stage in the program, and the faculty either accepting or rejecting the student (Golde, 2005; Zhao et al., 2007). The specific practices followed in different academic disciplines, institutions and departments however vary (de Valero, 2001). There is little research that sheds light on how the students and faculty make their advisor/advisee choices.

Choosing an advisor is often thought as the most significant decision that a doctoral student has to take (Ray, 2007). Zhao et al. (2007) suggest that students make their decision based on several criteria. Their factor analysis revealed three major criteria: *advisor reputation* (as a good teacher, researcher, and advisor), *intellectual compatibility* (match of the “advisor’s intellectual interests and methodological expertise with the student’s interests, expectations of ensuring high-quality work”), and *pragmatic benefits* (“financial support, a favorable work environment”) (p.267). Ray (2007) has found that Indian doctoral students apply similar criteria. Zhao et al. (2007) also discovered individual and disciplinary differences in the relative importance attached to each criterion. In the absence of further empirical studies on the topic, we assume that students may seek advisors possessing characteristics that are generally valued, including trustworthiness, goodwill (Wrench & Punyanunt, 2004), availability and interactions (Curtin, Stewart & Ostrove, 2013), treating advisees as junior colleagues (Bieber & Worley, 2006), and the ability to help the student

graduate in a timely fashion (Lovitts, 2001).

The literature on how advisors make advisee choices on the other hand is practically non-existent. Barnes and Austin (2009) note that in general advisor perspectives are less studied than student perspectives. It may be reasonable to assume that advisors also engage in an assessment of student characteristics. Based on the responses from advisors in the area of Counseling Psychology in Knox et al.'s (2006) study, it is likely that advisors also consider the cost and benefits in advising a particular student before accepting or rejecting him or her. Examination of actual criteria applied by advisors is yet to take place.

Ray (2007) recommends that the assessment of criteria should be an objective process to arrive at the best choices. It appears that this does not happen in practice – 20% of graduate students in Goldberg's (2003) research said that they would choose a different advisor given a second chance even though they had the freedom of choice in the first instance. According to Ray (2007), this may be because they have incorrectly assessed the relative importance of each criterion to them or may not have had full information on the criteria. We posit that a third reason for this can be that both students and faculty are influenced by other factors which prevent them from making an objective assessment of the criteria and lead them to wrong choices. Therefore, in order to understand how advisor-advisee pairs are formed, it is not sufficient to identify the criteria applied; we also need to recognize the factors that affect the evaluation of such criteria.

Influencing Factors

Absence of sufficient research makes it difficult to predict which other factors affect advisor/advisee choices. We expect that factors related to faculty (e.g., gender), students (e.g., nationality), and departments (e.g., size) that have been found to affect faculty-student relationships might influence the choices.

Faculty factors

The impact of gender on perceptions about faculty members at research universities has been widely studied. Male faculty tend to fit into the stereotypical mold of the ideal academic/scientist better than female faculty, making the former more attractive as advisors than the latter. "Valued attributes of science – such as rationality and control – are attributed to men more than women" (Fox, 2001, p. 655), which affects women's credibility as scientists. In addition, although more women obtain doctorates and enter academia, their career growth is very slow and they remain under-represented in the higher ranks (Bilimoria, Joy, & Liang, 2008). Students who may look at career progress as an objective process may interpret this gender disparity in faculty ranks as an indication of women's lack of competence. Under-representation at the top renders women less visible to students. This lack of visibility (Krefting, 2003) is compounded by their choice to survive in academia by being non-confrontational and invisible (Heinrich, 1995). In advising relationships, students may expect a male faculty member to provide help that is more practical in nature, and a female faculty member psychosocial help (Tenenbaum, Crosby & Gliner, 2001) that is maternal in nature (Guiffrida, 2005; Heinrich, 1995). Although empirical evidence as to whether the actual help provided is in accordance with the expectations is inconclusive (e.g., Goldberg, 2003; Tenenbaum et al., 2001), the repercussions for violating the gender stereotypes are real. Students have reported feeling betrayed and deeply disappointed when these expectations are not met (Heinrich, 1995). Female faculty who do not fulfill gendered role expectations are reported to receive hostile responses in student evaluations (Sprague & Massoni, 2005).

A relatively less researched feature of faculty that potentially impacts advising relations is faculty career stage. Junior faculty are considered inexperienced in many academic functions and in need of mentoring themselves (Feldman, Marshall, Lovett, & O'Sullivan, 2010; Sands, Parson, &

Duane, 1991). Advising is one of the functions that they enter into without prior training and start doing based on their own experience as advisees (Knox et al., 2006) The senior faculty members, on the other hand, are more experienced in advising, although they also have had no training, but learned the task by doing it (Halse, 2011). Good advisers are thought to treat the advisees like a junior colleague or a peer-in-training (Bieber & Worley, 2006) and junior faculty may do that more easily. The demands of the job are different for junior and senior faculty. Faculty availability is predicted to impact ability to graduate advisees faster (Curtin et al., 2013) – junior faculty facing tenure pressures may choose to maintain close contact with advisees whose work has publication potential, whereas senior faculty's service commitments may make them scarce. Despite such speculations, as far as we know, no empirical study has been done on the impact of career stage on advising, and which group the students find more attractive as advisors.

Student factors

American graduate schools attract the highest number of international students (Institute of International Education, USA, 2011; UNESCO's World Conference on Higher Education Report 2009). Advising international students could be challenging because of cultural differences, insufficient English language capabilities, and educational system differences (Charles & Stewart, 1991; Curtin et al., 2013; Kim, 2007; Offstein et al., 2004). In advising relations, deficiency in linguistic capabilities limits exchange of ideas with the advisor and puts the advisee in need of much handholding from the advisor in the writing stage. Along with culturally rooted stylistic differences in communication (e.g., differences in relationship building styles, body language etc.), it could lead to interpersonal issues resulting from misunderstandings and make conflict resolution immensely difficult (Kim, 2007). Lack of familiarity with the US educational system and academic expectations is another big challenge that international students face, for which they may turn to the advisor for help (Zhai, 2004). Thus, compared to advising domestic students, advising international students becomes a more effortful and challenging activity that requires a broader range of skills.

However, despite the difficulties facing them, international students consistently show higher and faster degree completion rates compared to domestic students, Curtin et al. (2013) observe. The authors speculate that this difference may be because international students that travel to the US for graduate study are a self-selected group of the more talented and ambitious. In certain fields (e.g. Mathematics), they are believed to be better qualified than domestic students (Herzig, 2002). In graduate school, they are more concerned about receiving research related and professional development experience (Curtin et al., 2013) and attaining academic success (Zhai, 2004), which shapes their attitude and approach to graduate education. They possess a stronger sense of academic identity and find it easier to fit into the academic environment (Curtin et al., 2013). In comparison, domestic students often start graduate school wanting to emulate the idealized image and lifestyle of faculty that they formed during their undergraduate years, realizing only later that the faculty life is "unbalanced, work-centered and stressful" (Golde, 2005, p. 689). As a result, they find it difficult to meet the demands of graduate school and opt to leave (Golde, 2005).

In terms of expectations, international students accept their social isolation as a reality that they have to live with and do not expect to bridge the cultural and social gaps and build relations with peers or local people; the only relationship that they want to work is the one with the advisor (Rose, 2005). These students tend to have expectations about the nature of the relationship based on the models of student-teacher relations in their home cultures. In many cultures, especially from Asia, teachers are parental figures, and students from those cultures expect parent-like engagement from their American advisors (Charles & Stewart, 1991; Dong, 1996; Kim, 2007). The relationship has been perceived to be less personal in the US and most US faculty do not offer assistance or go out of their way to help a student (Eland, 2001). When the advisor behavior does

not match the expectation, the students perceive it as a lack of interest in them and they may feel rejected. The advisees place the responsibility to make the relationship work on the advisors and expect the advisors to initiate the steps for building it (Kim, 2007). The advisors, on the other hand, may interpret the advisees' reluctance to approach them as the lack of interest to work with them and may decide not to invite the student into an advising relationship (Friedman, 1987). Student nationality thus becomes a complex factor in the faculty's decision to accept or not accept a student as advisee.

Departmental factors

Academic departments are usually grouped into disciplines in empirical studies (Golde, 2005; Zhao et al., 2007). De Valero (2001) points out that this approach does not capture the variations among departmental policies and practices. It is observed that the department is the locus of control in doctoral education with each department forming its own policies regarding admission, financial support, and degree progress (Frazier, 2011; Zhao et al., 2007) and can have a significant impact on student experience and outcomes (Austin, 1996; de Valero, 2001).

Advising is an area for which departments often refrain from formulating common policies or guidelines and leave it to individual faculty members to carry out as they see fit, particularly when faculty grants are the source of funding (Fox, 2001). However, unwritten practices and norms for pairing advisors and advisees exist in every department. Zhao et al. (2007) describe that in some departments all students are assigned to an initial advisor as they begin the program and over the next year or so they are expected to form a relationship with someone else who then becomes the advisor. In other departments, students and advisors decide to work together during the admission process, or faculty choose students who they want to work with and admit them to the program. Another model of advisor matching is for departments to have students advised by a committee for the first year while they complete lab rotations. There are departments where students have to meet program milestones such as coursework and/or qualifying exams and prove their competence to be able to choose advisors. Students report that the faculty do not pay attention to them until they clear the milestones (Herzig, 2002). It is not uncommon to have lack of uniformity in practices followed in the same department, as a result of which the final pairing for different students in the same cohort gets done at different points, leading to anxiety and a sense of competition among the students. The stop-gap arrangements such as assigning of initial advisor or committee have not been found to be effective, as these advisors do not invest in the students knowing that they may not be the final advisors anyway (Herzig, 2002). Lack of orientation for students on the process leads them to rely on other students for guidance and support.

The size of the department/program is another factor that affects advisor-advisee pairing. Departments may have sub-groups based on areas of research, some with very few faculty members. This limits the choice of advisors for students whose research interests fall in those areas (Golde, 2005). Also, faculty find that they have to limit the number of advisees because of departmental regulations, lack of funding, or by the sheer impossibility of the task. Under these circumstances, students who do not make their choices early enough find themselves without advisors in their area of interest.

The incentives for advising vary among departments. Faculty tend to view teaching and advising related responsibilities as "load" (Hearn & Anderson, 2002), especially in research universities, where teaching is less valued. Research shows that number of hours that faculty spend on advising has decreased considerably in the last three decades. In the absence of formal rewards, faculty are encouraged to take up advising only if it is accompanied by incidental rewards. These include getting qualified workforce for the lab, publication potential of the students' work, funding brought in by the students through grants or scholarships, and opening up of international re-

search opportunities because of students' nationality or membership in certain research centers or joint ventures between students' and faculty's institutions.

Purpose of Research

As established in the literature review, the process of forming advisor-advisee pairs is often taken for granted and has attracted very little research focus, in spite of it being one of the most consequential decisions in doctoral life. It is necessary to understand the dynamics involved, to be able to create appropriate structures and processes or to improve existing processes. Hence, the primary purpose of our study was to gain perspectives from both graduate students and faculty members as to how they selected advisors and advisees and what common criteria were applied in this selection process. The second purpose of our study was to explore if and how factors pertaining to the faculty, students, and departments affected the evaluation of these criteria and adviser-advisee pairing. We adopted a qualitative exploratory approach since there is a lack of previous theoretical models.

Methods

Sample and Data Collection

This study was conducted in a private American university and was funded by NSF-ADVANCE Institutional Transformation Program for increasing the participation of women and minorities in science and engineering workforce. The doctoral students and full-time faculty members of all 31 Science, Technology, Engineering, and Mathematics (STEM) departments in the university that were part of the ADVANCE program were invited to participate in the study by email. Snowball sampling was used when the members of a special population (e.g., international students), proved difficult to recruit.

Given the exploratory nature of the research questions and the need to understand multiple perspectives, the data collection method chosen was focus groups (Kreuger, 1988). An interdisciplinary team of trained faculty and staff conducted six focus groups, one each for domestic graduate students, international graduate students, pre-tenure female faculty, pre-tenure male faculty, tenured female faculty, and tenured male faculty. Additional individual interviews were carried out with international students (due to cultural reasons some of the volunteers felt more comfortable sharing their opinions in an individual setting than a group setting) and tenured female faculty (it was difficult to schedule the focus group at a time that was suitable for all volunteers). Combining focus groups and individual interview data to augment data richness in similar settings was done also by Offstein et al. (2004). Prior to the beginning of focus groups and interviews, participants were asked to complete a brief demographic background questionnaire. During focus groups, participants were asked to describe the process followed for pairing students and advisors, and to discuss the impact, if any, that factors such as student national origin, gender, and faculty status might have had on this decision. The same protocols were used for individual and group sessions. The focus groups and interviews were audio-recorded and then transcribed into electronic documents.

Participants

A total of 17 graduate students (7 males and 10 females) and 35 faculty members (19 males and 16 females) participated in this study. Participants in the domestic student focus group (4 males and 6 females) had an average of 4 years of experience in their graduate program. The international student participants (3 males and 4 females) had an average of 3 years of experience in America and 2.4 years of experience in their graduate program. The faculty participants included

9 pre-tenure/junior females, 6 pre-tenure/junior males, 10 tenured/senior females and 13 tenured/senior males. Taken together, the 33 faculty members had an average of 11 years of teaching experience at this university (demographic information was unavailable from 2 faculty members).

Data Analysis

NVivo 7.0 was used for coding and grouping the themes. The researchers individually analyzed the transcripts to identify the common patterns and themes. The researchers then met as a group and differences were discussed until consensus was reached. As themes evolved, transcripts were analyzed again in an effort to challenge, expand, and refine the thematic categories. Researchers also examined the codes to see if there was sufficient differentiation between themes, and combined the codes that were similar. The process was iterated several times until the list of categories appeared to be both parsimonious and complete. The final coding structure, which consisted of both broad themes and their dimensions, was then applied to the entire set of transcripts. Quotations from participants also were identified, including key words or phrases that captured the essence, or served as metaphors, for a theme.

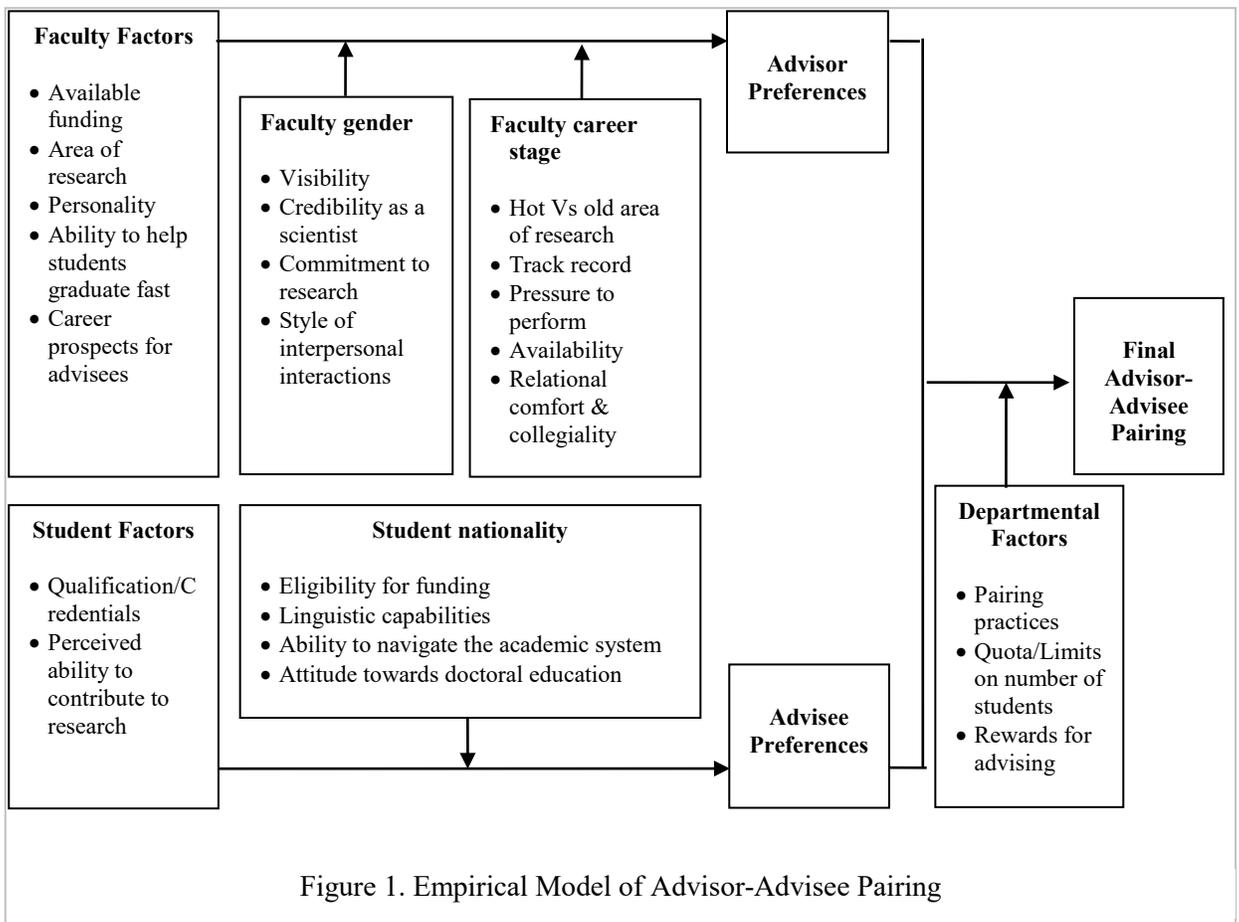


Figure 1. Empirical Model of Advisor-Advisee Pairing

Findings

The data confirmed that advisor-advisee pairing involved a decision process in which the students as well as the faculty considered many factors (Figure 1). We found that stereotypes around the gender and the career stage of the faculty member and the nationality of the students biased how they were evaluated on the above mentioned factors. In addition, Departmental Factors were crucial in determining if the advisors and advisees were actually assigned to the ones they preferred.

Faculty Factors

In selecting a potential advisor, several features of the faculty were identified by both faculty and student participants as critical as discussed below.

Available funding

Funding was perceived by participants as perhaps the most important factor in attracting graduate students. The majority of student participants believed that *“most graduate students chose their advisor because of funding.”* Both domestic and international students mentioned that some students had changed their research interests to work with advisors who could fund them. A domestic student noted *“sometimes there might not be a match between what student is interested in and the funding that’s available. And that’s where students find themselves working on something they ‘have to’ - to get funding - and working without passion.”* Faculty participants also confirmed that *“generally graduate students do not go to a program unless they are assured that they will be funded”* [A tenured female faculty].

Areas of research

A faculty member’s research area was recognized as important as funding in identifying an advisor. *“I picked my advisor solely because of the research interest”* a domestic student said. The faculty concurred. *“I think that certainly the primary or the first thing that the students think about is the research topic”* [A tenured male faculty].

Students and faculty participants also noted that graduate students tended to be attracted towards the latest topics in the field. *“There are always fads in any field, and there are these ‘in’ areas. And if a faculty member happens to do work in area that is ‘in’ at the moment, he or she attracts students”* [a tenured female faculty].

However, some students expressed the desire to establish their own identity in the chosen area and a voice that is distinct from their advisor’s, and wanted advisors who would help them with that. *“I was clear about not being someone’s clone. I wanted to find someone that would support that. To use participant J’s words, owning my own voice and having that voice supported”* [A domestic student]. Some of the faculty were sympathetic to this view. *“Some students feel that they are being groomed to be the clone of their mentor and it’s very scary to say hey, I don’t wanna be like you. I wanna be like somebody else now”* [A tenured female faculty].

Personality

Students were sensitive to the personalities of the faculty they chose to work with. *“Nice,” “open,” “easy going,” “not aggressive,” “confidence,” “trustworthy”* and *“comfort level”* were the words used by participants to describe the personality of a desirable advisor. Faculty participants perceived that the *“comfort level with a particular person the students would like to work with ranks pretty high in their consideration once they start to know people here”* [A tenured male faculty]. A mismatch in personality and work habits was raised as a reason to change advisor. *“The things that work with some people would not work with me. He [former advisor] was confrontational and he set specific deadlines and had very specific rules. I’m more of a ‘I’ll do it, just give me some time’ kind of person. The other professor [current advisor] is more like ‘what are you doing?. He makes sure you are on the right track and getting your work done. He’s much more open. His students do not graduate as quickly because he is much more open. But I think the environment is nice”* [A domestic student].

Ability to help students graduate fast

Past performance of an advisor in getting students graduated was perceived by both student and faculty participants as critical in advisor choice. The average number of years that the advisees of a certain faculty took to graduate was an important criterion while deciding whether to choose them as advisors. *"I chose the particular advisor because they are known to get students out of the door, and I didn't want to hang around much longer than I had to"* [A domestic student]. Faculty participants also were cognizant of this fact. *"I have overheard in discussions that some students choose their advisors' labs according to where it is easier to get projects done"* [A pre-tenure male faculty].

Career prospects for advisees

Participants from both student and faculty groups noted that graduate students chose their advisor based on a faculty member's perceived ability to advance the student's career. *"When you're done with your graduate program, you want someone who can advance you, either in a post doc or job application"* [An international student]. The students looked at where their predecessors obtained jobs and were interested in finding out if the reputation, credibility, and the network of the advisors would be helpful for them. *"Being with a faculty member who has tenure and prestige that's really where you want to be. Partly because of the next step [getting a job], the bigger the name the easier it is"* [An international student]. The students were concerned about associating with faculty that had negative reputations.

Influence of Faculty Gender

Though some said that gender had no impact when there was a match in the research interests or when the faculty member had a name in the field, other participants observed female faculty had lesser number of advisees. *"From my own experience, I've had, until this year, more money than I've been able to get students for and I have not been able to just get them to even come to the door"* [A pre-tenure female faculty]. Comments by the participants alluded to the existence of gender stereotypes. Women faculty in departments with lesser number of women experienced gender effects more severely.

Visibility

According to a few, female faculty were less visible in the department in comparison to their male counterparts. *"In my department, there are two senior female faculty and they have the least number of students. I haven't really spoken much to the couple of females [faculty] and I don't know what the relationship [between them being females and having the least number of advisees] is. But it is telling that the younger male faculty probably aren't in the category of people who could do a better job of really pushing you along in your career, but they do seem to be doing a better job of getting students into their labs, and that would be beneficial to your career because they have higher visibility"* [An international student].

Credibility as a scientist

Some participants speculated that female faculty (especially at the junior level) did not fit the students' conception of an 'ideal scientist' and hence were perceived to be less qualified to guide students: *"I believe that the students are more willing to trust their [male faculty] scientific judgments or, you know, go to them [male faculty] for scientific advice than they would for a female"* [A pre-tenure female faculty]. *"I think, for female faculty, I don't mean the general, but for my advisor [specifically, who is a junior faculty], she believes her idea very firmly and it's very hard to persuade her that we go another way. [The result is that] Sometimes, she is right. But sometimes, I am not sure"* [An international student]."

Commitment to research

Both faculty and student participants pointed out that female faculty were perceived to be less research-focused because of their family roles. “... *my male colleague was saying to the student ‘why are you asking me if I can come up with a project that suits your interest when we have someone in the department who does what suits your interests’ and the student said ‘Women don’t work as hard, they don’t care as much about their science, they care about their families first and they don’t put in as much time’*” [A pre-tenure female faculty]. There was the impression that this mindset was stronger among some international student groups. “*This past year one of the international students told one of my male colleagues that the international students didn’t want to work with women because they were going to have babies and weren’t going to pay as much attention to the lab*” [A pre-tenure female faculty].

Style of interpersonal interactions

Female faculty were aware that they might disappoint students in not being feminine, maternal, and nurturing in interpersonal interactions. “*I got a whole group of people who thought I was going to be very nurturing, which unfortunately I’m really not. I mean, I don’t do that very well. So I had experiences, mostly with female students, where I had one in particular that I ended up having to get rid of her out of my lab, because she wanted to talk about earrings and laundry and oh my God and I was like, ‘do some science’*” [A pre-tenure female faculty]. While some felt that female faculty were more nurturing towards female students, the others felt that they were tougher with female students. Examples of female faculty offering special advice to female students as well as female faculty and female students not wanting to work with each other were offered.

Influence of Faculty Career Stage

The tenure status/career stage of the faculty member was discovered to be pivotal when students made judgments about several of the faculty features. Junior and senior faculty were thought to be different in many respects.

‘Hot’ versus “old” areas of research

It was felt that the junior faculty carried out their research in new and cutting edge topics compared to the senior faculty. This added a ‘*hotness factor*’ to the junior faculty and made them more appealing. An international student participant observed “*some senior faculty members whose research was in the 1960s, they basically teach unpopular required courses that someone has to teach, and they are kind of seen as only doing that, not much [new] research*” [An international student].

Track record

Students often found the lack of a track record a problem with faculty at early career stages. A pre-tenure male faculty member admitted “*sometimes junior faculty are seen by students as not having proven already that they can produce papers at such a pace, so they might choose a lab that has proven already that students don’t have any problems in producing the papers*”. Junior faculty were considered to have fewer resources and fuzzier research agendas compared to senior faculty. “*Many young faculty that are pre-third year review [mid-term review in tenure process], they are just starting out, they do not have all of their equipment yet, they may be a little bit scattered in terms of what types of projects that they are doing*” [A tenured male faculty].

Pressure to perform

Pre-tenure or junior faculty were perceived by student participants as facing more pressure than tenured faculty in meeting the performance criteria as a result of their tenure track status. This in turn might impact how demanding they would be as an advisor. *“For the tenured advisor, they do not work very hard. Based on my personal understanding, some tenured faculty do not work hard. I don’t mean that they don’t care [about] the students. But they don’t [put] pressure on the students. So the progress of the project totally depends on the students. But for the non-tenured advisors, they themselves have high pressure. And they need immediate progress on the project, so that they can publish paper, they can get patent, finally they can get funding from different foundations, so that they can get tenured. These pressures make them push students usually harder than the tenured advisors. In this case, most grad students in the non-tenured advisor’s lab have higher pressure. These higher pressures also give them higher/more production [productivity]”* [An international student]. However, some of the student and senior faculty participants felt that advising would be an additional pressure on the junior faculty. *“I see a lot of pressure in our area on junior faculty in terms of getting tenured. I don’t want to put unnecessary the burden of being the chair of a student committee on them because they have a workload on them to maintain”* [A domestic student].

Availability

Another notion was that the junior faculty spent more face time with students in the lab and in their offices than the senior faculty. Senior faculty were perceived to have more committee work and other service commitments that reduced their availability to students. *“Senior faculty members are the ones who are in all the high committees and may have meetings all day. So it’s like, if you work with this guy, he is busy all the time. But he is a senior guy and he is almost on every committee. But if you want time [with the advisor] you work with junior faculty who have time”* [A domestic student]. This was confirmed in the male faculty focus group interviews. *“... as you move up in the ranks, committee seems to take more and more of your time away and consequently you don’t have as much time to interact with the student”* [tenured male faculty].

However, the students were sceptical about the long term availability of junior faculty since there was the risk of their not getting tenured and leaving the school. *“If you want to work for an untenured faculty or junior faculty there’s a high risk that they’re not going to be there for the duration of your PhD...there’s a very short window of opportunity with junior faculty.”* [An international student].

Relational comfort and collegiality

Participants also noted that junior faculty were perceived to have *“a lot in common with students”* since they were close in age and experience and the interactions with them were more *“collegial”* and *“comfortable”*. An international student commented *“our department is growing quite rapidly and we have more junior faculty who are in their early to mid-thirties and they’re a lot more available, more open to discussing a wide range of topics. They don’t have as many responsibilities as the other faculty, and they have a lot more current, recent experience that they can give to you. So they’re like, five years ago I was where you are, this is how I got where I am now, whereas a lot of the older faculty, in terms of science, graduated when it was a completely different world, and when they got their PhDs the career paths were so different”*. Student as well as senior faculty participants observed that the energy around the junior faculty made them attractive to students. *“The junior faculty were the most interested and the most dynamic, and everyone wanted to work with them”* [A domestic student].

Student Factors

Some features of the students that the faculty examined affected their preferences for and acceptance of them as advisees. The main features that both the faculty and student participants reported included the following.

Student credentials

While assessing the credentials of students, the faculty took note of standardized test scores and/or qualifying exams as well as students' skill sets and experience. *"A lot of my work involves certain skills, and previous experiences are helpful in judging whether that student will be successful, and so it's a combination of the student applying to the program to work specifically with a faculty member and the faculty member looking at the set of applicants interested in working with them and selecting one that provides the highest potential, matched with their interest area"* [A tenured female faculty]. Another important criterion of the student credentials was the score in the qualifying examination.

Ability to contribute to research

The faculty participants also were concerned with the ability of the student to contribute to research meaningfully. The student participants pointed out that some of the faculty were interested in making sure that the students contributed to the faculty's own area of research. *"In the years since I entered, he [the advisor] has chosen a very narrow path of research, and the impact that has had on his career is that he is now recruiting just those students who want to work in his narrow field of interest. I am the last student who is not doing work in this particular line of research. Although he has tried to mold my interest but I have been very firm on that I don't want to work on that. When he accepted me it was based on my qualification and my research interest at that time, but now he is only taking students interested in this particular area, and thus when student work, they obviously indirectly help him to advance in his field"* [A domestic student].

Influence of Student Nationality

Many faculty and student participants considered the nationality of the students to be a factor in the advisor/advisee selection process and a predictor of their doctoral performance. Tokenism was observed in admitting international students. Performance of existing international students was usually discussed while making decisions about accepting their fellow nationals. A few faculty members openly said that they did not accept students from certain countries because of negative experiences in the past.

Eligibility for funding

Both student and faculty participants observed that eligibility requirements limited funding opportunities for international students. A tenured woman faculty member shared her own experience: *"...it looks like bias, but it is not so much bias as it is practical, because there is a lot of funding available to us to fund the students, but it is limited to US citizens or permanent residents. We get a lot of engineers from, a lot of capable students from outside the country, but we may very well say 'no' to them in favor of the US students. This is a tricky thing but that is how it works"*.

Linguistic capabilities

Many suspected that the language was a barrier to effective advising of students from certain countries and sometimes resulted in misunderstanding and conflicts. *"I've really struggled, I've had students of [lab] rotations and it's never really been clear to me whether the student fully*

understood things that I might have said, so there is this big communication gap with students from Asian countries as was said earlier. It's quite as true that if you're getting students from Europe or India, they actually have a better command of English [than even the domestic students]" [A tenured male faculty]. It was felt that faculty had to take special measures to address the international students' unfamiliarity with language and culture in the US. "...I think the faculty had to just be very sure that the students were understanding exactly what was expected and directions. They did require a lot more interaction in terms of writing up their research, pretty much a fundamental skill development in respect to writing" [A tenured female faculty].

Ability to navigate the academic system

The international students were perceived to be "more naïve" and as "lacking awareness of the elements of the educational system and academic structure in the US" (such as selecting the right courses, grading, and tenure system). Domestic students were viewed as more "sophisticated" in understanding the system and negotiating relationships than the international students. "Domestic students are more sophisticated in the sense that they probably get better socialized, I mean they learn to think and look for the fact" [A pre-tenure female faculty].

Attitude towards graduate education

It was felt that the international students had a greater appreciation of their education, saw graduate school as a privilege, and were very focused. Domestic students were perceived to enter graduate school with a sense of entitlement, but with a lesser sense of purpose. "For the right reasons or the wrong reason I think that many of the non-domestic students actually come with a singleness of purpose, to get the degree. And many, not all, domestic students come because they don't know what else to do after college. And they're just sort of continuing along, and maybe they'll get something figured out" [A pre-tenure female faculty]. International students were seen as more hardworking while the domestic students were assumed to be more concerned with "lifestyle". "The only thing that I actually see at least for us that's a bit different now is that, for a lot of what we refer to as the domestic or the US students, they're beginning to get a little bit more 9-5 ish, whereas most of the international students, perhaps based on the training and what they had to do to get out of their countries and into a US school, are actually much more aggressive, and often they're the folks you'll find there early and they're the folks you'll find there late" [A tenured male faculty].

Departmental Factors

Even when both faculty and students had preferences as to who to work with, departmental factors were found to influence if they were actually paired with their preferred ones.

Prevalent pairing practices

In some departments pairing was done before or during admission, and in others after admission. At each of these time periods, the extent of information on various selection factors available to both faculty and students varied, and so did the sources of information. As a result, factors that influenced the decision varied depending on time of pairing.

In cases where pairing was done before admission, research interests and student credentials were regarded as the most important criteria. The students usually came in wanting to work with a specific advisor, having read about the advisor's interests, and contacted them via email or in conferences. The choice was solely guided by match in research interest. "I actually picked my advisor before coming here. I was interested in a particular field of research. I did my own research to find the best people in that particular field. I contacted him. As it turns out he was looking for a

student and he saw some match in me. So I didn't know a lot about the personality. I knew about the research. I didn't visit him or the lab" [A domestic student]. Research interest based pairing was also done by the admissions team as part of the admission process. *"In our department, we actually bring students in and we have an interview process where we actually select. So there's some knowledge face-to-face of the person and their [research interests]. And then before they join there's a match[ing process]. So we have them assigned to an advisor largely based upon potential research interests overlap and also partly based upon faculty availability"* [A pre-tenured male faculty]. Some student participants perceived the pairing process to be very fluid and unclear, and were not fully satisfied.

The advisor choices made after admissions were guided more by personality and track record of the faculty with other students, and the advisee choices by students' perceived research ability. This process was informed by the interactions they had with each other mainly during formal lab rotations and/or classroom lectures. *"If the students come in without a preconceived notion of who they want to work with and then in that case, it is strongly influenced by who they get to interact with"* [A tenured male faculty]. Students were strongly influenced by the information (and sometimes misinformation) on faculty that spread through student grapevine. *"I don't think we make individual decisions about faculty. In our department whenever I have interaction with faculty I tell someone about it and we give feedback. A couple of us actually started a club called 'Strange encounter with academia' and every time something weird happens we share it"* [A domestic student]. The faculty were sensitive to the impact that disgruntled students had on such information sharing and felt that it negatively affected objective assessment of faculty personality and credentials.

Quota or limits on the student numbers

Some departments had restrictions on the number of advisees per faculty. Though these restrictions arose out of the good intention to avoid piling up students in certain labs or with certain faculty members, it was perceived by faculty participants as sometimes limiting their own as well as students' choices. *"It gets a little bit difficult in my department because faculty are limited to number of students that they can take. So if you have students [who] do rotations and you already have your quota - and we are only allowed to have 2 students at a time - then even if they wanted to come and join your lab, we are not allowed to take them. So in those situations students do often end up having out of necessity to go work with someone that they may not necessarily have been their first, second or even third choice, but that they were forced into that environment because they was no other option"* [A pre-tenure female faculty]. There were some programs that restricted the number of international students that they admitted due to funding constraints.

Rewards for advising

Training advisees was an activity that was not always rewarded positively, especially in the case of pre-tenure faculty. The reward structure is such that it works as a punishment if the faculty member does not train a specified number of students. *"I had a most recent student, a good one who wanted to leave. He had some self-confidence issues, maybe didn't think he deserved a masters. I was approached by our program director and our chairman saying, 'You find a way to get this guy a masters because it's important for your career that he has a degree of some sort and doesn't just leave the program'"* [A pre-tenure male faculty]. Pre-tenure faculty felt they were at a disadvantage as sometimes the bad students were thrust on them.

Discussion

Based on the findings from this qualitative exploratory study, we offer a beginning model of the advisor-advisee pair formation (Figure 1). It reveals that individuals form their preferences based on a number of criteria, however preference formation is far from an objective process as they are influenced by their perceptions of each others' characteristics (such as gender, career stage, nationality). It also shows that final pairing is beyond individual control because of the influence of departmental elements.

Students find the faculty members' ability to provide funding, area of research, personality, ability to graduate students quickly and impact on students' future careers as the criteria to determine whether they will make good advisors. These findings are consistent with the criteria revealed in the survey study by Zhao et al. (2007). Both sets of findings show that students possess developmental as well as pragmatic orientations. The developmental orientation is observable in their concern with match in area of interest in our study and intellectual compatibility in Zhao et al.'s (2007) study, and the pragmatic orientation is evident in a focus on ensuring funding and timely completion and even the forethought to capitalize on the advisory relationship to build a future career. Individual students however vary in the relative importance they attach to each of these criteria as found by Ray (2007) as well, especially availability of funding and match in research interests, which are considered the most important among all criteria. While some students feel that a match in research interests is non-negotiable, for others it is funding that is non-negotiable. It is yet to be seen how the prioritization may change in the future considering the funding cuts and academic job market following the global recession.

This study is one of the first to explore what advisors look for in their advisees and finds that they are most concerned about advisees' credentials and ability to contribute to research. We feel that this concern factors into how faculty assess the costs and benefits of advising. In a study by Knox et al. (2006) of advisors in the area of counseling psychology, the advisors claim that the benefit of advising is personal satisfaction and the cost is the time demands. They say that positive professional characteristics of the advisee contribute to advisor satisfaction. Advisors' concern with credentials of the advisee discovered in our study may be part of their efforts to ensure that the advisee possesses desired professional characteristics before they commit to the relationship, and thus will contribute to a satisfactory overall relationship. Similarly, their concern with the ability of the advisee to contribute to research may have origins in their wish to minimize the time and effort spent on advising. Further, an advisee with research potential may turn out to be a good collaborator (Wang et al., 2010) and help to advance the advisor's career. In science, this is especially true as students are the key resources to take faculty projects forward.

Another key finding of this study is that the assessment of these criteria is a very subjective process, as individuals are influenced by several factors. The factors that emerge as salient include faculty gender, faculty career stage and student nationality. It might not be surprising that women faculty are looked at less favorably as potential advisors given the systematic bias against women in seemingly objective processes in other aspects of academic life (Bilimoria et al., 2008; Valian, 1999). Even when there is funding and match in research interests, women find it difficult to get advisees, since students tend to rate them lower on their ability to graduate students faster and advance their careers, because of the perceptions about their credibility as a scientist, commitment to research, and visibility (Fox, 2001). Personality clashes may have to be anticipated with women faculty when they do not display the stereotypical maternal/gendered behavior (Sprague & Massoni, 2005; Superson, 1999). Larger proportion of women in a department does make a difference (Fox, 2001), as the assessment of potential advisors seems less gendered in such departments. Our study articulates stereotypes about faculty career stage which are not explored in previous studies. Unlike gender, career stage does not attract a universally positive or negative

response. Junior faculty are favored for research interests and collegiality, while their pressure to perform and short versus long term availability invoke ambivalent reactions. The established careers of senior faculty make them look like dependable advisors who can provide funding and good career opportunities, while their availability is seen as an issue (Macfarlane, 2011). It is possible that gender and career stage will have interaction effects, which may put junior women faculty in the most disadvantageous positions in attracting graduate students.

When it comes to assessing criteria related to students, nationality is a source of real constraints as well as stereotypes. Student's eligibility for funding is a structural constraint that the advisor may feel helpless about. The level of linguistic capabilities is seen as affecting a student's ability to contribute to research (Kim, 2007). The lack of familiarity with the academic system among international students may require additional advising efforts from the advisor (Zhai, 2004). The perceptions about work ethic may give international students an edge over the domestic students, but it could also lead to situations of exploitation. The tokenism in decision making is an indication of discrimination that goes unreported.

In spite of the individual preferences, the final pairing is dependent on the structural constraints posed by departmental factors such as prevalent pairing practices, restrictions on the number of advisees per faculty, and rewards for advising. The pairing practices determine the nature of information used for decision making. While pairing before or during admissions is based just on a match in research interests (Golde, 2005; Zhao et al., 2007), the pairing after admissions gives both faculty and students a better understanding of other factors as well. Golde (2005) discovered that in departments where pairing practices allow students to have long term interactions with the advisors (e.g., lab rotations) and thus more opportunities to develop a good sense of advisor's research interests and supervisory styles, student attrition rates were lower. Restrictions on advisee numbers are especially problematic in departments where faculty depend on students to carry out research related tasks, affecting their productivity. Unlike departments that are small or with less number of faculty in each interest area that have real manpower constraints (Golde, 2005), these regulations here create artificial constraints that help neither faculty, nor students, though the intention is quite the opposite. Lack of adequate rewards is seen as discouraging faculty from accepting advising roles (Hearn & Anderson, 2002). In general, there is a sense of lack of clarity and transparency about departmental factors, which proves to be stressful for both faculty and students, and points towards the need for formal orientation and support structures (de Valero, 2001; Fox 2001).

Implications for Research

This study is a contribution to the slowly emerging literature on the advisor-advisee relationship formation. By inductively identifying the students' criteria for advisor selection, our findings verify the results from Zhao et al.'s (2007) deductive work. In addition, this study identifies the criteria applied by faculty in assessing potential advisees. Another key contribution of this study is in revealing for the first time how various faculty and student factors create perceptions that affect individual choices. It also shows how departmental factors become constraints in the process. The resulting empirical model establishes advisor-advisee pair formation as a process that involves various actors with different goals, making their decisions under a range of influences and constraints.

There are however limitations to this study, which open avenues for future research. Although the qualitative approach has helped us to have a well-rounded understanding of a number of factors that have bearing on this decision making process, it is possible that such understanding may be the result of post-hoc sensemaking of the participants. It cannot be conclusively said that students in the pre-selection phase may have had the same level of understanding about these factors. Comparison of the mental models of students in the pre- and post-selection phases may be an in-

teresting line of enquiry. Another possibility for comparison is between different groups (e.g., male/female/junior/senior faculty, domestic/international students, departments with similar processes) to see if there are similarities in the relative importance given to the criteria and/or perceptions in operation. Finally, our research focused on STEM departments within a single university; future research should compare and contrast the practices occurring across multiple universities. Quantitative models will be useful in producing more generalizable findings.

Implications for Practice

We join other researchers (de Valero, 2001; Fox, 2001; Golde, 2005; Kim, 2007) in emphasizing the need for orientation and support. Instead of the hands-off approach (Fox, 2001), we suggest that departmental administrators and senior faculty leaders design and implement systems and support structures to help both students and faculty members make more informed choices about the advisor-advisee selection. We recommend the following.

Enhance clarity in departmental policy

Departments should undertake a review of the extant processes used by students and faculty to make advising decisions, and determine steps to make the process of selection more equitable, transparent, and participative. Departmental guidelines and timelines for advisor/advisee selection need to be articulated.

Implement an orientation for students

A recurring theme in the findings is the need for orientation for graduate students, especially international students, on how to navigate through graduate school. Students may find it useful to have formal information sessions on how to choose an advisor, rather than having to rely on the opinions of other students. An information session would be a venue for not only talking about the factors that students should consider and the processes that they could follow, but also for creating awareness about various stereotypes that might subtly bias the decisions. Appointing a faculty member or peer guide/resource person in each department for students to talk with if they are finding the decision difficult may be a good follow up measure.

Make faculty information available to students

In the absence of rich information about faculty members, the student grapevine takes over. Departments vary widely in the amount of faculty information shared on departmental web pages and brochures. There should be avenues to distribute complete and accurate information about the faculty research interests, current research projects, research assistants, sources of funding, list of publications, future projects, etc. In departments that do not have opportunities for arrangements like lab rotation, there should be alternatives to enhance student-faculty interactions such as 'meet-the faculty' seminars where each faculty presents his/her research to the new cohort of students. Department socials also may be good idea (Golde, 2005).

Provide support to faculty

The faculty who have had to learn advising by doing (Knox et al., 2006) may find formal training on advising useful. They also might appreciate open discussions about their student resource needs, advising rewards, and measures to assess the effectiveness of advising. This may be a sensitive issue for discussion, and the chair and senior faculty leaders should ensure that junior faculty members have voice in this discussion.

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Cite as: Nagel, D. A., Burns, V. F., Tilley, C., & Aubin, D. (2015). When novice researchers adopt constructivist grounded theory: Navigating less travelled paradigmatic and methodological paths in PhD dissertation work. *International Journal of Doctoral Studies*, 10, 365-383. Retrieved from <http://ijds.org/Volume10/IJDSv10p365-383Nagel1901.pdf>

When Novice Researchers Adopt Constructivist Grounded Theory: Navigating Less Travelled Paradigmatic and Methodological Paths in PhD Dissertation Work

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Abstract

Graduate students considering constructivist grounded theory as a qualitative methodological approach may benefit from recognizing the many challenges they could face when embarking in thesis work. These challenges include great diversity in approaches to grounded theory, lack of congruity in how grounded theory methodology is described and understood within the literature, and a dearth of expertise and/or support within academic committees and institutions for both grounded theory and constructivist approaches to qualitative research. In this article, we describe why we selected constructivist grounded theory for our PhD work and the common challenges we encountered. Drawing on the analogy of preparing for a journey, we offer strategies for future graduate students including locating one's ontological and epistemological worldview, finding grounded theory mentors, and facilitating a methodological fit with academic stakeholders. Our recommendations focus on how to navigate the challenging terrain of conducting a qualitative research project within a predominantly post-positivist landscape.

Keywords: qualitative research, constructivist grounded theory, graduate students, methodology, grounded theory

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*"I shall be telling this with a sigh
 Somewhere ages and ages hence:
 Two roads diverged in a wood, and I —
 I took the one less traveled by,
 And that has made all the difference."*

Robert Frost (1916)

Editor: Michael Jones

Submitted: April 13, 2015; Revised: August 26, 2015; Accepted: September 14, 2015

Introduction

Determining a research focus, defining a research question, selecting an appropriate methodological approach to address the question, and, finally, implementing the research project in PhD dissertation work are exciting and daunting parts of the academic journey. While much of this scholarly road has been well-travelled by doctoral students before us, our path diverged to one less traveled—akin to Frost’s poem—when we selected a constructivist grounded theory (ConGT) approach over more common forms of qualitative research, including established grounded theory (GT) methodologies. Selecting GT as a qualitative research approach has been equated to navigating terrain (Hunter, Murphy, Grealish, Casey, & Keady, 2011) and as being a “long walk through a dark forest” (Wu & Beaunae, 2014, p. 249). In choosing ConGT, we similarly found ourselves weaving through a myriad of paths in a landscape of varied and divergent perspectives of ontological and epistemological philosophies on GT, requiring navigational skills we would not have anticipated at the outset of our dissertation work.

In reflecting on our respective dissertation journeys, from early proposal development through to the latter stages of our research processes, each of us realized that we had encountered challenges in having adopted ConGT. Fundamental and historic tensions between positivism/post-positivism and constructivism as described by Guba and Lincoln (1994) seemed to overarch many of these challenges, playing out amongst the various GT traditions and within our respective learning environments. We encountered differences of opinion with PhD mentors and other GT researchers, either because of differing paradigmatic inclinations or lack of agreement amongst established GT methods and procedures. Further, we often had difficulty distinguishing clearly articulated examples of ConGT and other GT research in the literature as methodological approaches rather than merely analytical frameworks in qualitative data analysis (QDA).

In reviewing literature to determine whether our experiences were unique, we found little written on PhD students in the dissertation process and even less information on graduate students utilizing GT, specifically ConGT. Thus, our purpose in this article is to illuminate some of the divergent paths and hurdles we faced navigating the use of ConGT and to highlight key learning experiences from our research processes. We begin with an overview of our backgrounds and rationale for having selected ConGT as our methodological approach, and present some of the barriers, challenges, and facilitating factors encountered along the path “less traveled by.” We contrast and contextualize our experiences with our understanding of constructivism, GT and ConGT from the literature and offer thoughts and strategies for consideration by future graduate students contemplating use of ConGT in dissertation work. Our perspectives may also inform the broader academic community, such as supervisors and committee members, who strive to support graduate students using ConGT in dissertation work.

Orientating Ourselves: A Compass Heading Towards ConGT

A major consideration at the beginning of our respective research processes was selecting a methodological approach that (a) was appropriate to answering our research question, (b) resonated with the philosophical values for knowledge development within our disciplines, and (c) fit our personal beliefs, values, and goals. With respect to our individual research questions, each of us had found gaps in knowledge related to our phenomenon of interest and lack of theory development in our areas of focus when developing our proposals. Qualitative inquiry is recognized as an appropriate approach for when little is understood of phenomena and can be used inductively to develop theory (Creswell, 2013; Polit & Beck, 2012). Thus, in consultation with our respective supervisors and committee members, a decision was negotiated to employ a qualitative methodological approach for our studies. Further, each of us believed that social interactions and process-

es underpinned the phenomenon we sought to understand in our respective doctoral projects. For each author this was the following: DN - nurses knowing the person in a virtual environment; VB - pathways into homelessness for older adults; CT - transitions of internationally educated nurses into Canadian practice settings; and DA - psychological impact of mistakes on health professionals. Since GT is recognized as a suitable methodology to gain an understanding of underlying social processes associated with a phenomenon (Charmaz, 2014; Corbin & Strauss, 2008; Glaser & Strauss, 1967), we concluded that GT methodology best fit our respective research questions.

GT originated with Glaser and Strauss (1967), whose foundational work shifted the focus from the dominant deductive and hypothesis-testing approach of knowledge development to an inductive, theory building mode of inquiry grounded in data (Charmaz, 2014; Creswell, 2013; Glaser & Strauss, 1967). Since the initial rendering of GT, there have been a number of variations of this methodology that reflect different ontological and epistemological perspectives of GT (Charmaz, 2014; Morse et al., 2009). Glaser continued to develop what he calls *classic grounded theory* that emphasizes an objective stance and emergent discovery of theory from the data (Glaser, 1978; Holton, 2007). Strauss and Corbin (1990) collaborated to develop qualitative analysis informed by Chicago School pragmatism and philosophies of symbolic interactionism (Charmaz, 2014; Corbin & Strauss, 2008). Charmaz (2000, 2006) proposed an approach to GT that overtly embraced a constructivist stance in qualitative inquiry, including co-construction of knowledge with participants and recognition of interpretation in analysis. Common to all approaches to GT are strategies of theoretical sampling, constant comparison, coding, and memo writing (Charmaz, 2014; Corbin & Strauss, 2008; Glaser, 1978). However, as we will elaborate later, there are many differences in philosophical perspectives to the various approaches to GT and in how methods are employed between the forms of GT.

We represent three disciplines from four different Canadian academic institutions and our areas of focus coincidentally have connections in the broad realm of healthcare. For three of us, our disciplines are practice oriented (i.e. social work and nursing) that involve direct care to individuals and are mandated to be evidence informed. For all of us there has been an emphasis on quality research, and, for most of us, there was a historical predisposition within our disciplines for post-positivist approaches to scientific inquiry. Although quantitative research has been more prevalent in most of our academic institutions, we found that supervisors and mentors generally had familiarity with GT, particularly that of Glaser and Strauss. This is not surprising, since GT has become more widespread in many disciplines and due to the perception of rigor that Glaserian and Straussian forms of GT provide.

Before selecting ConGT as best suited for our respective study foci and research questions, each of us had identified our paradigmatic inclinations as being constructivist with respect to research and knowledge development. First, we all believe that perception of reality varies between individuals, and there are pluralities of reality experienced by different people exposed to the same phenomenon. Further, we believe a singular truth can neither be objectively appreciated nor directly measured given differing perceptions of people and the complex nature of interpreting meanings of phenomenon; we hold this particularly applies to phenomena in the realm of social sciences and healthcare where our research is situated. This aligns with the constructivist paradigm, where subjectivity is embraced from an epistemological stance and where multiple realities are accepted in the construction of knowledge during the research process (Guba & Lincoln, 1994; Sandelowski, 1993).

We also believe participants' meanings of phenomena are not only shaped through social interactions, but are contextual and change over time. This is in keeping with Blumer's (1969) articulation of symbolic interactionism, which is recognized as the philosophical foundation to GT (Bryant & Charmaz, 2007; Charmaz, 2014; Corbin & Strauss, 2008). As well, each of us holds that social construction of meaning is heavily influenced by the interpretive nature inherent to social

interactions, which is amenable to and congruent with constructivist lines of inquiry. In the second edition of her book, Charmaz (2014) recognized the inescapable feature of interpretation when undertaking theory development in GT, an element we believe integral to our roles as constructivist qualitative researchers. Building on previous articulations of GT (Glaser & Strauss, 1967; Strauss & Corbin, 1990) Charmaz defines ConGT as:

A contemporary version of grounded theory that adopts methodological strategies such as coding, memo-writing, and theoretical sampling of the original statement of the method but shifts its epistemological foundations and takes into account methodological development in qualitative inquiry occurring over the past fifty years. (p. 342)

Charmaz's (2014) ConGT draws on analytical frameworks of both Glaserian and Straussian traditions, but honours the flexibility of researchers co-constructing theoretical explanations of phenomenon with participants. For three of us, this flexibility was seen as important since dynamic interaction with participants was integral to either illuminating social justice issues or enhancing human agency, both of which can be accommodated in ConGT (Charmaz, 2011, 2014). ConGT also acknowledges the researcher's paradigmatic orientation and experience brought *a priori* to the research project and encourages use of reflexivity by the researcher during the research process (Charmaz, 2014). As reflexivity is core to practice-based professions, this attribute of ConGT was seen by us as complementary to the nature of our disciplines. Overall, the philosophical underpinnings of ConGT and the methodological processes described by Charmaz fit with our research questions, disciplinary grounding, dissertation goals, and personal world views.

Meeting along the Path

The catalyst for this paper was our participation in the Grounded Theory Club based out of the University of Victoria, British Columbia (Schreiber, 2001), a virtual web-based twice monthly meeting between faculty and graduate students from various disciplines across Canada and the United States. Work of members within the Club represents predominant traditions of GT, including those of Glaser, Strauss and Corbin, and Charmaz, and provides a supportive environment to discuss GT philosophies, compare methodological approaches, and receive or provide feedback in dissertation and research work. For us, while we were trying to grasp and make meaning of the various perspectives of GT, the Grounded Theory Club has provided a sense of connection that enhanced our knowledge, allowed us to become more confident in our understandings of GT methodology, and helped lessen the sense of isolation experienced in the PhD trajectory. Even within this forum there can be passionate divergence in perspectives on methodological aspects of GT and application of methods and procedures from ontological and epistemological viewpoints, and privileging of one GT tradition over others.

In sharing our experiences using ConGT, we realized other members had faced similar challenges in their PhD dissertation processes; this brought the four of us together to compare insights and learning using ConGT in our research, particularly in the context of our respective academic environments. Through conversations and subsequent work on this manuscript, we identified common hurdles, divergence in philosophical approaches and external influences that have shaped our individual educational experience, some of which relate to the history of our disciplines and our respective academic institutions. We also shared similar strategies and ways to navigate the sometimes unclear and windy paths of dissertation work using ConGT that might benefit future graduate students and the novice researcher.

In our review of the literature we found no articles specific to the experiences and challenges of PhD students using ConGT, and very little written in relation to the use of GT by graduate students more generally. A search of CINAHL, Embase OVID, PsychInfo and Medline databases up to October 2014 using key search terms of *graduate students*, *qualitative research* and *grounded*

theory yielded 457 articles. These articles mainly focused on doctoral students reporting research results or were related to GT methodology in dissertation work. However, we found two articles of doctoral students using GT that captured similar experiences to ours: Hunter et al. (2011) through our literature review and Wu and Beaunae (2014) through direct contact with Dr. Kathy Charmaz (personal communication, October 11, 2014).

Standing at the Crossroads and Taking the Path Less Travelled

Wu and Beaunae’s (2014) metaphor for their experience with GT and Hunter et al.’s (2011) decision-making process in selecting GT resonated with us as they reflected some of the challenges we faced in our own journey. Examples of these challenges included distinguishing the paradigmatic attributes of main GT approaches, lack of clear articulation of methods and procedures (e.g., coding and analysis) in ConGT, and the necessity for us to familiarize other individuals involved in our dissertation work, such as supervisors and committee members, with ConGT methodology. As we progressed through the various stages of our research work, we continually grappled with methodological issues and returned often to what we see as the *ConGT Crossroads for PhD Students* (see Figure 1) to re-orient ourselves on the dissertation journey.

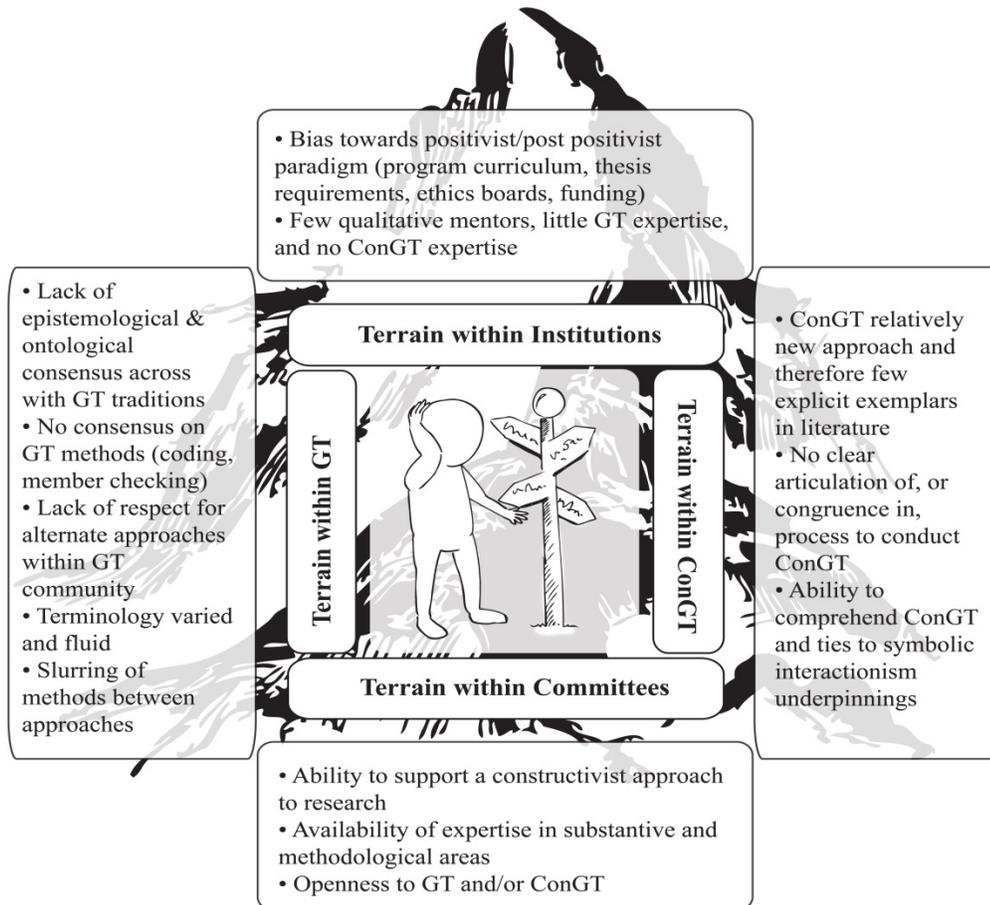


Figure 1. The ConGT Crossroads for PhD Students.

By the time we had progressed to development of our proposals and started our fieldwork, we realized that each of us had individually covered much terrain and navigated a maze of key decision points without benefit of a clear path or mentor expertise in ConGT. Although there were

many reference points to orientate ourselves along the way, such as seminal texts by key authors, we were often led astray by the vagueness and disagreement in the literature. In reflecting on, and synthesising, our collective experiences with ConGT, we mapped out some of the obstacles and unanticipated detours we encountered and categorized these challenges into three broad themes: 1) *Traversing the Topography of Paradigms and Research Traditions*, 2) *Crossing the Great GT Divide* and 3) *Bridging the Gap(s) Within and to ConGT*.

Our preface on paradigms

Before speaking to the three themes, we wish to be clear that we are not taking a position that adopting one particular paradigm is more correct or that there is a failing of any institution or school in being predisposed to positivism/post-positivism. We do, however, agree with Staller's (2012) position that paradigmatic influences shape the culture of academic environments and favour certain types of research, which can have an impact on educational preparation and research work of graduate students. We firmly believe that all paradigms play an important part in the development of knowledge for disciplines, and academic preparation of graduate students should include a balanced appreciation of all paradigms, grounding in various research traditions, and support in the academic environment to promote respect and inclusion of the diverse contributions of paradigms and research traditions to science.

Traversing the Topography of Paradigms and Research Traditions

Guba and Lincoln (1994) proposed that the metaphor of “paradigm wars” described in qualitative research by Gage (1989) is “undoubtedly overdrawn” (p. 116). While it would appear constructivist approaches are becoming more widely accepted, we suggest that the battle for recognition and unconditional acceptance still plays out regularly in most academic fields. In selecting ConGT, we often encountered resistance and some conflict having a paradigmatic leaning that differed with that of mentors, program curricula, the institution's Faculty of Graduate Studies, and ethics boards. This manifested through such dynamics as disagreements in analytical processes or adapting ConGT methods to fit institutional requirements thereby compromising our constructivist principles. In choosing constructivism, an alternative methodological approach to the predominant research tradition of our post-positivist educational settings, our challenges and hurdles seemed primarily related to paradigmatic and philosophical differences between us and institutional stakeholders. As we discovered, learning environments that are preferential to objectivist epistemological approaches made it particularly challenging to be constructivist in practice and completely faithful to the tenets of ConGT. Often we felt pressure to conform our intended approach to the dominant norms of institutional stakeholders; given post-positivist influences in our learning environments, we often experienced what we describe as a form of epistemological oppression. Some specific challenges we faced have included the following: a) biases inherent to the institution and program of study; b) selection of supervisor(s) and committee; c) the depth of literature review required for GT research and imposition of an a priori theoretical framework; and d) forcing of concepts in analysis.

Bias inherent to the institution and program of study

At a program level, the philosophical and research methodology preparation of students, or lack thereof, played a significant role for us in navigating ConGT. For two of us, the course work in our academic programs provided a solid philosophical foundation in the overarching paradigms and specifically addressed epistemological and ontological aspects of knowledge development. However, the other two had to negotiate this critical element independently through reading, peer seminars, and forums such as the Grounded Theory Club, and with little or no guidance in

ConGT within their program. We contend a deep and rich understanding of conceptual knowledge that attends to paradigmatic influences on knowledge development is foundational to good empirical research and is essential to the philosophical base of PhD education. Such conceptual knowledge and foundational preparation can facilitate the doctoral student's capacity to appreciate and evaluate epistemological and ontological underpinnings of the various GT traditions, to critically review associated literature and be prepared to defend adoption of ConGT (Staller, 2012).

Closely aligned with developing a philosophical foundation is another cornerstone of PhD education: preparation in, and receiving support for, a chosen research methodology. In comparing our programs of study, it seemed evident the overarching paradigmatic inclination of the schools was reflected in curriculum design and course availability. One author had a qualitative methodology course as a requisite requirement with quantitative research in the program of study, and another was able to choose just a qualitative research course in support of dissertation work. However, one author had to choose a qualitative course outside of the program as only quantitative courses were offered in the program, while for the remaining author qualitative research was an optional course over and above three mandatory quantitative courses. These latter situations highlight the primacy of post-positive inquiry inherent to some programs and disciplines. This aligns with Staller's (2012) position that programs where "students are required to take statistics courses but not qualitative data analysis courses essentially privilege and institutionalize 'positivist orthodoxy' through policy" (p. 3). From our perspective, this seems to reinforce a form of epistemological oppression on graduate students who are constructivist oriented.

While further empirical exploration of graduate study andragogy might be useful to examine the association of curriculum and course design to prevailing paradigmatic viewpoints of a program, it seems logical that such a relationship would potentially impact a student's ability to utilize ConGT, as well as a program's capacity to provide appropriate and effective support, including supervision and mentorship. It was necessary for two of us to seek required qualitative expertise outside the program to support the research process by recruiting committee members from other disciplines. We also sought out alternative resources, such as the Grounded Theory Club and the International Institute for Qualitative Methodology (IIQM) conference and workshop. We agree with other authors that independence, motivation, and interdisciplinary perspectives are important aspects in the educational and professional development of doctoral students, however we also believe it is essential that structural, theoretical and philosophical support is present to support student success (Liechty, Liao, & Schull, 2009; Staller, 2012).

Selection of supervisor(s) and committee

One of the most important decisions a student will make in graduate studies is choosing a supervisor and committee members to help guide the research process. There are a number of considerations a student takes into account, foremost being academic reputation, knowledge, common interest, personality, and time commitment among other criteria (Liechty et al., 2009; Nutov & Hazzan, 2011; Ray, 2007). However, if choice of supervisor is based solely on these criteria and does not account for paradigmatic alignment or methodological expertise, this can be problematic for the doctoral student choosing ConGT. While paradigmatic differences can be resolved when there is mutual respect for paradigmatic perspective and mentors are supportive to constructivist qualitative research, this may be challenging in programs and institutions that are greatly influenced by deeply entrenched objectivist epistemological assumptions. However willing and able mentors may be, we have experienced the effect of "epistemological unconsciousness" (Staller, 2012) where mentors and we, by necessity, would default to stakeholders' preference of post-positivism.

While expertise in substantive area, knowledge of research methods, and interpersonal connection are critical in successful mentoring of any PhD student (Nutov & Hazzan, 2011; Walker, Golde, Jones, Bueschel, & Hutchings, 2008), use of ConGT requires an appreciation of, and support for, a constructivist perspective in relation to GT methodology. Since our personal goal was to be faithful to the tenets of ConGT, a view of ConGT as a methodology and not merely an analytical framework would have been ideal in supporting our methodological development. However, selection of a supervisor and committee member with a qualitative research background, specifically for GT (Glaser, 2014), and a constructivist philosophy may not be possible in the program of many disciplines. For instance, one author started in a program with a strong post-positivist culture and established quantitative research tradition where there was only one tenured professor on faculty formally prepared in qualitative methodology. While supportive of constructivist approaches to inquiry, this faculty member was not available as either supervisor or committee member due to high demand of expertise; the author transferred to another university program for a better philosophical fit and necessary GT mentorship.

Lack of methodological expertise in a program can pose challenges; however two authors did experience great receptivity and support in adopting a constructivist approach. One author had already been assigned to, and formed a good working relationship with, a supervisor and committee members who were not grounded theorists, but whose philosophical perspectives tended towards a constructivist paradigm. Another author was in a program intentionally not aligned with a particular paradigm or research tradition and that encouraged students to embrace a more flexible methodological approach. The generalist nature of this approach, however, presented other difficulties as there was not sufficient expertise focused in methodology to provide solid mentorship for ConGT. To help address the gap of expertise and mentorship for use of ConGT, most of us sought out opportunities at personal expense to attend workshops and seminars, such as the Odum Institute at University of North Carolina, to work with scholars like Charmaz to develop our knowledge, skills, and confidence in using ConGT.

Requirement of a priori literature review and theoretical frameworks

Two original core principles of GT are to limit exposure to literature prior to beginning research and not use a conceptual or theoretical framework *a priori* to inform the research process (Glaser, 1998, 2009; Glaser & Strauss, 1967; Hunter et al., 2011). The rationales for these constraints are to minimize researcher bias during the data collection and analytical processes and to help minimize imposition of preconceived conceptualizations influencing the theory development (Charmaz, 2006, 2014; Glaser, 1978, 2012). With respect to the first principle, *a priori* grounding in literature has been recognized as being virtually inescapable since all researchers come to the field of inquiry with some level of exposure to literature; to this end, there has been more acceptance to literature reviews in advance of GT research (Bryant & Charmaz, 2007; Charmaz, 2006, 2014). For PhD students, in-depth literature reviews are usually a requirement in course work, preparation for comprehensive examinations, and development of research proposals; these reviews are an expectation of supervisors and the institutions to demonstrate a student's knowledge in the field and provide adequate background for research ethics board [REB] approval (McGill University, 2015; University of Ottawa, 2012; University of Victoria, 2014). Further, granting agencies for scholarships, fellowships, and research funding require substantial literature reviews to support elements of the research process as part of the application process (Glaser, 1998; Wu & Beaunae, 2014).

However, a key challenge is determining how much is too much immersion in the literature; conceivably there is a risk for the PhD student, or anyone doing GT research, to become so saturated with *a priori* concepts, theories, models, and frameworks that it is impossible to reasonably guard against perceptions of bias. Charmaz (2014) and Glaser (1998) recognized this expectation and requirement of immersion in literature for graduate students. Charmaz suggested researchers "let

this material lie fallow” (p. 307) until categories are developed, while Glaser recommended that the literature be turned into part of the data collection process. For us, immersion in the literature occurred throughout our course work, comprehensive exams, and proposal writing, and it was so ingrained that we had to do more than simply set the material aside. We felt compelled to engage in higher levels of reflexivity using activities, such as memoing and free writing, to overtly acknowledge and contextualize our *a priori* exposure. While one may employ strategies like these to minimize bias, they may not be viewed sufficient enough to meet QDA requirements of rigor often adjudicated vis-à-vis more post-positivist expectations and measures. We further contend that GT researchers can only engage in meaningful reflexivity of conscious thoughts that arise during data collection and analysis and cannot account for subconscious influences associated with *a priori* exposure to literature and experience.

As an example of *a priori* influence, one author was required to compare and contrast at least two existing conceptual models or frameworks relevant to the research focus as a requisite comprehensive exam question. The author brought to the examination committee chair’s attention that *a priori* use of models or frameworks is discouraged given the goal of GT is to generate an original theory. However, the author was informed that a conceptual framework helps to guide development of research for novice researchers. The rationale of requiring an *a priori* framework or model for novice researchers is not empirically supported in the literature and, contrary to notions of rigor for GT specifically, the imposition of such background work risks contamination of the final theoretical product with intentional introduction of bias to the research process. Thus trustworthiness of the study, specifically credibility, could be justifiably regarded as compromised through interference with the design and methodological approach to the research.

Forcing the concept(s)

For two of the authors, there was the added burden of being required to start with a central premise in mind during development of the research proposal and to further align the research question and sub-questions accordingly. As well, once coding and analysis began, there were instances where mentors and committee members not immersed in the data lobbied to have specific concepts represented in the findings. However, the intent in all GT approaches is for concepts to earn their way into the theory, whether through emergence or construction (Charmaz, 2014; Glaser, 1978, 2012; Glaser & Strauss, 1967). These situations illustrate how preconceived viewpoints can impose a more reductionist or deduction-oriented influence to analysis and compromise the trustworthiness and integrity of a ConGT approach. As Glaser (1998, 2014) notes, in specific reference to classic GT, there is potential of forced preconceptions in mentee-mentor relationships often due to lack of understanding between tenets of GT and QDA. Compounding this is the challenge students have to confidently take a stance on paradigmatic and research design issues with mentors when discordance in viewpoints occurs and there is perceived or real imbalance in power balance; students may feel resigned to giving committees what they want to facilitate progression in the research project (Lukerhoff & Guillemette, 2011), further compromising the integrity and trustworthiness of the study.

Crossing the Great GT Divide

As each of us progressed in developing our proposals, we encountered vastly divided perspectives in the literature on methods and procedures for GT, lack of consistency in terminology across the main GT approaches, and lack of agreement of how post-positivist and constructivist paradigms are (or are not) reflected in the three main approaches. These dynamics seem to stem back to the original philosophical underpinnings of GT and what we see as an incommensurable tension between post-positivist views of GT and more interpretive, co-constructed lines of theory development. Staller (2012) recognizes this tension, noting that “well-known scholars disagree and ‘sort’

these ideas differently” (p. 13) and that boundaries in relation to methodology and methods can be fluid. As such, we have found divergent views on basic GT methods, such as determining sample size, coding, and analysis; we also found disagreement on the meanings and importance of concepts like emergence, reflexivity, and verification in GT.

Paradigmatic orientations of GT

As we illuminate here, our experience has been that there exists divisiveness within the various camps of GT related to the paradigm influences we described earlier; paradigmatic schisms in GT approach have been around for decades and are well-recognized in the literature (Schreiber, 2001). Although Glaser states he does not ascribe to any particular paradigm leaning (personal communication, January 16, 2014), the processes of data analysis and rigidity of the classic GT approach suggests a post-positivist flavour; this view is supported by numerous authors (Bryant, 2003; Charmaz, 2014; Staller, 2012). While Straussian GT seems to have shifted to a more interpretive style of theory development, the view of some authors is this form of GT retains a structured and more prescribed approach to coding and data analysis (Glaser, 1992, 1998; Hunter et al., 2011). While Charmaz takes an overt stance advocating a constructivist approach to GT, there is much critique on her articulation of ConGT, both written (Glaser, 2002a) and informally in discussion, such as in the Grounded Theory Club. Although critique is to be expected when a bold, innovative approach is offered and is undergoing its own evolution, for the doctoral student it can make taking a position on ConGT quite daunting, particularly in the absence of experienced supervisory mentorship.

As an example of the criticism, Glaser has taken exception to deviations from classic GT often being quite blunt and acerbic in his criticisms of alternative perspectives, including Strauss and Corbin’s (1990) book on GT (Glaser, 1992) and Charmaz’s ConGT (Glaser, 2002a). Ironically, Glaser (1998) labelled the rhetorical wrestling in GT as “a waste of time, tiresome, and goes nowhere” (p. 35). Even within the supportive environment of the Grounded Theory Club, there are divergent viewpoints and varied levels of agreement on philosophical and paradigmatic foundations of GT. The dynamic (and sometimes colourful) scholarly discourse and tone of dialogue within the literature and discussion forums has given us occasional cause to question our adoption of ConGT. As we have discovered, lack of agreement and conciliation of the broader paradigmatic philosophies in GT approaches has direct implications in the choice and defence of methods and procedures a doctoral student must make in ConGT, often requiring a contrary stance to more traditional views of GT. Thus, we believe, it is important for a student to explore his or her paradigmatic stance and be confident in supporting one’s worldview and selection of ConGT.

Lack of “road maps” for GT and ConGT

A major gap we have found in the literature is full explication and philosophically balanced rationales of all forms of GT in the main indexed databases of peer-reviewed scholarly research journals. For example, our literature review of journals did not yield any research study protocols for a GT study, aside from those presented in available graduate student dissertations. In contrast, there are numerous published quantitative protocols available to doctoral students. While we do not ascribe to recipe or “cookie cutter” approaches to any form of qualitative research, we do believe that drawing from examples would facilitate development of the doctoral student’s knowledge and confidence in planning and executing a ConGT study. Given the complexity and extensive narrative required in articulating all considerations of qualitative research, often explicit description of methods and procedures is sacrificed for presentation of results and discussion in the face of maximum word limits; the reader is left to accept at face value that steps in constant comparison, theoretical sampling, and theoretical sufficiency have been satisfied.

As one author discovered, it is not just manuscript length that limits publication of GT and ConGT protocols but that paradigmatic influences and lack of understanding of qualitative research by journal editors may factor into the equation. For example, upon submitting a ConGT research protocol with a legitimate sample size typical of a GT study to a peer-reviewed journal, one of the authors received the following response from the editor:

We felt that the scope of the study and the number of the participants involved were inadequate for the publication of a study protocol in [peer-reviewed nursing journal]. We would however be delighted to consider any research articles arising from the completed study (personal communication, April 30, 2014).

This comment underscores the ongoing battle for authors to advance understanding and broader acceptance of qualitative research like ConGT.

Divergence on core GT methods

There is little agreement in the literature across the main GT traditions on some key elements for methods and procedures, such as sample size, coding, and verification. In the case of sample size, there are broad variations across GT ranging from 20 to 30 participants (Creswell, 2013; Polit & Beck, 2012), 25 participants for a small study (Charmaz, 2006), to simply achieving theoretical saturation (Corbin & Strauss, 2008). We understand a specific sample size will be contingent on the various forms of data gathered, including interviews and observations; however, insufficient or vague estimates are not likely to satisfy journal editors, REB reviewers or, potentially, examiners unfamiliar with qualitative research and, specifically, GT (Staller, 2012). In our situation, each of us made an informed estimate in our research proposals based on the resources at hand, previous GT research reports similar to our proposed studies, and on the anticipated availability of participants for our research question. From a pragmatic angle, the estimated sample size ranges for our studies were a balance between methodological soundness, rigor, and feasibility for a doctoral study.

One example of divergent views regarding methods is use of *member checking*, a controversial practice of validation or verification when incorporated into GT. Glaser (2002b) takes one position that member checking is not appropriate due to the level of abstraction of theory that moves meaning of concepts from the participant's comprehension, while Charmaz (2014) presents strategies to incorporate nuanced forms of member checking for verification of findings with participants. It was important for us to resolve debates like these for ourselves since member checking is generally equated with rigor from a post-positivist stance, is often encouraged and/or expected by mentors, and is frequently built into a research proposal to facilitate acceptance by REBs. Our belief is that co-construction, as a fundamental principle of constructivism, requires some form of involvement of participants beyond just the initial data collection (e.g., first interview) and a variation of member checking, or some process to share evolving categories for input, would be essential to ConGT. We pose the caveat that such involvement of participants for co-construction must be contextually appropriate and mindfully integrated in a ConGT research design to mitigate Glaser's concern of participant comprehension and guard against a post-positivist application of validation or verification.

Bridging the Gap(s) Within and to ConGT

There were a number of practical challenges we immediately encountered in adopting ConGT and beginning dissertation work. The first challenge, as noted previously, was that while much is written about use of Glaserian and Straussian GT and, thus, clearer examples of published research, researcher experience and critiques to draw from, very little has been written about ConGT. The relatively recent presentation of ConGT as a methodological approach (Charmaz,

2000, 2006, 2014) has yielded few well-described ConGT studies to use as exemplars in our formation as researchers or to illustrate how ConGT might be articulated for the benefit of supervisors, PhD committee members, and ethics boards. While we believe the essence of a constructivist approach to GT has been articulated by other authors, such as MacDonald and Schreiber (2001) who present a postmodern perspective on GT, Charmaz (2000) was the first to overtly advocate and label ConGT as a methodological approach. Charmaz (2006, 2014) then elaborated on possible methods and procedures in a ConGT approach.

Because of the recent advent of ConGT, we found many of the methods, procedures, and processes associated with ConGT have not been well explicated, nor are the philosophical underpinnings of constructivism and symbolic interactionism well-articulated in published research reports and articles. Having such resources specific to ConGT would have helped us to better support our choices in methodology, methods, and procedures and would likely have assisted us in communicating our processes more effectively to others supporting our work. However, with the resources available and through our own initiative, we have successfully navigated to this point in our respective paths and overcome challenges by creating bridges in gaps of knowledge and skill in ConGT for ourselves, our supervisors and committee members.

Developing our own capacity for ConGT

We have found our way to this point in our ConGT dissertation journey with little formal mentorship in this methodological approach, having to rely on our own innovations, motivation, and, at times, sheer tenacity. It has required us to draw upon numerous resources, such as the literature and peer support, to enhance and test our own philosophical foundations in GT research and to develop the confidence to navigate and defend our epistemological and ontological choices for ConGT. Glaser (2009) would seem to support this as an effective way to develop competence in GT, suggesting that mentors without formal GT backgrounds can undermine skill development and openness to possibilities and can impose preconceived categories. In hindsight, the three most important aspects of developing our capacity for conducting ConGT research were to clearly identify the paradigm that we ascribe to, find resources to develop our knowledge and skill in utilizing ConGT, and acquire foresight to anticipate challenges and barriers in our dissertation journey.

As articulated earlier, we each had come to a point of rationalizing the inclination and appropriateness in adopting a constructivist approach to our dissertation work. The very philosophical nature of this aspect, alone, was crucial to selection and justification of ConGT as our methodological approach and has facilitated our abilities to critically think through the choices we have made for the methods and procedures of our work. While not all of us were formally prepared in our academic programs to consider research paradigms, the less travelled path we chose has afforded us a great opportunity to evolve in our own thinking of the epistemological and ontological foundations in qualitative research, specifically ConGT. This has largely been an iterative process, requiring us to seek out and incorporate resources that enhanced our academic and professional growth, such as seminal literature, mentors outside our academic programs, peer groups, workshops, and conferences to share ideas and receive guidance. Communicating and working directly with researchers, such as Kathy Charmaz and Rita Schreiber, has been especially beneficial for us in exploring and teasing out some of the methodological nuances for employing ConGT.

Finally, identifying strategies to anticipate and address challenges and barriers in using ConGT has been one of the most significant learning opportunities for us – in retrospect, much of this has occurred through trial and error and often realized at difficult and stressful points in our dissertation process. We now appreciate, as PhD students, how important it is to identify academic programs and institutions that closely align with one's own philosophical stance or, at the very least,

can provide support for alternate approaches to research and knowledge development. Within this scope, we now recognize how critical academic preparation is for differentiating between methodological approaches and conceptualizing research designs through available courses, supervision, and mentorship. Importantly, our experiences have provided us with strategies to identify gaps in support for ConGT at the academic level and to anticipate the information and knowledge needs of our dissertation stakeholders, such as the program, the institution, supervisors, and committee members.

Bridging ConGT to supervisors and committee members

Most of us had the opportunity to consider and negotiate our PhD supervision and committee membership at some point in the dissertation process, however the predominant influencing factor was substantive area first and, then, methodological support second. Little, if any, consideration was given to paradigmatic fit with supervisors and committee members at the start, and with ConGT being a more recently defined methodology, none of us had support of faculty with formal experience using ConGT. As Staller (2012) pointed out, “If those doing the assessing do not share your epistemological orientation you may face the added burdens of needing to educate others about epistemological difference” (p.18). Thus, throughout our dissertation process we needed to become intimately aware of our supervisors’ and committee members’ knowledge and comfort with both qualitative research and a constructivist approach to inquiry and to find ways to mitigate the gaps. In retrospect, our quest to authentically pursue a more genuine ConGT approach would have been better facilitated had those supporting our work had a blend of substantive area, methodological expertise, and paradigmatic fit.

The main ways we educated others was through providing resources to our supervisory team, crafting strong rationales based on evidence from the literature, and explicating our research processes to demonstrate rigor from a more post-positivist angle. An essential lesson we learned was to determine what information to present and how best to prepare supervisors and committee members in advance of meetings. To advance this strategy, preparing a brief synopsis of key points related to ConGT, in either document or PowerPoint slide form, along with references generally worked quite well. It may be necessary to advocate a particular position contrary to mainstream research expectations, such as use of member checking; so anticipating this and crafting a strong rationale with supporting references in advance can be beneficial for keeping the project on track and in girding the philosophical base of ConGT inquiry.

One of the most useful tactics we found in conveying our ConGT research process to supervisors and committee members, particularly those with a quantitative background and more positivist inclination, was to regularly update them on our research steps, explicate analytical processes, and present project updates in ways that reflected traditional notions of rigor. For example, one may be expected to ask the same set research questions of each participant as articulated in a question guide although theoretical sampling is the aim in any GT approach. A solution is to spend less time on set questions with each successive interview and gear probes in line with evolving categories. Another strategy we used was to tabulate coding responses into numerical data to reflect frequencies of responses to demonstrate representativeness and importance of codes as theorization advanced; although contrary to the essence of constructivism, this was seen as a necessary step to secure buy-in from the committee and mitigate imposition of *a priori* concepts.

Sharing Our Journey with Others: Helping Define Paths in ConGT Research

In reflecting on our respective journeys and lessons learned, we have come to appreciate that undertaking PhD dissertation work using ConGT can be challenging, time-intensive and, yet, quite rewarding. While pursuing a constructivist approach to research can be unique for each doctoral student, we have discovered many experiences common to our ConGT research project trajectories. We recognize now that our path to completion might have taken fewer detours and had less challenges with clearer directions and guidance, however we accept that this has been key in our learning and doctoral preparation. In presenting our experiences here, our intention is to share our journey and learnings with other PhD students planning to undertake ConGT research and academic stakeholders, and to offer potential guidance vis-à-vis a summary of our recommendations (Table 1).

Get Your Paradigmatic Bearing and Set Your Compass

We suggest that the first step a student should take is to carefully consider his or her own paradigmatic inclinations and make decisions, such as choice of program, that align with one's own personal philosophy. Only two of us had exposure to understanding epistemological and ontological perspectives in our master's level of graduate studies and, as we have presented, not all programs may adequately prepare PhD students in these requisite fundamentals. We posit that university graduate education programs which do not have a requisite philosophy course for students to explore paradigms in-depth and/or only offer qualitative research courses as optional offerings may not be in the best position to support doctoral students who pursue constructivist lines of inquiry such as ConGT. It may default to the student to discern and address gaps of philosophical preparation in educational programs and curricula to ensure adequate preparation in the dissertation process.

Plan Ahead for the Journey

While in an ideal world a PhD student would have the requisite resources to successfully navigate completion of a dissertation, such as requisite courses and expert mentors, this is not possible or practical in many educational settings. It is necessary for the student to consider implications of adopting ConGT in advance of starting dissertation work. We recommend that the student think about what he or she will need from the program, mentor relationships, and institutional structures to attain goals, and to proactively do an inventory of resources and plan out strategies to meet these goals. This is important, since as we have presented it was necessary for us to seek supplementary learning opportunities and support elsewhere to realize our own success. This has practical implications in terms of resource access, costs and time.

Table 1. Recommendations and potential strategies to consider in adopting ConGT

	<u>Recommendations</u>	<u>Potential Strategies</u>
<p style="text-align: center;">Get Your Paradigmatic Bearings and Set Your Compass</p>	Explore your own paradigmatic leanings	<ul style="list-style-type: none"> • Familiarize yourself with the literature of paradigms and conceptual knowledge • Take a philosophy course on conceptual knowledge development and the nature of paradigms in scientific research • Write a short essay declaring your paradigm inclination
	Fortify your foundational understanding of the development, methodology and various approaches to GT	<ul style="list-style-type: none"> • Conduct an extensive literature review on GT and ConGT before choosing one approach over the other • Develop a library of essential textbooks, articles, and references; although books are expensive, seminal resources are invaluable
	Consider what resources you need and what is available to you	<ul style="list-style-type: none"> • Determine what you may need to be successful in realizing your research goals; if you need access to alternative resources outside your program, think about logistics and cost • Connect with other students and mentors who use GT
<p style="text-align: center;">Plan Ahead for the Journey</p>	Reflect on what you will require in a supervisor and PhD committee	<ul style="list-style-type: none"> • Consider a potential supervisor and committee members based on knowledge of, and philosophical leanings towards, qualitative research and a constructivist paradigm; have a frank discussion • Be aware that some programs assign you a supervisor; decide whether this will work for you
	Select an academic program that fits with you and your goals	<ul style="list-style-type: none"> • Review academic program and institutional philosophy statements • Consider the program’s curriculum, the courses offered, and the research backgrounds of tenured faculty; if you suspect you will do ConGT or any qualitative research, select a program that offers requisite courses • If the courses you need are not available at the institution, consider your alternatives for access to courses and workshops
<p style="text-align: center;">Fortify Yourself</p>	Prepare for the bumps along the road	<ul style="list-style-type: none"> • Accept that ConGT does not have a “cookie cutter” approach, as it is relatively recent and is continually evolving • Be prepared to defend the ConGT process that you adopt • Pick your battles wisely; conformation may be necessary
	Anticipate needs of others and timelines	<ul style="list-style-type: none"> • Know your supervisor, committee members, program and institution; understand the needs/requirements of all stakeholders • Be well prepared and plan far in advance • Allow others, and yourself, lots of time

Fortify Yourself

We learned in our processes that dissertation work, particularly qualitative research like ConGT, is time intensive and requires stamina, tenacity, and personal nourishment – it is a long haul. The length of time for completing a PhD can be quite variable, but the usual timeframe is five to six years. The average time for us to complete course work, including any extra courses to support ConGT, was 20 months (range 12 – 24 months) and then an average of 12 months (range 10 – 14 months) to complete comprehensive exams, write our proposals and submit to ethics. And while we are at varied points in our research processes, ConGT requires time for data collection, analysis and theory development; we forecast our average time to completion will be approximately five years. As we discovered, it has taken a lot of extra time and effort to effectively convey our ConGT work to supervisors, committee members, and other institutional stakeholders largely because of the lack of familiarity with this methodological approach – thus a great lesson learned was anticipating the needs of others in the process. Through preparing oneself thoroughly by building paradigmatic understanding, making thoughtful choices in advance, solidifying knowledge of ConGT throughout the research process, and finding necessary supports, a prospective doctoral student should be ready to meet the challenges in the dissertation process.

Conclusion

For any doctoral dissertation, the PhD candidate must be able to rationalize and defend each choice made in the research design. A perplexing, and often overwhelming, part of preparing for the ConGT journey for us has been gaining insight to one's own understanding of the epistemological, ontological, and methodological underpinnings of our chosen research design for our dissertation journey. Given the rich history and evolution of GT since the seminal work of Glaser and Strauss (1967), not only does the terrain involve mountains of scholarship, but the road forks into several branches of GT and there are significant gaps to bridge between some very divergent viewpoints for ConGT. Further, there can be contentious landscape to navigate given passionate differences of viewpoints and, in some cases, very entrenched positions on what constitutes appropriate approaches to GT methodology.

While it has been a long and, at times, difficult journey in having selected ConGT for our doctoral work, we have each learned much about the ontological, epistemological, and methodological considerations for research on our less travelled path – from each other, from our mentors, and from the dissertation process. In choosing a divergent road in GT and facing in adopting a constructivist approach for our research design, we had embarked on a challenging but rewarding journey. And for us, in the words of Frost, "...that has made all the difference."

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Biographies



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Victoria Burns recently completed her doctoral studies at McGill University's School of Social Work and is a postdoctoral fellow at the Institut National de la Recherche Scientifique, Urbanization, Culture, and Society Research Centre in Montréal, Québec. Her doctoral work on older adults' pathways into homelessness was informed by several years of social work experience in home care and community outreach with marginalized older adults. Victoria is also a sessional instructor at McGill and has taught Social Policy and Administration at the undergraduate level, and Social Care as a master's seminar. Her broad research interests include social gerontology, homelessness, living environments, social policy, social exclusion, and qualitative methodologies.



Carla Tilley is currently a faculty member with the Vancouver Island University and a PhD candidate in nursing at the University of Victoria. Carla's interests include curriculum development and educational programming for a variety of health care disciplines, and her doctoral research is focused on support for internationally educated nurses. Her other experiences include nursing in a number of clinical settings, clinical education, leadership settings, and work as a practice consultant.



Diane Aubin has a PhD from the Department of Educational Psychology at the University of Alberta, where she completed a qualitative study for her dissertation on the psychological impact of mistakes on health professionals working in pediatric hospitals. Her interest in health services research was first sparked by her work with the Canadian Medical Protective Association (CMPA), where she contributed to numerous publications on such topics as disclosure, team communications, and fostering a just culture of safety. Diane also worked for the Canadian Patient Safety Institute (CPSI) as the lead on research projects supported by CPSI, collaborating with researchers from across the country to promote patient safety research. She is now Associate Director for the Career Development in Methods & Health Services Research platform of the Alberta SPOR (Strategies for Patient-Oriented Research) SUPPORT unit. Her academic interests also include interprofessional education (IPE) and technology in education. She lives in Edmonton, Alberta.

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Cite as: Tammi, T., & Kouhia, A. (2015). Accessing the research community: Metaphors in understanding the processes of becoming a researcher. *International Journal of Doctoral Studies*, 10, 385-398. Retrieved from <http://ijds.org/Volume10/IJDSv10p385-398Tammi0899.pdf>

Accessing the Research Community: Metaphors in Understanding the Processes of Becoming a Researcher

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Abstract

This article examines the questions of professional identity formulation and the possibilities of young scholars to reflect on these processes. Relying on insights of collaborative autoethnography, this article is based on a four year long process of exploring our ways of participating in the community of academic practice. This process is studied through discussing various metaphors related to academic life. In this article, metaphors are used as methodological tools to characterize and reflect on young scholars' being and becoming in the academic world. First, we consider how different metaphors may help us to communicate with others, and then continue reflecting on the acquisition and participation in the communities within which we become scholars. Finally, we elaborate on two metaphors—methodological mess and endless scholarly immaturity—to navigate in the research community as (young) researchers.

Keywords: professional identity, metaphors, collaborative autoethnography, participation, young researchers, doctoral students

Introduction

In finding their professional identity and place in the field of academic research, many young researchers struggle with questions relating to professional life and academic calling: Is what I do worthwhile? Am I able to succeed in my work? Am I on the right path? (Hakala, 2009, p.178). In this article, we apply a practice-theoretical understanding on development of professional identity. According to this view, professional identity can be considered as a relation between the emerging understandings of oneself and the means, goals, and motives (or justifications) of the practical activity (Räsänen & Korpiaho, 2011). Identity is thus understood as a process in which the subject becomes engaged with and aware of the practices and ideas valued by the community in question and gains competence through participating in these practices (Lave & Wenger,

1991). During that process, the participants continuously renegotiate different meanings and sets of relations in the community, increase their participation and, according to Lave and Wenger (1991), move from the periphery to the center, also gaining more power and prestige within the communities. This perspective situates the learning of doctoral student within the scholarly community.

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Editor: Ahabab Chowdury

Submitted: October 14, 2014; Revised: September 15, 2015; Accepted: September 16, 2015

Recent scholarship has noticed that the problems doctoral students face in their doctoral processes often stem from the relation between student and research community (Räsänen & Korpioaho, 2011; Vekkaila, Pyhältö, & Lonka, 2013). Doctoral students' experiences of their own doctoral processes, in particular, have been shown to contribute to students' well-being and satisfaction, thus increasing their perceived fit into academic communities (Pyhältö, Vekkaila, & Keskinen, 2012). As doctoral students, we have found it extremely important, yet difficult, to reflect on our processes of becoming members of scholarly community. In this article, we aim to find tools to tackle with this issue. In particular, we explore whether thinking with metaphors could offer some help in positioning oneself in the research field, finding one's place in the community, and understanding oneself as an emerging researcher. We thus take our current position as "emerging scholars" as a possibility to make sense about the community of practice through which our scholarly identities are being produced. Even though learning is sometimes described in terms of a move from periphery to the center, the mastery in the community of practice is not regarded as fixed, but as evolving, changing, shared, sustained, and even struggled by its members (Lave & Wenger, 1991). We emphasize that the communities in question are also situated within broader (e.g., economical) settings and have to adjust to these constraints in varying degrees.

In composing the article, we have engaged in the practice of writing through a collaborative autoethnographic approach as we have tried to understand construction of academic identities through metaphors. Thus, we use metaphors in order to think about our processes of becoming and the contexts of this becoming. We approach these issues from standpoint of doctoral students in the Faculty of Behavioral Sciences in the University of Helsinki. As doctoral students, we are academic rookies taking our first steps as researchers; besides, we are fellows in our early thirties, both trying to balance between professional career and family life in our own ways. As our investigation on metaphors proceeds, we will reflect on our positions closer, and situate ourselves further within the fields of science politics, disciplinary ideals, and everyday of scholarly practice. Thus, we will consider metaphors as methodological tools to study possibilities and constraints of the academic world on micro, meso, and macro levels. We further explore two metaphors on learning presented by Sfard (1998) that may help us to understand the learning involved in the process of accessing the worlds of research. Finally, we will introduce two metaphors of our own—methodological mess and endless scholarly immaturity—that cast light on our becomings as young researchers within the landscapes of academia. Through thinking with these metaphors, we also connect to a postmodern view on professional identities as navigation among different forces. We perceive that the ideas presented in this article – especially regarding the self-reflective method of thinking with metaphors – could potentially offer tools for other young researchers, as well as their supervisors in this regard. We consider thinking with metaphors as an intellectual quest.

The paper proceeds as follows. First, we will formulate a theoretical understanding on metaphors. Second, we will consider the methodological underpinnings of autoethnography and collaborative writing, after which we will reflect on our experiences as emerging scholars with the help of various metaphors. Finally, we will consider certain metaphors as "methodological tools" for formulating understanding of our becomings as researchers. At the same time, we produce analysis of the contemporary academe from a perspective of young researcher.

Metaphor and Its Uses

Metaphor as a cognitive conception reflects the human ability to connect different domains based on experiential connections (Sweetser & Fauconnier, 1996). The operative word here is "connections," since by the use of metaphors, as Sweetser and Fauconnier (1996) note, understanding of one domain in terms of another is evoked. For Sfard (1998, p.4), the power of metaphor lies in this act of conceptual bridging: forging connections between the competing intuitive and formal

outlooks, metaphors can spontaneously link experiences of everyday reality to scientific theories. In other words, metaphors offer an understandable form for abstruse ideas. Sfard (1998, p.5) further argues that explaining the processes that turn old into new metaphorical figures of speech allow researchers to nominate what is perceived unfamiliar, to step from one domain to another using language. Still, metaphorical entailment that tends to migrate across domains often remains unnoticed and uncontrolled (Sfard, 1998).

Many people consider metaphors as devices of the poetic imagination and rhetorical flourish or as matters of characteristic language that combine concept structures to thought and action (Lakoff & Johnson, 1980). Relating dissimilar ideas to establish a comparison, metaphors, in fact, are far from being mere rhetoric. Moreover, metaphors have essential influences on how important societal issues and everyday experiences are conceived and conceptualized (Lakoff & Johnson 1980; Thibodeau & Boroditsky, 2011). Although metaphors that are used to reason about concepts may be inconsistent, Lakoff and Johnson (1980, p.272-273) see that abstract concepts are not complete without metaphors. As they (1980, p.273) summarize, “We live our lives on the basis of inferences we derive via metaphor.” In this article, we aim to emphasize the role of metaphors as conceptual bridges that connect discourses to everyday life, or nominate the unfamiliar.

In recent research literature, metaphors are often characterized by their figurative language or context. For example, in cognitive science, Beaty and Silva (2012) distinguish between conventional and creative metaphors. Conventional metaphors are perceived as straightforward or idiomatic expressions that often represent a comprehensible comparison between a topic and a characteristic exemplar, while creative metaphors are unique, fresh expressions that use transient association to describe an emotional experience or express imagery in everyday speech. Conventional metaphors are rather familiar and easy to comprehend, such as the one-to-one in comparison, “life is a journey” or “time is money.” Creative metaphors are inventive and unforeseen, often emotionally charged uses of language; neither the creator nor the audience have encountered the metaphor before (Beaty & Silva, 2012). These more complex metaphors require more explanation and clarification, as we will see later on when discussing our metaphors of “endless scholarly immaturity” and “methodological mess”. This division to spontaneous and non-spontaneous types of metaphors supports the idea that metaphors in written language often tend to be more or less carefully considered and meticulously formulated’ and therefore defined by conventional attributes, whereas in speech metaphors flourish in spontaneous expressions. While creative metaphors may act as unplanned expressions in everyday life, conventional metaphors offer us ways to conceptualize ideas by making interpretations that reflect broader social-cultural horizons. Moreover, different ways of interpreting metaphors are tied to individual culture and history, and thus shared in social contexts (Lakoff & Johnson, 1980). For example, understanding of the metaphor “time is money” requires that both “money” and “time” exist culturally and in relation.

In short, metaphors act as conceptual bridges that can help us to communicate with others and understand, so far as it is perceived, the world in which we live. However, the use of metaphors is highly consequential and it depends upon personal life histories and social contexts (and the discourses permitted within these contexts). In this article, reflecting on the academic community that we as young researchers are accessing, we use metaphors as methodological tools to develop new understandings of our ways of “becoming”.

Methodological Considerations

A commonplace way of considering one’s doctoral journey is to reflect on the shift from a doctoral student to an academic scholar. Many studies, often written retrospectively from the years of distance and from the higher-ranked positions (e.g., Gallos, 1996; Hernández, Sancho, Creus, & Montané, 2010), report how “becoming a researcher” raises questions of one’s identity, or how

young academics understand themselves within the social climate of their universities. In the present article, we are interested in the same questions; we, however, approach the questions autoethnographically as “emerging scholars” from the periphery of the academia (see Lave & Wenger, 1991). We are especially interested in what certain metaphors evoke in us, most of which are generated by others, from a certain academic point of view, in certain time that may be different from that of ours.

Considering the metaphor as a methodological tool, the present article includes aspects from the autoethnographic research approach, as the “data” we rely on consists to a great degree of retroactive writings about our experiences. We use the autoethnographic research strategy to systematically describe and analyze (graphy) our personal experiences (auto) in order to understand the culture around us (ethno) (Ellis, 2004; Ellis, Adams, & Bochner, 2012). According to Ellis (2004, p. xvii), the aim of autoethnographic writing is to “enter and document the moment-to-moment, concrete details of life”, and use one’s experiences to find meaningfulness with a larger group or culture. While the things that are encountered through autoethnographic introspection may not always be flattering, or they might even generate emotional pain, autoethnography seeks to make lived experiences visible through honest exploration (Ellis, 2004, p. xviii). This, further, requires researchers to identify the disciplinary ground on which they stand, question and reflect on their decisions and motives, and acknowledge the limitations of their own voice with which they speak (Dauphinee, 2010; Ellis 2007). For us, autoethnographic research approach has provided a practice-theoretical framework for reviewing the domains of practice we have undertaken as doctoral students. This means that while trying to understand ourselves, we have been conducting “a systematic sociological introspection” (Ellis, 2004, p. xvii) of the practices of our academic community from the position of doctoral students.

Lately, collaborative autoethnographic projects, in which researchers pool their experiences to discover the correspondence and divergence of the meanings of the life experiences in relation to the sociocultural contexts, have been starting to flourish alongside the works of solo authors, thus proposing an emerging collaborative research framework combining autobiographical, dialogic, and ethnographic writing (Chang, Ngunjiri, & Hernandez, 2012). While in some projects, researchers have chosen to collaborate concurrently throughout the study (e.g., Chang, Ngunjiri, & Hernandez, 2010), other projects have placed more emphasis on the dynamics between the self and other, engaging researchers who have worked individually at certain stages of research and collaborated in others (e.g., Hernandez, Ngunjiri, & Chang, 2014). During the writing of this article, we have been collaborating at all stages of research: We have been sharing ideas, reading and writing, detailing and documenting the academic practices, developing the metaphors in and through our discussions, and engaging in collective analysis and interpretation. In order to intentionally embed our reflection in the socio-cultural environments within which we become scholars, we have further shared our thoughts with our colleagues and become inspired (or sometimes depressed) from these discussions that have circled around our emerging scholarship.

Writing autoethnography collaboratively has prompted us to share the ideas of Chang, Ngunjiri and Hernandez (2010), who have claimed that the strength of the collaborative autoethnography is that it enables an open, context-conscious perspective of the personally embodied experiences with an emotional and cognitive resonance to the experiences of the others. Nevertheless, the underlying dilemmas of the autoethnographic writing, such as telling the stories subjectively in content and context (see Ellis, 2007), or the power and privilege of the academic voice (see Dauphinee, 2010) remain in collaborative autoethnography. Therefore, it needs to be acknowledged that in the course of writing and representation we are unable to withhold the all-encompassing academic voice: While detailing our experiences of accessing the academia, we already operate with, and take the use of, the set of conventions, concepts and practices within the academia. For example, when writing this article, we may contribute to the world of academic rankings (a prac-

tice based on certain ideological premises) through article publishing – a world, the complexity of which has only recently begun to manifest to us. Similarly, we are on our way to “becoming” insiders or full participants as we become involved, achieve new understandings, and eventually incorporate the scholarly profession as part of our identities.

We have both started our doctoral studies in the field of Behavioral Sciences working outside academia: Anna as an educator in the field of arts and crafts, and Tuure as an elementary school teacher. We came across each other in the early phase of our doctoral journeys within an organizational doctoral study project in 2011, where we both worked as project researchers. Anna has also worked on a scholarship for a year. Since then, we have both been employed by the university, which has provided us a fulltime doctoral student position at the Department of Teacher Education. Our academic paths are not identical, but they have much in common. We have shared much throughout the years, and much has become shared during our collaborative autoethnographic projects.

Data production for the project examining the development of professional identity began in 2012, when we two started to meet regularly in order to discuss our experiences in academia. What are we doing here and why? We read articles for every meeting and wrote down our ideas together. These “data” (meetings, writings, readings) were recurrently enriched through meetings with our colleagues. In particular, one summer school gathering together of young researchers from European countries to discuss methodological issues in 2012 was of great importance for the development of the ideas of this article. As we discussed our experiences of the development of scholarly identity, concerns about disfigurement of the academic world and imperfection of the scholarly competence seemed to be widely shared by all of us summer school participants. Thus, while the metaphors presented in this article cannot be generalized to broader population, and we are not even attempting to do that here as we are experimenting with postmodern techniques of autoethnography, we perceive them as reflections on our deepening engagement to the academia, complementary to the experiences other people sharing our position. However, whether one agrees with the metaphors introduced here or not, is not the core issue in the article. What we attempt to do is to introduce one possible “method” for self-reflection as we think such reflectivity is essential for any emerging scholar.

Gaining Access through Acquisition and Participation

At the beginning of one workshop at the abovementioned summer school we both attended in 2012, we were presented with Francis Bacon’s (1620/1863) Aphorism XCV; a metaphor of ants, spiders, and bees from his book *Novum Organum*:

Those who have handled sciences have been either men of experiment or men of dogmas. The men of experiment are like the ant, they only collect and use; the reasoners resemble spiders, who make cobwebs out of their own substance. But the bee takes a middle course: it gathers its material from the flowers of the garden and of the field, but transforms and digests it by a power of its own.”

The excerpt was used as a pedagogical tool to encourage us to think about our identities as researchers by asking which one of the described insects could best represent us. However, we, among other participants, found the task of naming oneself as a certain kind of researcher rather difficult. Nearly all young researchers who participated in the discussion felt having some of the characteristics of ants, spiders, and bees alike. Naming oneself as an ant, a spider, or a bee was causing frustration among the participants, as if “the scholarly antness” would mean that one was only capable of conducting uninventive research, or “the spideriness” that one was only willing to work by one’s own rules, or “the beeness” that one was to become a scholars of masses lacking both vision and originality. It was clear that the participants wanted to emphasize the social and

cultural nature of being and becoming a researcher. As a solution to the problem, both various hybrids (e.g., spider-bees) and other species (e.g., butterfly) were suggested. Some participants reasoned that even though one might have acquired, say, bee-like strategies, s/he has done so in a certain context of power and privilege, within a community valuing certain attributes and being subjected to certain broader powers. Thus, in understanding the formulation of identity, we figured, we must not only look at what we possess (the concepts, tools, ideas), but also the contexts in which these are recognized.

This idea is well articulated by Sfard (1998). According to her, the metaphors of acquisition and participation can be thought to form a contradictory, yet interwoven dyad thus pointing out the complexity of defining learning. The metaphor of acquisition includes an idea of the “human mind as a container to be filled with certain materials and about the learner as becoming an owner of these materials” (Sfard, 1998, p.5). From the viewpoint of acquisition, learning is a means for the acquisition and accumulation of new knowledge, new information, ideas, or conceptions: a process of gradually gaining ownership over what is constructed, attained and internalized. Once acquired, new conceptions may be applied, articulated, and shared with others, and this “property” can thus be employed in a great variety of frameworks. The idea of acquisition has shifted over time from the passive reception of knowledge to the transformation of knowledge from a social to an individual plane, now putting more emphasis on the active role of the learner (Sfard, 1998, p.5-6). As Sfard (1998) observes, this metaphor works only partly. In 2013 we wrote about our processes as young researchers in the following way:

“Almost daily, we need to think whether we use certain scientific tools *in the right way*. We feel that we are expected to use the accepted tools of good scientific practice [...] but on the other hand, we are participating in negotiating these means through developing analytic procedures that help us to approach the data.”

Whereas acquisition mostly concentrates on possession and state, the metaphor of participation gives priority to activity and agency; instead of different “concepts” and “knowledge” it focuses on “knowing” as active doing (Sfard, 1998). When contrasted with the metaphor of acquisition, the participation metaphor, according to Sfard (1998, p.6) is a context-related, open-ended body that emphasizes situatedness, cultural embeddedness, and social mediation: learning is then perceived as a “process of becoming a member of certain community.” In the qualitative inquiry the analytical methods seem to be open to improvisation and experimentation. The methods we use (or “own”) and the ways we use them define our appearance to others and, thus, our emerging professional identity. The difficulty here is that the community of qualitative researchers is diverse as well: autoethnography, for example, is not perceived as valid or trustworthy scientific method in all academic fields. For example, our autoethnographic texts have been celebrated in certain scholarly communities and neglected in others.

According to Lave and Wenger (1991), we learn and gain memberships in the communities by taking part in the community practices. As doctoral students, we are learning to write articles, publish in high-ranked journals, present in conferences, and engage in scientific discussions. While we read, write, and engage in discussions with our colleagues, we also encounter new concepts through which we continue negotiating our being and becoming within the scholarly world. For example, issues of precarity and young scholars as members of precariat (e.g., Standing, 2011) have been recently discussed in our research community. In regard of the concept, we have been reflecting on the nature of academic work, sharing in length our experiences of undertaking a doctoral degree, and discussing the position of young academics as knowledge workers (see also Hakala, 2009) within the academia. Interestingly, the more we have talked about the metaphor of precarity—the insecure, relatively poorly paid, unprotected class of academic workers—the more we have realized the presence of the concept within our own academic lives. Thus, following Sfard (1998, p.6), we believe that we learn to negotiate meanings relating to the subject

learned when we “acquire” new concepts or ideas: we learn how to act according to the particular norms and communicate in the language familiar to the community. Our acquisition of ideas and the use of these ideas is interwoven in the academic flows, and many times we don’t have a possibility to refuse.

From a practice-theoretical point of view, becoming a member of a research community requires the scholar to acquire the conception of “good science” and participate in sustaining (and on the other hand challenging and developing) it with scientific choices. The scholar must both recognize that possession defines the identity of the possessor and, at same time, when contextualized the possessor is becoming a part of a greater entity (Sfard, 1998). It is believed that scholars do not become researchers in a vacuum, but someone (often old-timers of this community) has to grant access legitimately by approving the learner’s application and symbolically approving his or her “potential”. Moreover, researchers seem to need to acquire certain concepts in order to participate in meaningful activities (as numerous as these may be) and become more competent actors in the research community—to become perceived as legitimate scholars. It can be thought that scholars learn about which contents are most crucial to certain “tribes and territories” by this very participation.

Tribes and Territories within the Triple-Helix

Becher and Trowler (2001) offer conceptual tools for positioning in the academic world through their metaphor of “academic tribes and territories.” In a cognitive realm, they separate hard from soft and pure from applied sciences. Hard sciences are quantitative and method-centered, knowledge is atomistic and cumulative, and they aim at causal explanation and ascertain universal laws. The criteria for good research are clear, as in the soft sciences, theories are multiple and the criteria for evaluation differ between schools and research orientations. In the soft sciences, research is usually qualitative and holistic. With the term “pure”, Becher and Trowler (2001) refer to basic research that is directed from inside the university as applied sciences are directed from external needs. In the social realm, a distinction is made between convergent and divergent, and urban and rural disciplines. Convergent refers to strict rules and tightly bound disciplines as divergent disciplines are more fragmented. Urban fields are characterized by a fast and competitive group life, as its counterpart produces research slowly and as scholars have their own territories, less competition exists. These two realms and the four constituent parts of the realms offer a metaphor of “academic tribes and territories” that aims at explaining the organization of the university. Remarkably, however, Becher and Trowler (2001) also note that the attributions of the realms may change over time and space.

At first glance positioning ourselves as researchers in this metaphor seems easy. In our first discussions, we figured ourselves as representing soft (qualitative educational research), pure (research plans made by ourselves under the guidance of our professors), divergent (drawing from various fields and disciplines), and rural (emphasis on individual work in conducting research). Yet, we soon noticed that we could also find other kind of characteristics in our work. We memorized conversations with our supervisors and colleagues about the importance of learning to conduct both qualitative and quantitative research, attempts to productize our research in order to secure funding, and encouragement for publishing with our supervisors or other colleagues. Increased competition is continuously emphasized, and some publishing is valued more than others. Having said this, we have found that positioning ourselves in the tribes and territories is more complex than it seems: it is not merely accessing clearly bounded tribes with territories, but rather navigating between, inside and across them.

The metaphor of triple-helix will help us situate our working environment within some broader societal (and global) trends of higher education. Some argue that the old norms of science are falling away, being replaced with new, applied, competitive and entrepreneurial ones (e.g.,

Slaughter & Leslie, 1997). The academic landscape has undergone major shifts during recent decades, and many universities have faced several reforms relating to their efficiency and accountability in Finland, but as well as in other countries (Becher & Trowler, 2001; Hakala, 2009; Kouhia & Tammi, 2014; Slaughter & Leslie, 1997). In general, the function of the university has slowly changed from acting as an autonomous and unitary agent of basic research towards becoming a part of “a triple helix” (see Etzkowitz & Leydesdorff, 1997), in which the tasks previously assigned to government (applied research) and industry (applied research and product development) are interwoven with those of academe (valid and valued science). As a result, this change in focus means that some universities are “becoming more involved in technology transfer, intellectual property, and the exploitation of knowledge” (Hemlin, Allwood, & Martin, 2008, p. 202).

At first, the faculty of behavioral sciences seems an unlikely place to look for such entanglement with industry as in Finland the educational sector has mostly been run by public funds. However, we found that the entrepreneurial discourse had entered also our scholarly practices especially through changing practices of publishing. When we began thinking about post-graduate studies around 2009, doing a monograph was still considered an alternative. This, however, had more or less changed when we began our studies in 2011. We found most of our colleagues doing article based dissertation, many of them being engaged in various research or article writing projects outside their own work. After 2014, when doctoral education was reformed and unified in Finland, the steering document of the doctoral program to which both of us enroll has recognized only international peer-reviewed articles as legitimate foundations for a dissertation (see Kouhia & Tammi, 2014). Partly this development can be interpreted to reflect on the increased measurement practices—part of the governmental funding for faculties is allocated on basis of the quantity of articles produced in different “quality categories”, for example. Through article writing practices we also produce material for the growing science publication business. Paradoxically, while the research articles we produce are publicly funded, the articles we have written often need to be bought back by our (publicly funded) libraries in order to become available for our colleagues and students. Publishing (more and more) is presented to us among the only ways through which we can prepare ourselves for the uncertain future of the highly competed knowledge markets.

Thus, to a degree, we perceive that the dilemmas related to situating ourselves along with the tribes and territories reflect on the diversified functions of the university on a macro level. The metaphors of “triple helix” and “entrepreneurial university” are important especially for a new generation of researchers because they help us to understand the contemporary university in which we work and the altered demands and opportunities this suggests compared to those that many of our professors faced as young researchers. Of course, this set pressures to the supervisors as well: in which degree to adapt to the demands of knowledge economy and in which to give support to the alternative projects doctoral students might feel need to engage in.

Consequently, as we have found, “accessing the research community” can be approached as a complex activity, situated within a broader societal (and global) context, and comprised of the dynamic interplay of acquisition and participation within the landscapes of faculties, schools, departments, and research groups (i.e., tribes and territories), which positions our “being” and sets directions for our “becoming”. Scholarly identity is not only up to scholars’ own efforts, but is socially, culturally, and historically embedded. Acknowledging that “accessing” is surely a complex process, we want to take this complexity a little further. In following, we elaborate on two postmodern “creative metaphors” (Beaty & Silva, 2012), which we created in order to reflect on our processes as young researchers who have just recently accessed the world of research.

Creating Metaphors for Understanding the Process of Accessing

In the process of developing metaphors, we encountered the problem already addressed by Sfard (1998) that although similar concepts may be acquired, the meanings might differ. Let us take an illustration. Some months ago, Tuure had a debate with a colleague about the meaning of messiness. He had written a short paper titled “Messy agency” implying that agency is too often used as an unproblematized buzzword and scholars need to pay more attention to its use. Thus, messiness could be accepted as an encouraging concept, motivating the researcher to go beyond the trend and pushing him or her toward clarity. However, his colleague found the messiness to be discouraging. For her, messiness makes the task of clarity seem unreachable, pushing away the researcher. We talked about the same concept but the “sense” about the concept was different.

At first inspired by Sfard’s (1998) metaphors, we have constructed new expressions that could enlighten the intermittent insufficiency that we as newcomers to the field of academic research have been experiencing. Thus, we elaborated our academic identities through the metaphors of “methodological mess” and “endless scholarly immaturity” that both accentuate that there is a number of underlying, still continuously evolving presumptions present at any given moment the research is conducted. Yet, these metaphors also maintain the idea that presumptions are fuelled by contextuality—they are entrenched in the researchers’ mind (and cultural worlds), and so guide them in their work. These two metaphors emphasize the processual nature of becoming a researcher, yet situate this process in the changing socio-cultural patterns.

To all appearances, the main purpose of messiness is to challenge the metaphor of acquisition, as it seems that the concepts that have been acquired and internalized (such as agency, voice, culture, democracy) remain controversial in definition. It even seems that these concepts are contested in nature, open to ongoing questioning and elude definitive description. This discussion leads to the most profound questions concerning acquisition: To what extent is it possible to own these concepts that are repeatedly redefined? Participation in a community of research reveals the messiness included in the acquisition of concepts and meanings. Yet, these incomplete concepts are used in order to participate in scholarly discussions in publications. Thus, in the world of research (at least in the tradition of thought that is currently being accessed), researchers navigate in methodological mess in order to provide fresh and insightful reports, ideas, and theories.

While the metaphors of “methodological mess” and “endless scholarly immaturity” admit that researchers are strained to manage different motivations and interests, they underline the ever-present complexity in both scientific thinking and methodological contemplation. These metaphors certainly evoke anxiety – we can easily notice such frustration only by looking at the email conversations we have shared during the past years – but they also function as sources of curiosity. We have felt that messiness and immaturity may also advance our productive thought and help us to reconsider, deliberate, and tolerate paradoxes in ways of thinking and acting. For us, messiness is not something to be solved completely, but rather something that invites to navigation.

In the field of childhood studies, Gallacher and Gallagher (2008) have introduced a concept of “methodological immaturity” with which they criticize the current trend to blindly believe in participatory methods as a solution for the dilemmas in research with children. To them, research must be seen as an experimentation that requires methodological immaturity, as researchers are “not simply reporting a world that exists ‘out-there,’ but are creating and experimenting with an emergent one” (Gallacher & Gallagher, 2008, p.511). They further promote an understanding where knowledge is relational and humans are emergent becomings: “always-unfinished subjects-in-the-making.”

The metaphor of “endless scholarly immaturity” shares the latter assumption. By developing this metaphor we have intended to pay attention to the infinite process, granting that endless scholarly immaturity does not eliminate the idea of transformation as scholars – only the “completeness” becomes insignificant. Nevertheless, we do not use immaturity as a metaphor for escaping the responsibilities for actions a scholar has engaged in during the research process. In contrast, as metaphor assigns incompleteness to every scholar, it also does so to every research project. If science were perfect, it would not be a mystery.

Although never perfect, we have experienced “moments of clarity” and “hints of maturity” during the processes of accessing. These incidents have been good analytical opportunities for us as reflexive researchers. In times of moments of clarity or hints of maturity, we have witnessed a temporal tolerance for uncertainty in ourselves, or even reached a confidence of some kind in that very moment (we might call this an identification). “Moments” and “hints” have often occurred in relation to something our colleague said about our study, something we just read, or an unexpected encounter at the café, for example. The momentary, fleeting experiences of clarity and maturity suggest that messiness and immaturity are never realms of total turmoil, and even while it sometimes may seem like it, our becoming is not mere postmodern chaos. We do notice some of our learning, we do get things done (e.g., this article), and we do develop skills and knowledge valued in the various communities of scholarship. Through focusing on the moments of clarity and hints of maturity, noting the moments when messiness and immaturity are interrupted, we may cast a new light on the processes of being and becoming a researcher in a specific time, place, and space. Still, it must be highlighted that moments of clarity and hints of maturity seem to depend on our situated processes of learning, and may thus be never guaranteed as outcomes of any learning process. Neither do these moments and hints seem to occur at regular intervals, but rather tend to accumulate in sequences that resonate with the learning processes. However, when looking at accessing (or participating in the communities of practices), it seems possible that as we learn, the moments of clarity and hints of maturity may become more frequent because of our growing involvement. We might learn to “master” our methods better, become better aware of the range of choices we have made during the research process, and begin more thoroughly acknowledge the effects that we and the other people encountered during the process of research may have had on the frame of the conducted research. In short, we might learn to navigate in the methodological mess with endless scholarly immaturity as our compass.

As has already been suggested, we consider that research is not only about individuals who study, but also about deeply interwoven social, cultural, and historical processes. This speaks for the contextuality of “methodological mess” and “endless scholarly immaturity” in both scientific thinking and methodological contemplation—the world changes and the new problems that arise might need new openings in this regard. In this vein, the metaphors lead us to a consideration of the construction of the academic communities and the strategies in navigating between the diversified forces that are faced while doing research.

Navigating in the Methodological Mess with Endless Scholarly Immaturity as a Compass

As Lave and Wenger (1991) suggest, we as newcomers to the community of practice are being pushed to find our ways through many burdensome challenges while wandering from the academic periphery to the core of the community. The challenges that currently concern us as researchers most relate to our academic identities and the processes of finding our place (and becoming “placed”) in the community of researchers. We are not alone with our concerns; a comprehensive survey by Pyhältö et al. (2012) on Finnish doctoral students’ perceived fit into academic communities suggests that doctoral students regard academic disengagement as a central challenge of their doctoral processes. In times like this when the number of PhD students is con-

tinuously rising in many countries, as well as in Finland, and the competition for academic positions is increasing, finding “a place” is not an easy task (Hakala, 2009). For example, we have found very difficult to think where we will be five years from now. Utilizing our newly presented metaphors as strategies of coping with the challenges, we could say that using scholarly immaturity as our compass, we are navigating between the forces of triple-helix, tribes and territories, fixed typologies of researchers sometimes thinking strongly that we have found ourselves as researchers or managed to diminish our methodological dilemmas until we need to re-coordinate.

Following the practice-theoretical insights of Lave and Wenger (1991) we may argue that our professional identity not as static and permanent, but changing (to a degree) in and through social encounters and our participation in the scholarly world and beyond. Accordingly, through participation in a certain community (influenced by forces of discourse), we acquire certain valuations of scientific practice. However, these valuations are not immutable, as the environment and its demands are changing and communities interact with other communities. We have found ourselves becoming participants in the community of science through publishing, taking part in reviewing processes, giving expert statements to the media, lecturing and teaching, and presenting in seminars and conferences. However, currently the traditional activities have been augmented by applying for funding, the productization of research, boosting one’s visibility, and the rapid production and report of results in easily digestible form. Such diversification of the academic practice, and accordingly, the diversification of experiencing and practicing academic identities has been suggested in several studies (e.g., Henkel, 2005; Smith, 2012, Ylijoki & Ursin, 2013). For example, we are not only becoming researchers, but also (forced to become) academic entrepreneurs demanded to prove our productivity, effectivity, and existence in the knowledge economy. Nevertheless, not every publication is recognized and equally valued by the community as a source or example of good science, and these disagreements will probably prevail.

For Lave and Wenger (1991) the emphasis is not on the acquisition of skills and the transmission of knowledge from experts to novices—from professors (or books) to graduate students—but on the very process of participation and the notion of becoming a full participant. What we want to add is the (emerged demand of) endlessness of the process of becoming we have found through our introspection: the continuous movement—the navigation—inside theoretical frameworks, continuously altering trends of research, emerging new methods in relation to broader changes and forces that seek to define what type of research is significant. Be that as it may, the longer we have been wandering in the world of research, the more uncertain it seems that there is a “core” in the academia (or in the field of educational sciences) at all. Perhaps it is just another periphery towards which we are floating? For us it is easier to perceive the community of research as a dynamic rhizome including various quasi-communities than a stable structure with an identifiable core (Deleuze & Guattari, 1987). In our minds tribes and territories have begun to hybridize generating new pathways, or new lines, within this rhizomatic understanding of the field of science. On the one hand, these ideas allow us to consider the many possibilities what scholarship can be; or the various possibilities of “becoming”. And on the other, we can always be expected to learn more and produce more. Surprisingly, we find ourselves sharing our lunch with both postmodernism and neo-liberalism. This is an uneasy relationship.

In this article, we have attempted to think with different metaphors in order to situate ourselves in the field of science and understand our processes related to formulation of professional identity. We don’t claim that these ideas could be generalized across scholarly contexts, even though we do think, in line with the practice-theoretical assumptions, that our thinking is in many ways socially embedded. Further research could investigate whether other emerging scholars would find our self-exploratory method useful. We see no reason why other methodological choices, such as surveys, interviews or documentary analyses, could not be utilized as well. However, the idea here has not been to provide generalizations about what scholarly life is, but instead to cast light

on a postmodern path of self-exploration with the help of metaphors in order to illustrate the complexity of our “becoming”. Further, instead of reducing the chaos into clearly bounded themes, we have attempted to portray our experiences of scholarly incoherence – that is, messiness and immaturity – as one core aspect describing our processes of becoming academics.

Through writing and thinking together, we have found that metaphors do stimulate the process of understanding. However, as we have seen, the simplifying nature of metaphors is also a dilemma as it is set against complex worlds where boundaries are shady. Thus, we do not offer these metaphors as solutions to challenges faced, but they have, perhaps, helped us to position ourselves, and thus, at least partially, to gain a hint of mastery in this messy and rhizomatic community of practice. In this regard, we find that exploration of metaphors could benefit also other young scholars across disciplines, as well as their supervisors in their processes of becoming.

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Biographies



Tuure Tammi (M.Ed.) is currently finishing his PhD at University of Helsinki, Finland. Next to his dissertation project that discusses issues related to student participation, he has also engaged in projects exploring neoliberal governance in higher education, and reflexive methodologies.



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Cite as: Chesnut, S. R., Siwatu, K. O., Young, H. A., & Tong, Y. (2015). Examining the relationship between the research training environment, course experiences, and graduate students' research self-efficacy beliefs. *International Journal of Doctoral Studies*, 10, 399-418. Retrieved from <http://ijds.org/Volume10/IJDSv10p399-418Chesnut0914.pdf>

Examining the Relationship between the Research Training Environment, Course Experiences, and Graduate Students' Research Self-Efficacy Beliefs

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Abstract

This study examined the relationship between graduate students' research training environment, course experience, and research self-efficacy beliefs. The findings of the descriptive and regression analyses suggest that graduate students' ($n = 161$) general research, quantitative, and qualitative research self-efficacy beliefs varied and that these beliefs were related to different aspects of the research training environment and course experiences, including their own personal research experiences. While course experience variables were significant predictors of quantitative and qualitative research self-efficacy, they were not predictive of general research methods self-efficacy. Also, while mentorship was a significant predictor of general research methods self-efficacy, it was not a significant predictor of quantitative and qualitative research self-efficacy. The implications of this study for research and graduate education are discussed.

Keywords: graduate student, professional development, research, self-efficacy, training

Introduction

Graduate programs are designed to assist students in developing the relevant knowledge and

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skills needed to be successful in their professional careers. While most graduate students eventually find careers after they graduate, many seeking jobs in academia report a lack of readiness (Nyquist et al., 1999). Additionally, experts across the domains of educational research (e.g., psychology, counseling, administration) have complained that numerous graduates lack the basic research skills necessary to be successful

Editor: Simona Scarpato

Submitted: October 27, 2014; Revised: August 3, September 25, 2015; Accepted: September 30-, 2015

in their respective field's faculty positions (Zhang, 1998). While it may be possible that this lack of readiness and ability is due to graduate students not actively participating in research during the course of their graduate training (Stoltenberg et al., 2000), researchers have suggested that many graduate programs fail to incorporate these aspects of the field that would make their doctoral students marketable and capable (Adams, 2002; Boyer, 1996; Cody & Hageman, 1997).

Being successful in academia requires mastery of numerous skills. It is not the case that graduate students do not value or seek help in preparation for their future careers (Nagle, Suldo, Christenson, & Hansen, 2004). Instead, many students are unaware of the skills that they need to master (Trower, Bleak, & Newman, n.d.) and, upon graduation, realize that their prior training environment (time in the graduate program) did not help them develop the skills that they are expected to have (Meyers, Reid, & Quina, 1998). This feeling of being underprepared, even after multiple years of education, has been shown to decrease graduates' levels of confidence in their ability to successfully find and maintain a career in academia (Austin, 2003; Furniss, Blomquist, Butler, McDougall, & O'bannon, 2002; Golde & Dorey, 2001; Miller & Lambert-Shute, 2009). Being confident in one's self has tremendous implications for motivation and behavior (Bandura, 1977, 1986, 1997). In the following review of the literature we discuss the role of one's confidence to be successful in academia and related tasks (i.e., self-efficacy; Bandura, 1977, 1986, 1997), how this confidence is framed in regards to research-related tasks, what research has suggested about building an individual's self-efficacy for performing research-related tasks, and why further research in this field is necessary for enhancing the development of our graduate training programs.

The confidence that an individual has about the likelihood of being successful in his or her endeavors has been frequently studied in education. A key component of Bandura's (1986) social cognitive theory is the perception of one's ability known as self-efficacy. Bandura (1997) defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Developed through lived and observed events, individuals are better able to make appraisals regarding what they believe they are capable of successfully doing (Bandura, 1977, 1997; Bong, 2006). Experiencing success and observing similar others succeed in given tasks can help to build an individual's confidence in his or her ability to successfully engage and complete a task (Bandura, 1986, 1997). Similarly, experiencing and observing failure can undermine the development of self-efficacy (Bandura, 1986, 1997). In order for lived and observed experiences to influence the development of an individual's self-efficacy beliefs, accurate attributions of the outcome are necessary. While a discussion of attribution theory and its role in Bandura's (1986) social cognitive theory is beyond the scope of this discussion, a seminal discussion can be found in the works of Bernard Weiner (1976, 1979).

In the context of career planning and preparation, positive self-efficacy beliefs influence the types of goals that are set, the perceptions about outcomes of engagements, and the level of persistence that individuals will expend (Lent, Brown, & Hackett, 1994). Forester, Kahn, and Hesson-McInnis (2004) defined self-efficacy in research as "one's confidence in successfully performing tasks associated with conducting research" (p. 4). The confidence that graduate students maintain about their ability to design studies, collect and analyze data, and write a well-organized manuscript might further influence their research-oriented goals, expectations of performing research, and the effort expended during the process.

Indeed, graduate students' research self-efficacy beliefs have been examined in regards to their influence in the development of research attitudes (e.g., Bishop & Bieschke, 1998; D. M. Szymanski, Ozegovic, Phillips, & Briggs-Phillips, 2007) and have even been able to account for the variability in graduate student research productivity (Hollingsworth & Fassinger, 2002; Kahn & Scott, 1997; Phillips & Russell, 1994). As graduate students master various aspects of research, their levels of confidence to successfully engage and maintain a research project also increase. The increase in self-efficacy beliefs subsequently influences the attitudes that graduate students

hold toward research (Bishop & Bieshke, 1998) and the extent to which they engage in research (Kahn & Scott, 1997). Knowing how self-efficacy can promote pro-research orientations and the frequency of engagement in research-related activities, it is important to consider what the research suggests about the graduate program's role in helping students master research skills and develop their self-efficacy beliefs for engaging in research.

Previous research has suggested that courses intensely focused on research training are more likely to bolster graduate students' research self-efficacy beliefs compared to general research courses (Gelso & Lent, 2000; E. M. Szymanski, Whitney-Thomas, Marshal, & Sayger, 1994). Cross-sectional studies have further examined the professional and academic research training environments, faculty mentors, and previous research-oriented experiences (e.g., publications, conferences, presentations) with promising results (e.g., Hollingsworth & Fassinger, 2002; Kahn, 2001; D. M. Szymanski et al., 2007). The research-training environment, composed of interpersonal and instructional factors, has shown to be a consistent predictor of graduate students' research self-efficacy beliefs (Bishop & Bieschke, 1998; D. M. Szymanski et al., 2007). That is, through the observation of models, being reinforced for producing research, practicing research, and engaging in research with others, graduate students tend to feel more self-efficacious in their abilities to successfully engage in research-oriented behaviors and tasks. Most of the research on graduate students' research self-efficacy has examined the enactive and vicarious experiences that influence personal beliefs of ability (Bishop & Bieschke, 1998; Gelso, Mallinckrodt, & Judge, 1996).

Graduate students' self-efficacy beliefs for engaging in a diverse range of research-related activities have the potential to influence interest development, performances, and vocational decisions (Gelso & Lent, 2000; Lent et al., 1994). Within a Social Cognitive Career Theoretical Framework (SCCT; Lent et al., 1994), researchers have devised three models that explain vocational decisions, interests, and performance. While each of these models utilizes a mixture of social cognitive constructs (e.g., self-efficacy, outcome expectations, goals), they all focus heavily on the self-efficacy beliefs that an individual has about his or her research abilities to perform tasks in a given domain and context. In fact, the prevalence of self-efficacy in Bandura's social cognitive theory (1986) and SCCT has made it a construct worthy of extensive research.

In Lent and colleagues' (1994) SCCT models, social cognitive variables are modeled to explain their influence on vocational choices, the development of interests, and the performance while engaging in a variety of activities. The *choice model* describes a process in which an individual's career-oriented goals influence his or her decisions to pursue a particular career. Influenced by occupationally related self-efficacy beliefs, interests develop that lead to occupational choice goals (Brown & Lent, 2006; Lent et al., 1994). These goals, in turn, help to motivate individuals to engage in behaviors beneficial to achieving their career-related goals. The *performance model* has been used to predict and explain levels of success, quality of performances, and the persistence in confronting obstacles during career-related pursuits (Brown & Lent, 2006; Lent et al., 1994). According to this model, performance is influenced by prior ability, self-efficacy beliefs, outcome expectations, and goals (Lent et al., 1994). The *interest model* is very similar to the *choice model* with the difference being that occupational interests develop as a pattern of engagements and interpreted outcomes manifest as likes and dislikes for the individual. An individual that continually experiences failure with each engagement for a particular activity and ultimately comes to perceive failure as a consequence might be less interested to engage in that activity than someone with confidence for success and positive outcome expectations.

Previous research is replete with examples highlighting the value of positive self-efficacy beliefs in the development and preparation of graduate students (Lev, Kolassa, & Bakken, 2010; Maier & Curtin, 2005; Perepiczka, Chandler, & Becerra, 2011; Phillips & Russell, 1994; West, Kahn, & Nauta, 2007; Zajacova, Lynch, & Espenshade, 2005). Holding to the tenets of Bandura's (1986)

social cognitive theory and Lent and colleagues' (1994) social cognitive career theory, high research self-efficacy beliefs orient graduate students to establish more challenging research goals, maintain positive expectancies for their engagements, and increase the frequency of productive research behaviors (e.g., Kahn, 2001). Training in research design and methodologies has been vital in the push to increase graduate student research self-efficacy (Belar, 2000; Ramsey, Cavallo, Kiselica, & Zila, 2002). Additionally, academic environments that support research and collaboration have also been known to bolster graduate student research self-efficacy (Hollingsworth & Fassinger, 2002; Unrau & Beck, 2004). While individual components of the academic environment have been shown to influence the development of graduate students' research self-efficacy, there has been little to no research that explains what components influence this development most and if these components are the same across the different research methodologies. To illustrate our research model, we aim to examine the predictive relationship that aspects of the training environment (e.g., graduate program and related research activities) share with graduate students' research self-efficacy beliefs. Figure 1 illustrates this predictive relationship; however, it is important to consider that we seek to examine the predictive influence on self-efficacy for research related tasks as they may be described as *general*, *quantitatively oriented*, and *qualitatively oriented*.

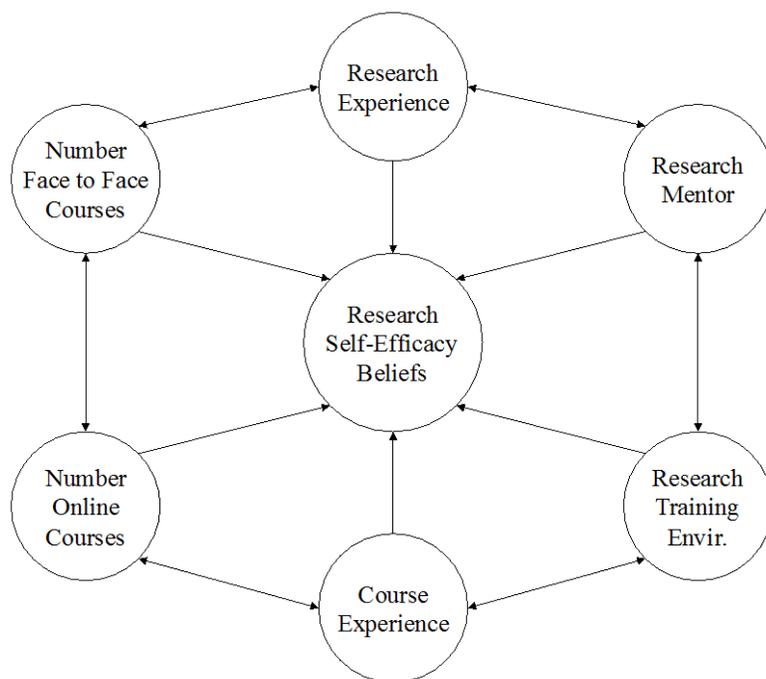


Figure 1. Theoretical model guiding current study suggests that all perimeter constructs uniquely and jointly inform the variance found within our dependent variable, *Research Self-Efficacy*. This model illustrates the expected shared relationships of the perimeter constructs and their hypothesized predictive relationships shared with research self-efficacy.

Purpose of the Study

The purpose of this study was two fold. First, this study was designed to add to the knowledge base regarding research self-efficacy, research team experience, course experience, research training environment, and research mentorship in the context of graduate student training. Second, the researchers designed the study to have a potential institutional impact on the direction and focus of graduate education. To fulfill these purposes, this study was designed to examine the relation-

ships among research training environment and course experience variables using a survey re-search design to answer the following research questions:

1. What is the nature of graduate students' research training environment and course experiences?
2. What is the nature of graduate students' research self-efficacy beliefs?
3. Do research training environment and course experience variables predict graduate students' research self-efficacy beliefs?

Methods

Participants

Participants in this study were graduate students enrolled in the College of Education situated in a large university in the Southwest region of the United States. One hundred and sixty one participants volunteered to complete a face-to-face survey. The graduate students in this study were comprised of 23.1% males and 68.8% females (8.1% missing) and represented a diversity of cultural backgrounds with 51.6% White, 17.4% Asian, 13.7% Hispanic, and 5.0% Black/African American. Approximately 6.7% classified themselves as Hawaiians / Pacific Islanders, American Indians, and other (5.6% missing). Forty-five percent of the participants were pursuing a master's of education degree, 10% were pursuing a doctor of education degree, and 35% were pursuing a doctor of philosophy degree. Ten percent of the participants did not respond with the type of degree being sought. The majority of the participants came from the counselor education program (27.3%), followed by higher education and administration (18%), curriculum and instruction (8.7%), instructional technology (7.5%), and educational psychology (6.8%). The rest of the participants indicated majors from different departments across the university.

Data Collection

Participants volunteered to complete the face-to-face questionnaires during time allotted by course instructors. The study spanned a fall and spring semester to capture more participants from courses offered once a year, but designed so as not to capture student data twice. Given pragmatic and efficiency issues that arose during the first semester of data collection in the fall, revisions to the data collection procedures were modified for the spring.

In the fall semester we utilized the full questionnaire (containing all items from all constructs) with a variety of forms based upon construct randomizing techniques (e.g., to reduce data effects associated with orders of items on long questionnaires). We split the questionnaire into two parts and administered them with a two-week interval between each administration. After collecting complete student data in the fall, we realized that this procedure had severe limitations. Data collection across multiple time periods was responsible for incomplete student data due to a number of factors. Primarily, however, the missing data were influenced by students completing data at one time point and then being absent for the second (or vice versa). In order to enhance data completion rates for the spring semester, we utilized a planned missing design to systematically reduce the number of items in the questionnaire by 25% so that students could complete the questionnaire in one sitting.

To elaborate on the planned missingness approach to data collection, three versions of the questionnaire were formed using the measures, with a variant of the three-form planned missingness approach (Graham, Hofer, & MacKinnon, 1996; Little & Rhemtulla, 2013). This was implemented by dividing items from each subscale evenly into four groups (i.e., Groups X, A, B, C). To ensure more items were retained in the common (X) group, we utilized a stacking technique. Figure 2 illustrates the use of a stacking procedure to increase the number of common items and

distribute the rest through the forms. These forms were combined to create a final form containing Group X and two of the others (i.e., forms XAB, XAC, XBC). With 25% of the data missing completely at random (MCAR), the missing data points were recovered using multiple imputation in the R package, *mice* (van Buuren, 2007; van Buuren & Groothuis-Oudshoorn, 2011). Each of these forms contained all or some of the items from the measures described below.

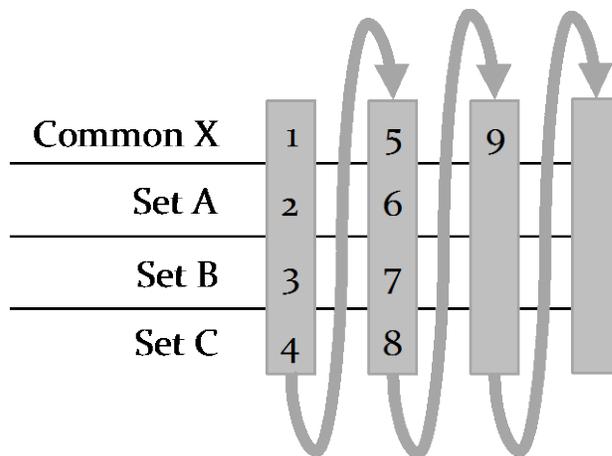


Figure 2. Using a stacking technique to distribute items of a subscale across the four groups (e.g., X, A, B, C). The stacking technique ensures priority to the common group that will be included in all three of the forms (e.g., XAB, XAC, XBC).

Research experience survey

Participants' experiences with research were measured using a 22-item questionnaire created by the researchers that asked participants to respond to prompts about a task involved in the research process. Participants placed a check next to the task to indicate that they had engaged in the task, such as "identify a research problem that can be researched scientifically" and "write a Human Subjects Proposal to obtain permission from the Institutional Review Board (IRB) to conduct your study." Prompts in the questionnaire reflected both general and specific (e.g., quantitative, qualitative) tasks involved in the research process. The number of checks can range from 0 to 22. We considered individuals with more checks to have more experience with research activities than someone with fewer checks.

Research training environment scale

Perceptions of the research-training environment were measured using the positive reinforcement of scholarly activities, low threat involvement in research activities, teaching relevant statistics and the logic of decisions, and teaching that all experiments are inevitably flawed subscales from the revised Research Training Environment Scale [RTES] (Gelso et al., 1996). Using a 5-point Likert-type scale, this 24-item adapted scale required participants to report on a scale from (1) "disagree" to (5) "agree" when responding to, statements such as "my graduate program rarely acknowledges the scholarly achievements of the students" and "I was encouraged to get involved in some aspects of research early in my graduate training." Scores can range from 5 to 120. Higher scores on the measure indicated favorable training environment. Scores on this measure were reliable as estimated by Cronbach's alpha of .81.

Mentor effectiveness scale

Perceptions of the effectiveness of research mentors were measured using an adapted form of the Mentor Effectiveness Scale (Berk, Berg, Mortimer, Walton-Moss, & Yeo, 2005). Using a 6-point

Likert-type scale, this 12-item scale required participants to rate their level of agreement using a scale from (1) “strongly disagree” to (6) “strongly agree.” Participants responded to prompts such as, “my research mentor is accessible” and “my research mentor demonstrates content expertise in my area of need.” Scores can range from 12 to 72. Higher scores on the scale indicate higher levels of good relationship with mentors. Scores on this measure were reliable as estimated by Cronbach’s alpha of .97.

Course experience questionnaire

Perceptions of course experiences were measured using the Course Experience Questionnaire (Ramsden, 1991; Wilson, Lizzio, & Ramsden, 1997). Using a 6-point Likert-type scale, this 23-item scale asked participants to respond on a scale from (1) “strongly agree” to (6) “strongly disagree” to prompts about good teaching, appropriate assessments, clear goals and standards, generic skills, and appropriate workload. Before analysis, codes were reversed so that higher scores were an indication that graduate students were satisfied with course experience. Scores can range from 23 to 138. Scores on this measure were reliable as estimated by Cronbach’s alpha of .86.

Research coursework completion questionnaire

The researchers created a questionnaire to identify the number of the research methods and statistics courses that graduate students completed prior to this study. This short questionnaire provided a list of courses offered in each of the three major areas (e.g., general research methods, quantitative research methods, and qualitative research methods) in the college of education and also blank spaces for the participant to fill in courses that may have been completed outside of the college or university. The participants responded to the questionnaire by indicating the courses taken and specifying whether it was taken in a face-to-face setting or online. Higher scores indicate more research methods and statistics courses graduate students have taken.

Research self-efficacy inventory

Research self-efficacy was measured using three of the four independent scales of the Research Self-Efficacy Inventory (RSEI) (Siwatu & Pasupathy, 2012). The three scales used were the (1) General Research Self-Efficacy Scale (GRSE), (2) Quantitative Research Self-Efficacy Scale (QnRSE), and (3) Qualitative Research Self-Efficacy Scale (QIRSE). All items were measured on a scale from (0) “No Confidence At All” to (100) “Completely Confident” in response to questions that asked, “How confident are you that you can... [insert task]?”

The GRSE consists of 10 items in which participants were asked to rate how confident they are in their ability to execute general research tasks associated with Creswell’s (2002) six steps in the research process. These processes include identifying a research problem, reviewing the literature, specifying a purpose, collecting data, analyzing and interpreting data, and reporting the results of the study. Participants’ responses to each of the 10 items were summed to generate a total score. Total scores could range from 0 to 1000. Participants with higher scores on the scale are more confident in their ability to design and conduct a research study compared to those with lower scores. Prior uses of the GRSE have averaged an internal consistency of .93. This study corroborated that finding with a Cronbach alpha of .90.

The QnRSE consists of 13 items in which participants were asked to rate how confident they are in their ability to carry out tasks associated with designing and conducting a quantitative research study. Participants’ responses to each of the 13 items were summed to generate a total score. Total scores could range from 0 to 1300. Participants with higher scores on the scale are more confident in their ability to design and conduct a quantitative research study compared to those with lower scores. Prior use of the QnRSE yielded an internal consistency of .98. This study corroborated that finding with a Cronbach alpha of .95.

The QIRSE consists of 8 items in which participants were asked to rate how confident they are in their ability to carry out tasks associated with designing and conducting a qualitative research study. Participants' responses to each of the eight items were summed to generate a total score. Total scores could range from 0 to 800. Participants with higher scores on the scale are more confident in their ability to design and conduct a qualitative research study compared to those with lower scores. Prior use of the QIRSE yielded an internal consistency of .96. This study corroborated that finding with a Cronbach alpha of .92.

Results

The Nature of Graduate Students' Training Environment and Course Experiences

Complexity of sampling frame and response influence

Given the diversity of the participants that completed our questionnaires, it is important to consider how a participant's level of study might influence response patterns. More specifically, it would be naïve to believe that no differences existed between master and doctoral students. Additionally, the potential for response difference between levels of doctoral work are also possible as the Ed. D. and Ph. D. programs are quite different at the university where participants were sampled. To determine whether the diversity of degrees influenced response patterns, a series of ANOVAs were conducted with each of the predictors and outcomes. While potentially inflating the Type I error rate by not utilizing an alpha adjustment procedure, we did not consider it to be problematic if multiple differences emerged. In this instance, adjusting alpha levels and potentially finding no significant differences might do more harm in understanding how students respond to prompts about their experiences in research and coursework.

In understanding how students responded to the independent variables, results from the ANOVA models suggested that Ph. D. students responded with significantly higher frequencies of online courses for general, quantitative, and qualitative research methods courses than their master student peers. No significant differences were found between Ph. D. and Ed. D. students. For face-to-face courses, Ph. D. and Ed. D. students responded with higher frequencies of courses taken in quantitative and qualitative research methods than their master student peers. In regards to research experiences, Ph. D. and Ed. D. students had significantly more experience than their master student peers ($F(2,141) = 21.075, p < 0.001; \Delta M_{\text{EdD=Med}} = 6.81, \Delta M_{\text{PhD=Med}} = 6.04$). For course experiences, level of student was only significant for quantitative research methods courses, where M. Ed. students reported slightly better course experiences than their Ph. D. peers ($F(2,141) = 3.281, p < 0.05; \Delta M = 0.22$). Regardless of the level of study, responses did not differ when asked about research mentors. Finally, level of study was also meaningful for the dependent variables, research self-efficacy beliefs in general and quantitative research methods ($F(2,141) = 15.470, p < 0.001; F(2,141) = 20.859, p < 0.001$). More specifically, Ph. D. and Ed. D. students responded with much higher levels of research self-efficacy than their master student peers ($\Delta M_{\text{Quant*PhD-MEd}} = 13.76, \Delta M_{\text{Quant*EdD-MEd}} = 32.36, \Delta M_{\text{Gen*PhD-MEd}} = 12.07, \Delta M_{\text{Gen*EdD-MEd}} = 20.61$). Additionally, Ed. D. students reported significantly larger self-efficacy beliefs than their Ph. D. peers ($\Delta M_{\text{Quant}} = 18.60, \Delta M_{\text{Gen}} = 8.54$). Table 1 summarizes the results from the ANOVA analyses.

Table 1. *Role of Degree Level in Determining Response Patterns*

Construct	<i>F</i> – value	<i>p</i>	η^2	Group Comparison	Difference	<i>p</i>
Research Self-Efficacy – Gen	15.470	< .001	.180	Ph. D. – M. Ed.	12.07	< .001
				Ph. D. – Ed. D.	- 8.54	Non
				Ed. D. – M. Ed.	20.61	< .001
Research Self-Efficacy – Quant	20.859	< .001	.228	Ph. D. – M. Ed.	13.76	< .001
				Ph. D. – Ed. D.	- 18.60	< .01
				Ed. D. – M. Ed.	32.36	< .001
Research Self-Efficacy – Qual	0.984	Non	-	-	-	-
Research Mentor	2.678	Non	-	-	-	-
Research Training Environment	5.433	< .01	.072	Ph. D. – M. Ed.	0.22	< .005
				Ph. D. – Ed. D.	0.07	Non
				Ed. D. – M. Ed.	0.16	Non
Course Experience – Gen	0.985	Non	-	-	-	-
Course Experience – Quant	3.281	< .050	.044	Ph. D. – M. Ed.	- 0.22	< .05
				Ph. D. – Ed. D.	- 0.03	Non
				Ed. D. – M. Ed.	- 0.19	Non
Course Experience – Qual	0.527	Non	-	-	-	-
Research Experience	21.075	< .001	.230	Ph. D. – M. Ed.	6.04	< .001
				Ph. D. – Ed. D.	- 0.77	Non
				Ed. D. – M. Ed.	6.81	< .001
Face-to-Face Courses – Gen	2.393	Non	-	-	-	-
Face-to-Face Courses – Quant	36.845	< .001	.343	Ph. D. – M. Ed.	1.39	< .001
				Ph. D. – Ed. D.	- 0.05	Non
				Ed. D. – M. Ed.	1.44	< .001
Face-to-Face Courses – Qual	12.941	< .001	.155	Ph. D. – M. Ed.	0.54	< .001
				Ph. D. – Ed. D.	0.05	Non
				Ed. D. – M. Ed.	0.49	< .050
Online Courses – Gen	3.185	< .050	.043	Ph. D. – M. Ed.	0.22	< .050
				Ph. D. – Ed. D.	0.17	Non
				Ed. D. – M. Ed.	0.05	Non
Online Courses – Quant	11.626	< .001	.142	Ph. D. – M. Ed.	0.47	< .001
				Ph. D. – Ed. D.	0.23	Non
				Ed. D. – M. Ed.	0.24	Non
Online Courses – Qual	9.369	< .001	.117	Ph. D. – M. Ed.	0.41	< .001
				Ph. D. – Ed. D.	0.22	Non
				Ed. D. – M. Ed.	0.19	Non

Research experience survey

Participants in this study had a mean score of 9.76 ($SD = 6.55$) on the Research Experience Survey. Participants' scores on the scale ranged from 0 to 22. Based on the descriptive analysis,

graduate students have more research experience in identifying a research problem that can be researched scientifically and writing a literature review about a particular research topic. On the other hand, graduate students have little research experience in analyzing qualitative data using a software program, implementing strategies to enhance the trustworthiness of a qualitative study, and conducting appropriate qualitative analysis to answer specific research questions.

Research training environment scale

Participants had a mean score of 79.94 ($SD = 9.22$) on the Research Training Environment Scale with total scores ranging from 55 to 114. The item-specific means ranged from 2.17 to 3.80 and suggest that graduate students' research training environment was from *moderately good to good*. The item-specific means suggest that graduate students mostly agreed with the following statements: (1) I get the impression from my training that, although a single study does not revolutionize thinking in the scientific community, such a study can contribute a useful piece to an unfolding body of knowledge ($M = 3.80, SD = .86$), (2) Students here are encouraged to at least begin thinking about one or more topics upon which they would like to conduct programmatic research ($M = 3.67, SD = .94$), and (3) My graduate program rarely acknowledges the scholarly achievements of the students ($M = 3.66, SD = 1.13$). On the other hand, graduate students mostly disagreed with the following statements: (1) Statistics courses here are taught in a way that is insensitive to students' level of development as researchers ($M = 2.17, SD = 1.58$), (2) Much of the research in which we become involved prior to the thesis is organized in a way that is highly anxiety provoking to students ($M = 2.81, SD = .88$), and (3) I have gotten the impression in my graduate training that my research work has to be of great value in the field to be worth anything ($M = 2.83, SD = .92$).

Mentor effectiveness scale

Participants in this study had a mean score of 63.97 ($SD = 6.42$) on the Mentor Effectiveness Scale. Participants' scores on the scale ranged from 12 to 72. The item-specific means ranged from 4.84 to 5.53 and suggest that graduate students' relationship with their mentors ranged from *good to very good*. The item-specific means suggest that graduate students agreed most with the following characteristics of their mentors: (1) demonstrating professional integrity ($M = 5.53, SD = .49$), (2) being accessible ($M = 5.47, SD = .71$), (3) motivating me to improve my work product ($M = 5.43, SD = .62$), (4) answering my questions satisfactorily ($M = 5.21, SD = .74$), and (5) challenging me to extend my abilities ($M = 5.22, SD = .72$).

Course experience questionnaire

Participants in this study had a mean score of 92.62 ($SD = 14.29$) on General Research Method courses, a mean score of 92.89 ($SD = 13.78$) in Quantitative Research Method courses, and a mean score of 98.63 ($SD = 13.58$) in Qualitative Method courses. Participants' scores on the scale ranged from 57 to 131 in GRM, from 53 to 127 in QTRM, and from 59 to 133 in QLRM. Graduate students found certain characteristics to be salient throughout their experiences, indicated by their levels of agreement.

For general research methods courses, they were predominantly in agreement that it was easy to know the standard of work that was expected ($M = 4.92, SD = 1.26$), I usually had a clear idea of the goals ($M = 4.49, SD = 1.25$), and the instructor made a real effort to effort to understand my difficulties ($M = 4.43, SD = 1.46$). For quantitative methods courses, graduate students were predominantly in agreement that it was easy to know the standard of work that was expected ($M = 4.93, SD = 1.07$), the instructor motivated me to do my best work ($M = 4.78, SD = 1.14$), and I usually had a clear idea of the goals ($M = 4.61, SD = 1.35$). For qualitative methods courses, graduate students were predominantly in agreement that the instructor made expectations clear

from the beginning of class ($M = 4.95$, $SD = 1.12$), the instructor normally gave me helpful feedback on how I was doing ($M = 4.86$, $SD = 1.25$), and my instructor was good at explaining things ($M = 4.76$, $SD = 1.23$).

Research coursework completion questionnaire

At the time of data collection, graduate students reported having completed 0 to 3 general research methods courses ($M = 0.49$, $SD = 0.66$), 0 to 5 quantitative research methods courses ($M = 0.89$, $SD = 1.27$), and 0 to 4 qualitative research methods courses ($M = 0.41$, $SD = 0.82$). The data suggests that there is a great variation in research courses taken by graduate students. Most research courses graduate students have taken are quantitative research courses. Graduate students reported taking fewer qualitative research courses, which might explain why graduate students do not have experience with qualitative research.

The Nature of Graduate Student Research Self-Efficacy Beliefs

Graduate students rated their general research self-efficacy from 0 to 968 ($M = 617.92$, $SD = 186.31$), quantitative research self-efficacy from 0 to 1246 ($M = 653.98$, $SD = 292.66$), and qualitative research self-efficacy from 0 to 740 ($M = 373.99$, $SD = 170.21$). To compare the results across the scales on the original 100-point scale, we calculated strength indexes (mean scores). Strength indexes ranged from 0 to 96.8 ($M = 61.79$, $SD = 18.63$) for GRSE, 0 to 95.85 ($M = 50.31$, $SD = 22.51$) for quantitative research self-efficacy, and 0 to 92.5 ($M = 46.75$, $SD = 21.28$) for qualitative research self-efficacy. The results suggest a wide range of self-efficacy beliefs for graduate students, ranging from no confidence to complete confidence. The data suggest that comparatively speaking, graduate students had moderately high self-efficacy beliefs in general research methods and were less confident in their abilities to engage in tasks related to quantitative and qualitative research methods. Table 2 summarizes the nature of graduate student self-efficacy beliefs by highlighting the items that received the highest and lowest self-efficacy appraisals for each of the scales.

Table 2. *Lowest and Highest Levels of Research Self-Efficacy*

	<u>Lowest Research Self-Efficacy</u>	<u>Highest Research Self-Efficacy</u>
General Research Methods	<ul style="list-style-type: none"> • Write a Human Subjects Proposal to obtain permission from the Institutional Review Board (IRB) to conduct your study. • Select an appropriate research design that will answer specific research questions. • Analyze data to provide answers to existing research questions. • Collect data using techniques that are suitable in answering research questions. • Write a research report documenting the findings of a research study. 	<ul style="list-style-type: none"> • Search an electronic database for existing literature about a particular research topic. • Write a literature review about a particular research topic. • Identify a research problem that can be researched scientifically • Write research questions for a study that you are designing. • Draw conclusions on the basis of the findings of a research study.
Quantitative Research Methods	<ul style="list-style-type: none"> • Perform an analysis to establish an instrument's reliability. • Conduct a statistical analysis (e.g. correlation, ANOVA) using a statistical software program (e.g. SPSS). 	<ul style="list-style-type: none"> • Select the appropriate sampling procedure to use in a quantitative study. • Locate resources that will help me interpret a printout containing the results of a statistical analysis."

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	<ul style="list-style-type: none">• Conduct a reliability analysis using a statistical software program (e.g. SPSS).• Use different statistical methods of data analysis (e.g. t-test, ANOVA) appropriate for hypothesis testing.• Implement strategies to enhance the accuracy of the conclusions that are drawn from the findings of a quantitative study.	<ul style="list-style-type: none">• Collect quantitative data using techniques that are suitable in answering research questions.”• Create a data file using a statistical software program (e.g. SPSS).”• Write a research report documenting the results of a quantitative study.
Qualitative Research Methods	<ul style="list-style-type: none">• Analyze qualitative data using a software program (e.g. NVivo, NUD*IST).• Implement strategies to enhance the trustworthiness of a qualitative study.• Conduct the appropriate qualitative analyses to answer specific research questions.• Implement the appropriate sampling procedure after data collection has begun in a qualitative study.	<ul style="list-style-type: none">• Write a research report documenting the findings of a qualitative study.• Select an appropriate qualitative research design to use in a study.• Implement the appropriate sampling procedure before collecting data in a qualitative study.• Collect data using techniques that are suitable in answering research questions within a qualitative study.

Predicting Graduate Student Research Self-Efficacy Beliefs

To better understand the role of research training environment and course experience variables in predicting graduate students research self-efficacy beliefs, three multiple regression analyses were conducted. For each analysis, the predictor variables were scored on the following measures: Research Experience Survey, Research Training Environment Scale, Mentor Effectiveness Scale, Course Experience Questionnaire, and Research Coursework Completion Questionnaire (i.e., number of research courses completed online or face-to-face). The criterion variable in each analysis was scores on the GRMSE, QnRSE, and QIRSE measures, respectively. For each analysis, a preliminary examination (e.g., casewise diagnostics, inspection of the normal probability plot and scatter plot) did not indicate any violations of the assumptions of multiple regression. In addition, correlation coefficients were computed to detect any variables that were highly correlated. The absence of highly correlated variables confirmed that multicollinearity was not a concern. A summary of each regression model is presented in Table 3 and described below.

The first multiple regression analysis conducted examined whether research training environments, research mentorship, research experience, course experiences, the number of general research methods courses taken online and face-to-face predicted graduate students' general research self-efficacy. Using a multiple regression model, a significant model emerged ($F(6, 142) = 24.15, p < .0001$), accounting for 51% of the variance in graduate students' general research self-efficacy. Within this model, research experience ($\beta = .56, p < .001$), research training environment ($\beta = .27, p < .001$), and research mentorship ($\beta = .15, p < .05$) made a significant contribution to the prediction of graduate students' general research self-efficacy. Failing to make significant contributions were course experience and the number of research courses taken online or face-to-face.

The second multiple regression analysis conducted examined whether research training environments, research mentorship, course experiences, the number of quantitative research methods courses taken online and face-to-face predicted graduate students' quantitative research self-efficacy. Using a simultaneous regression model, a significant model emerged ($F(6, 142) = 21.29, p < .0001$), accounting for 47% of graduate students' quantitative research self-efficacy.

Within this model, research experience ($\beta = .46, p < .001$), research training environment ($\beta = .21, p < .01$), and the number of face-to-face ($\beta = .13, p < .05$) and online courses taken ($\beta = .13, p < .05$) made a significant contribution to the prediction of graduate students' quantitative research self-efficacy. Failing to make significant contributions were research mentorship and course experience.

The third multiple regression analysis conducted examined whether research training environments, research mentorship, course experiences, the number of qualitative research methods courses taken online and face-to-face predicted graduate students' qualitative research self-efficacy. Using a simultaneous regression model, a significant model emerged ($F(6, 142) = 10.30, p < .0001$), accounting for 30% of graduate students' qualitative research self-efficacy. Within this model, research experience ($\beta = .40, p < .001$), the number of online ($\beta = -.18, p < .05$) and face-to-face courses taken ($\beta = .17, p < .05$) made a significant contribution to the prediction of graduate students' qualitative research self-efficacy. Failing to make significant contributions were research training environment, research mentorship, and course experience.

Table 3. *Predictors of Graduate Student General, Quantitative, and Qualitative Research Self-Efficacy*

Variable	Standardized β Weights by Model		
	GRMSE	QnRSE	QIRSE
Constant			
Research experience	0.56***	0.46***	0.40***
Research training environment	0.27***	0.21**	0.14
Research mentor	0.15*	0.11	0.10
Course experience	-0.07	0.04	0.07
Number of Online courses	0.05	0.13*	-0.18*
Number of Face-to-face courses	-0.02	0.13*	0.17*
R ²	0.51	0.47	0.30
F	24.15***	21.29***	10.30***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Discussion

In this study we sought to add to the knowledge base surrounding graduate students' research self-efficacy beliefs and their experiences with research teams, coursework, research training, and mentorship. We approached this objective by examining the nature of graduate students' research self-efficacy beliefs for general, quantitative, and qualitative research methods. We further examined the influence of different aspects of graduate education on students' research self-efficacy beliefs. Employing descriptive and inferential techniques, we were not only able to represent the self-efficacy beliefs of graduate students to engage in a variety of research methods, but we were also able to determine which aspects of their graduate education, including research training and coursework, had the largest influence on those beliefs.

In answering the research questions, interesting findings emerged. From the examination of research self-efficacy beliefs, self-efficacy indices (SI) suggested that the sample of graduate students was comprised of individuals with widely diverse beliefs about their ability to succeed in

research and the experiences that ultimately helped to develop those beliefs. When observing students' self-efficacy appraisals across the different research methods, trends suggested that research self-efficacy beliefs tended to decline from general research methods ($SI = 61.79$) to more specific techniques in quantitative ($SI = 50.31$) and qualitative methods ($SI = 46.75$). More specifically regarding research self-efficacy beliefs, while there was wide variability within different groups of students from different levels of study (e.g., M. Ed., Ed. D., and Ph. D.), there were meaningful differences between these groups. In fact, for quantitative and general research methods, Doctoral students were more likely to have higher self-efficacy appraisals than their peers in the masters' programs. Additionally, Ed. D. students tended to have higher research self-efficacy appraisals than their Ph. D. peers. While these higher appraisals may be due to the higher confidence associated with a professionally employed student (e.g., principals, teachers, administrators), it is also possible that these higher appraisals do not match their skills.

The mismatch in self-efficacy appraisal and skill level has been a commonly investigated problem in self-efficacy research known as miscalibration (Bandura, 1997). Individual's appraisals of ability (as measured through self-efficacy beliefs) are likely to be miscalibrated when they are not fully aware of the necessary prerequisites for success in a given task, which can be brought on by a lack of lived or observed experience and inappropriate feedback regarding those experiences (Bandura, 1997; Schunk & Pajares, 2009). While we were unable to account for the appraisal differences between Ed. D. and Ph. D. students, future research should aim to determine if Ed. D. students maintain higher appraisals for research self-efficacy beliefs and if these beliefs are calibrated with their abilities or if they are, indeed, misaligned.

The diversity in our sample not only prompted differential response patterns for research self-efficacy beliefs, but they also revealed differences in responses to the independent variables. More specifically, doctoral students reported more online and face-to-face research courses, more research experiences, and higher appraisals of the research-training environment. Given the nature of doctoral programs, these reported differences were not unexpected. However, even in the face of differential response patterns, these independent variables still predicted research self-efficacy beliefs for general, quantitative, and qualitative research methods. Given prior research in the field that has examined these predictors independently and on a single, combined form of research self-efficacy, being able to disaggregate the effects of these predictors, together and contextually relevant, on self-efficacy beliefs for general, quantitative, and qualitative research methods build upon prior research.

Results from our analyses suggested that self-efficacy beliefs for general, quantitative, and qualitative research methods shared unique predictive relationships with the independent variables. The only variable to share a common predictive trend was the research-training environment, which suggested a positive increase in self-efficacy beliefs for students who believed their training environment supported and promoted research and independence. Additionally, students who maintained that their research mentor was available to support and provide guidance for personal and shared projects were more likely to have higher self-efficacy beliefs for general research methods. This was not necessarily the case for self-efficacy beliefs for quantitative and qualitative research methods. Instead, students that completed more online and face-to-face quantitative research methods courses were more likely to report higher self-efficacy beliefs for methods associated with quantitative research. The number of completed research methods courses had mixed effects for self-efficacy beliefs in quantitative research. More specifically, students that completed more face-to-face courses were more likely to have higher self-efficacy beliefs; however, students that completed more online courses were more likely to have lower self-efficacy beliefs. This negative association warrants further investigation in future research endeavors.

Limitations

Our study is not without limitations. In the administration of our questionnaires, participation was limited only to those courses whose instructors would allow us to enter and collect data. While our sample size was sufficient for the research questions and analyses, our data collection was biased toward quantitative research methods courses, as they tended to have larger enrollment numbers and, by way of course catalog, have more variety and sections than qualitative research methods courses. Being able to target and collect data from online courses would not have only increased the overall sample size, but might have also allowed us to collect more information from participants in online qualitative research courses that could have helped to better understand why their traditional on-campus peers suggested these online environments were detrimental to their self-efficacy beliefs in qualitative research methods.

A limitation of our analyses and generalizations is that this study's inferential techniques were correlational in nature. While the relationships were based upon a sound framework as proposed in Bandura's (1986) social cognitive theory and Lent and colleagues (1994) social cognitive career theory, generalizing and suggesting causality can be quite limited. Controlling the experiences of graduate students and tracking their self-efficacy beliefs from entry until graduation would provide stronger evidence for the causal nature of these lived and observed experiences. Additionally, without asking the graduate students about their research self-efficacy beliefs we are left to analyze them at face value (Wyatt, 2012). Future studies should incorporate a qualitative phase to give students the opportunity to explain their appraisals and the extent to which the hypothesized predictors influenced their self-efficacy beliefs. This approach as this has had success in other areas of self-efficacy research (Siwatu, Chesnut, Young, & Alejandro, 2015).

Finally, due to issues of class selection and sampling, students from different levels of study from within the college of education and across the university were participants in our study. While we were able to obtain a wide range of graduate students, it has been well documented in this study that the responses to the questionnaires exhibited patterns based upon different groupings. While we were only able to examine the level of degree (e.g., M. Ed., Ed. D., and Ph. D.), it is possible that students from different departments and colleges within the university might have responded differentially. Future studies should aim to increase the sample size and reinvestigate whether differences in research self-efficacy exist within and between levels of study and departments. For example, do traditional students in an educational psychology program report higher self-efficacy beliefs than their peers in the counseling psychology program?

Implications

Based upon Bandura's (1994) social cognitive theory and Lent and colleagues (1994) social cognitive career theory, the likelihood for graduate students to engage in research is influenced by personal interest, environmental constraints, self-efficacy beliefs, and outcome expectations. As graduate students, many hold high interest in engaging in research in their future careers. Others, however, may still be unaware of their future career endeavors or envision a career as an educational practitioner where they do not believe research will be a pivotal component. From this study, we found that graduate students research self-efficacy beliefs are a function of the opportunities afforded to them through coursework, research teams and mentors, and the support that faculty provide to help break down barriers to students being able to gain knowledge and develop the confidence necessary to be successful in future research engagements. With this knowledge, we propose a few ways this information can benefit graduate student education.

In the examination of the predictors of research self-efficacy, personal research experiences proved to be the most influential. As expected by theories on self-efficacy development (Bandura, 1977, 1997), enactive (i.e., lived) experiences provide the strongest source of information

upon which individuals make appraisals about their abilities. Providing opportunities in class and in research projects to work with more advanced researchers (faculty and graduate students), graduate students can gain the exposure and experience necessary to test their knowledge of quantitative and qualitative research methods while interpreting their successes and failures with a more accurate measurement device (e.g., a more knowledgeable other).

Research mentorship, while a positive predictor of all research self-efficacy, was only significant in predicting self-efficacy beliefs for general research techniques. While prior research has suggested this association in relative isolation (e.g., Hollingsworth & Fassinger, 2002), it is important to recognize that even in the presence of many other predictors research mentorship can provide the experiences and appropriate feedback necessary to build the skills and knowledge that will help students move from periphery participation to more autonomous roles (Lave & Wenger, 1991). While not every graduate student will have access to a faculty advisor or mentor, the mentorship and support provided by other faculty members in the pursuit of a degree provides graduate students with a venue for practice and constructive feedback. By strengthening graduate student-faculty relationships, more opportunities arise for aspiring researchers to learn the general practices and procedures for conducting a study. This, in turn, increases graduate students' confidence to conduct research autonomously in the future.

Future Research

Future studies investigating the sources of graduate students' self-efficacy beliefs should look into the construction of face-to-face and online research methods courses and the influence that these media have on the encoding and interpretation of research experiences. For example, our study found that online courses negatively influenced graduate students' research self-efficacy beliefs to utilize qualitative research techniques. What is it about the nature of qualitative research methods, as taught in an online environment, that lead graduate students to doubt their abilities? Issues regarding the effectiveness of online qualitative research methods courses and their development need to be further examined.

Additionally, future research should further investigate the rationales and sources of information guide graduate students' appraisals of their research self-efficacy beliefs. According to Wyatt (2012) and Klassen, Tze, Betts, and Gordon (2011), the sole use of measures to interpret and draw implications for self-efficacy beliefs requires many assumptions, some of which may be incorrect. Because of this, we need to further explore the participants' perceptions of their research abilities and the sources of information that helped to inform them.

Conclusion

In conclusion, the experiences necessary to develop graduate student research self-efficacy is something that graduate programs need to focus on if they are to graduate individuals who are both competent and confident to engage in original and groundbreaking research when they transition into research careers. For interests to blossom in a profession dedicated to research, the graduate environment needs to expose students to the types of mastery, vicarious, and persuasive experiences that can facilitate powerful self-efficacy beliefs and positive outcome expectations (Brown & Lent, 2006).

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Cite as: Flynn, M., Carter, M., Alford, J., Hughes, H., Fox, J., & Duke, J. (2015). Crossing international boundaries through doctoral partnerships: Learnings from a Chinese-Australian forum. *International Journal of Doctoral Studies*, 10, 418-438. Retrieved from <http://ijds.org/Volume10/IJDSv10p418-438Flynn0916.pdf>

Crossing International Boundaries through Doctoral Partnerships: Learnings from a Chinese-Australian Forum

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Abstract

International forums for doctoral students offer a fertile context for developing strategic partnerships between higher education institutions, as well as for building the intercultural capacity of early career academics. However, there is limited research investigating the benefits of international doctoral forum partnerships. This paper presents learnings from a recent international doctoral forum held in Beijing, China and

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attended by doctoral students and academics from Beijing Normal University (China) and Queensland University of Technology (Australia). Drawing on qualitative case study method and a model of boundary crossing mechanisms, we identify the beneficial outcomes of the forum. We describe how the forum arose from a strong ongoing partnership between the Education Fac-

Editor: Nicole Buzzetto-More

Submitted: October 29, 2014; Revised: June 1, 2015; Accepted September 17, 2015

ulties of Beijing Normal University and Queensland University of Technology. We then identify how, at the institutional and individual level, international doctoral forum participants can be challenged and benefit in four areas: collaboration, intercultural capacity, academic enhancement and program development. Implications for engaging successfully in international doctoral forum partnerships are also discussed.

Keywords: Australia, China, international, doctoral forum, boundary crossing, collaboration, university, case study

Introduction

International doctoral forums offer partnership building opportunities for universities and their emergent researchers. For participants, international doctoral forums involve various forms of boundary crossing, including physical, intellectual, inter-personal and inter-cultural. This process can be both challenging and beneficial.

International collaboration across education spaces, including higher degree research, is generating considerable interest globally for its capacity-building potential. For the Australian government, educational engagement with other countries in Asia and the Indo Pacific region is a key priority. For example, a recent government initiative, entitled ‘The New Colombo Plan’ (<http://dfat.gov.au/people-to-people/new-colombo-plan/pages/new-colombo-plan.aspx>), encourages Australian university students to spend part of their time studying at universities in Asia and the Pacific.

In the past decade, many Australian universities have developed formal partnerships with educational institutions in the People’s Republic of China. These partnerships present challenges – and opportunities – to ensure the educational success of such programs, whilst engaging with the local Chinese context. A similar challenge for the Chinese partner institutions is how to incorporate Western approaches and apply them to the Chinese context while maintaining Chinese cultural identity (Yang & Silver, 2011). A substantial body of literature exists on globalization in higher education exploring competition, economic and political forces, market steering, trans-national education and knowledge transfer (Altbach & Knight, 2006; Oplatka & Hemsley-Brown, 2010), and internationalization of higher education, which is often discussed in relation to physical mobility, academic cooperation, intercultural dimensions of teaching and research, and international education (Childress, 2009; Knobel, Simoes & Henrique de Brito Cruz, 2013). However, there is a lack of knowledge or literature that considers the nature and benefits of international doctoral forum partnerships in general and, in particular, from an individual and an institutional perspective. Responding to this research gap, this case study explores participants’ experience of a recent international doctoral forum involving students from an Australian University, Queensland University of Technology (QUT) and a Chinese University, Beijing Normal University (BNU). This case was unique as the doctoral forum’s expressed purpose was to enable purposeful and sustained collaboration between students. This contrasted with most doctoral forums that are conducted during larger discipline conferences where time is given for students to hear about each other’s research. In addition to sharing research, this case included a collaborative writing task, demonstrating sustained “collectivity and connectivity” that is an important coping mechanism for doctoral students within and beyond the forum (Byers et. al, 2014, p. 126). The study addressed two exploratory research questions:

1. What boundaries do participants cross when engaging in an international doctoral forum?
2. What benefits does an international doctoral forum partnerships produce for participants and their universities?

In answering these questions, we adopted Akkerman and Bakker's (2011) four boundary crossing mechanisms as a theoretical framework to provide a basis for a qualitative case study of the QUT-BNU doctoral forum conducted in Beijing in 2013.

In this paper, we begin by outlining the international doctoral forum partnership established between BNU and QUT. This is followed by a brief literature review that discusses the boundary crossing model that frames this study and the intercultural learning dimension that is essential to successful collaboration within international higher education. We then present the methodology used and the study's findings. We conclude with a discussion of key implications for future international doctoral forums.

Forum Background

Since 2007, the Faculties of Education at both the QUT and BNU have cooperated in organizing an annual doctoral forum that is hosted in alternate years in Brisbane, Australia and Beijing, China. Over these seven years a relationship has been built at the individual and institutional level. Foundations have been laid for ongoing academic dialogue and long-term collegial relationships and research partnerships between the universities. As an indication of the increasing potential of the partnership, the 2012 forum achieved a publication co-authored by all Australian and Chinese participants (Mu et al., 2013). The 2013 forum advanced this collaborative tradition with the development of two publications, this case study and a Bourdieusian analysis of relationships within the forum (Mu et al., in press).

Crossing Boundaries: Conceptual Frame

The concept 'boundary crossing' involves traversing the gap between two disparate organizations such as a Chinese and an Australian university. Boundary crossing was characterized by Engeström, Engeström, and Kärkkäinen (1995) as "horizontal expertise where practitioners must move across boundaries to seek and give help, to find information and tools wherever they happen to be available" (p. 332). Thus, boundary crossing is a means for partner organizations to interact and improve compatibility for functioning in the other setting (Akkerman & Bakker, 2011; Star & Griesemer, 1989). A shared vision is established and mutual benefits for the partnership are identified (Billet, 2002; Billet, Ovens, Clemans, & Seddon, 2007; Lave & Wenger, 1991; Pillay, Watters, & Hoff, 2013).

As a concept, boundary crossing has been applied broadly to educational research projects: for instance, in (a) organizational systems and structures of universities and associated work-integrated learning programs (Kjellen, 2010); (b) teaching out-of-field when teachers are not qualified to teach, for example, mathematics (Hobbs, 2012); (c) career change professionals entering the teaching workforce (Watters & Diezmann, 2012); and (d) industry-school partnerships (Flynn, Pillay, & Watters, 2014). The notion of boundary crossing is particularly relevant to this study as the primary purpose of international doctoral forum partnerships is to facilitate doctoral student professional development, with outcomes such as co-produced publications, intercultural competence and compatibility for future international academic work.

Morse's (2010) research on how partnerships create public benefit formed through collaboration across jurisdictional boundaries is useful in unpacking the concept of boundary crossing for international doctoral forums. Stakeholder organizations, such as universities, are described as structural catalysts that enable collaboration and the formation of partnerships. They have the capacity to hasten change by facilitating connections between potential partners. They also enable the convergence of multiple perspectives because of their pre-existing connections. For instance, in the context of the present paper, the BNU-QUT doctoral forum partnership is potentially a structural catalyst for other initiatives between QUT and BNU.

Common characteristics associated with an organization's boundary crossing processes include "accountability to both sides of the boundary; the use of boundary objects such as maps, reports, and forecasts that are co-produced by actors on different sides of the boundary; participation across boundary; convening; translation; coordination and complementary expertise; and mediation" (Cash et al., 2006, pp. 8-9). These characteristics are grouped into two domains, strategic and operational. For example, a partnership between two universities can be clarified and formalized in a memorandum of understanding – a strategic boundary crossing characteristic. An example of an operational boundary crossing characteristic is the convening of meetings between project managers of the respective universities.

Whilst Cash et al., (2006) detailed strategic and operational characteristics, they have not elaborated on how they manifest as processes across organizational boundaries. However, Akkerman and Bakker (2011), through an extensive literature review, identified four boundary crossing mechanisms that address matters of process: Identification, Coordination, Reflection and Transformation (see Figure 1).

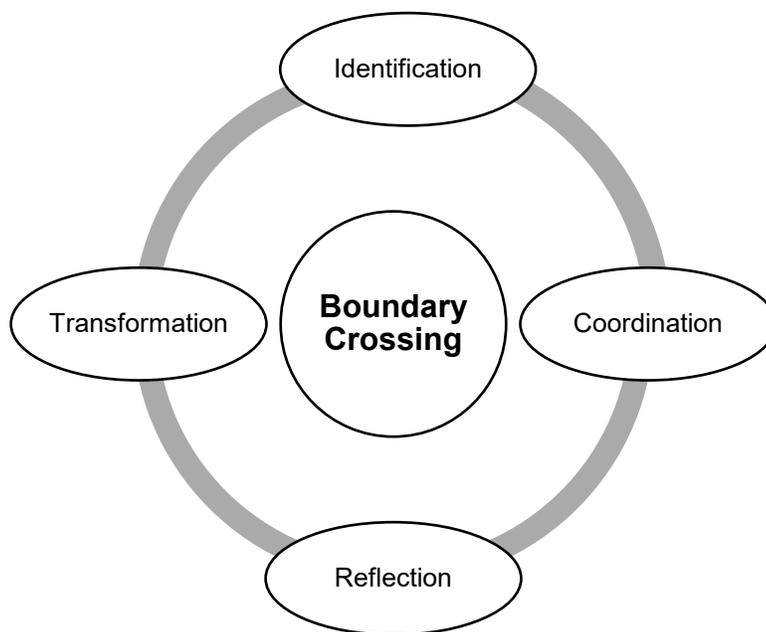


Figure 1. Four boundary crossing mechanisms (Akkerman & Bakker, 2011).

Akkerman and Bakker's four boundary crossing mechanisms can be explained as follows.

Identification

This is a process of delineating the differences and similarities between two partners. Basic questions are asked of partners, such as "Who are you?", "What do you do?", and "How do you contribute to the partnership?" With regard to the international doctoral forum partnership, learning about the specific activities in both universities (BNU-QUT) is important at the individual and institutional level. For instance, a doctoral student would benefit from identifying and assessing their personal intercultural capacity prior to participating in an international doctoral forum. At the institutional level, there needs to be an appreciation of the aims and objectives of the respective participating universities.

Coordination

This is where repeated interactions between the partners facilitate the permeation of boundaries between them. In the context of an international doctoral forum, repeated coordinating interactions can occur between participating universities through the exchange of information, for instance, the coordination of travel and accommodation arrangements, the establishment of the doctoral forum agenda, and the co-production of papers for journal publication. Clearly articulating the activities and constraints of both partners advances the international doctoral forum partnership.

Reflection

The Akkerman and Bakker (2011) model includes reflection as an element to facilitate participants' "coming to realize and explicate differences between practices and thus to learn something new about their own and other's practices" (p. 145). For an international doctoral forum, the reflective process is clearly an important element in the course of boundary crossing to expand perspectives and potentially enrich the development of the participants. However, while Akkerman and Bakker (2011) state that "the explication and visibility of perspectives" (p. 151) is necessary, they do not provide details of how this reflective work might be carried out. Therefore, we adopted a four step reflective writing procedure developed from the work of Bain, Ballantyne, Mills, and Lester (2002). According to Ryan (2011), the levels in this model "increase in complexity and move from description of, and personal response to, an issue or situation; to the use of theory and experience to explain, interrogate, and ultimately transform practice" (p. 3). A purposeful procedure such as this enables all participants to reflect individually and deeply, and is underpinned by a view of knowledge as transformative rather than transmissive (Ryan, 2011).

Transformation

Finally, transformation occurs progressively as an outcome of the other boundary crossing mechanisms. That is, as a participant identifies activities, establishes systems to coordinate activities, and reflects on the perspectives of the other participants, there will likely be genuine transformation or some change in current practices that leads to improved partnership outcomes. For an international doctoral forum partnership, that might involve changing the forum approach from less emphasis on formal presentations to a focus on critical discussion and collaborative writing.

The authors have adopted Akkerman and Bakker's (2011) boundary crossing mechanisms as framework for responding to the research questions by exploring international doctoral forum partnerships and how mechanisms were conceptualized for this case study of the BNU-QUT international doctoral forum.

The Intercultural Dimension

Intercultural understanding is essential to any successful international engagement, including international doctoral forum partnerships. Higher education promotes intercultural understanding as a measure of university graduate capability (Leask, 2002; Stone, 2006). Various conceptualizations of intercultural understanding are evident in the literature, for example, "intercultural competence" (Crichton & Scarino, 2007) and "intercultural literacy" (Heyward, 2002) but these do not always align. It is an abstract concept that requires definition in order to determine whether it has been attained; however, there is some disagreement on that definition (Deardorff, 2006). For the purpose of this study, a broad view of intercultural understanding was adopted: "the abilities to behave and communicate effectively and appropriately in multicultural contexts" (Deardorff, 2006, p. 247). This is an ongoing process, involving interpretation, negotiation, and the ability to self-reflect, leading to transformation of knowledge, attitudes, and skills towards cultural differ-

ence. Fluency in a common language is central to this process, as it provides the principal tool for interaction and communication (Deardorff, 2006). In addition, Hunter, White, & Godley (2006) suggest that a key indicator is being open-minded when seeking to understand others' cultural practices and expectations, "leveraging this gained knowledge to interact, communicate and work effectively outside one's environment" (pp. 130-131). Of particular relevance to this paper is Leask's (2002) assertion that developing international perspectives among higher education students is dependent on alignment between projected graduate qualities and teaching and learning opportunities provided for students. The BNU-QUT doctoral forum provided such opportunity, and this paper reports on the intercultural capacity outcomes of the doctoral forum held in 2013.

Context: 2013 BNU-QUT forum and participants

The 2013 BNU-QUT forum was hosted by the Education Faculty of Beijing Normal University. It comprised twelve participants (summarized in Table 1) with an equal number from BNU and QUT. All the doctoral students were undertaking PhDs. Both groups were led by an academic staff member, who collaboratively liaised with faculty leadership, oversaw the organization of the whole forum, and acted as student mentors. The intense ten day program included formal presentations, workshops, two formal dinners, many other shared meals, and visits to local schools and cultural sites. The program ensured sustained close interaction between all forum members. Formal sessions and social exchanges were conducted in English. The Chinese students acted as guides and interpreters for the Australians in negotiating the culturally less familiar environment of Beijing.

Table 1. Overview of BNU-QUT forum participants

	QUT	BNU
Academic status	6 forum members: <ul style="list-style-type: none"> • 2 academic mentors (including the QUT group leader) • 4 doctoral students 	6 forum members: <ul style="list-style-type: none"> • 1 academic mentor (BNU group leader) • 5 doctoral students
Age range	35-60	26-40
Gender	5 female 1 male (doctoral student)	5 female 1 male (academic mentor)

A third QUT academic, who was in Beijing at the time of the forum for other purposes, was involved in some sessions of the doctoral forum but did not participate in this research.

Methodology

Given the exploratory nature of the research questions, a case study design was selected. Case studies apply ethnographic methods to the study of particular phenomena (Hammersley & Atkinson, 2007). This section provides details of the methods used and the limitations of the study.

Methods

This qualitative case study (Simons, 2009; Stake, 1995) investigated the nature and outcomes of the 2013 QUT-Beijing Normal University doctoral forum, which comprised nine doctoral students and three supervising academics. In particular it sought insights about the boundaries that participants crossed when engaging in the BNU-QUT forum and indications of the benefits for participants and their universities.

The research was designed and conducted by the six Australian members of the doctoral forum. We sought to explore real life experiences of the international doctoral forum from the participants' varied perspectives (Denzin & Lincoln, 2005). The qualitative case study approach enabled us to explore the "complexity and uniqueness" of the participants' experience (Simons, 2009, p. 21). As co-researchers and forum participants we engaged in a reflective research process, documented multiple perspectives, and represented our differing interests and values (Simons, 2009, p. 23).

Prior to the forum, the QUT researchers designed the study, gained ethical clearance, and sent information to BNU counterparts. As all twelve forum members consented, the research participants included nine doctoral students (five from BNU and four from QUT) and three academics (one from BNU and two QUT). We collected data from two documentary sources, a questionnaire and free-text responses. This four-way data triangulation captured multiple perspectives on the forum. The documentary sources were an email from the Research Manager of the Office of Education Research at QUT outlining QUT's objectives in participating in the forum and information about the organization of the doctoral forum from the official program. The twelve participants completed the questionnaire on the last day of the forum. It sought their views about the nature of their boundary crossing and benefits of the forum to their university. A copy of the questionnaire is provided in the Appendix. The written responses were QUT participants' feedback to their university on return to Australia.

Analysis of the documentary, questionnaire, and feedback data followed a similar pattern. In line with the research questions, the focus was on (a) identifying the boundaries that the participants crossed when engaging in the international doctoral forum and (b) what benefits the forum produced for the participants and their two universities. We applied standard qualitative thematic analysis methods (Saldana, 2013). First, two researchers undertook a priori coding supported by meaningful journalistic notes (Layder, 1998). On completion, the coding was independently reviewed and verified by a third researcher. We then collaboratively reviewed the coded data to identify similarities and differences, gradually sorting it into broad thematic categories (summarized in Table 2). To identify and interpret the wider implications for international doctoral forum partnerships, the key themes were aligned progressively with the four boundary crossing mechanisms discussed previously (Akkerman & Bakker, 2011).

Table 2. Thematic categories.

Title	Frequency
Boundaries	49
Pre, during and post forum collaboration	41
Program development and management	40
Intercultural capacity	30
Scholarly knowledge sharing and building	23
Resources	23
Roles and responsibilities	20
Innovation	15
Academic writing process and product	11
University aims and objectives	7
Impact of forum on individual academic trajectory	6
Merit-based selection process	4

The systematic analysis revealed four ways in which the BNU-QUT doctoral forum participants crossed boundaries and four associated benefits. These findings are outlined in the following case study report.

Limitations

A small-scale exploratory study such as this has limitations. The findings are intended to be indicative rather than generalizable. Given the relatively small participant group, statistical analysis was not appropriate. Although the BNU-QUT doctoral forum partnership has existed since 2007, this study only considers the 2013 forum. Further, as the researchers are all from QUT and have an Australian viewpoint, the findings may not fully represent the experience of their Chinese counterparts. However, the findings draw upon data that reflect the first-hand perspectives of both the QUT and BNU participants. Thus, the case study offers productive insights that increase understanding about the potential benefits of international doctoral forums, provides recommendations for developing future partnerships between universities, and lays the foundation for future research about the experiences and outcomes of future international doctoral forum partnerships.

Findings

In the context of the two exploratory research questions about international doctoral forums that focus on the boundaries the participants crossed and the benefits of such a forum for individuals and universities, this section presents the key findings of the case study of the 2013 BNU-QUT doctoral forum. Extracts from questionnaire responses in this section are assigned codes, a 'B' for BNU or a 'Q' for QUT, and a number representing a specific question from the questionnaire (for example, 'Q3' or 'B2').

Boundaries

The participants identified a variety of boundaries encountered in the BNU-QUT doctoral forum. The questionnaire was developed from the four boundary crossing mechanisms, and asked two specific questions about the types of boundaries crossed during the forum. As expected, the participants identified several boundaries each, 49 in total. These boundaries were distilled into five types, namely, political, academic, educational systems, cultural, and geographical. A number of barriers, approximately half of which were cultural, were identified by both QUT and BNU students. For example, feedback from two QUT students after the forum highlighted the need for greater understanding about cultural Confucian philosophies and values and how they underpin education. Another QUT student experienced a barrier in "becoming familiar with the Chinese way of doing things" (Q5).

All of the BNU students commented on the English language challenges they faced during the forum when listening, speaking and writing. Participant B6 stated "at the beginning of the forum I felt shy to speak English and couldn't remember more words". She also commented "I am crossing boundaries in language...", suggesting that they were leveraging their growing knowledge (Hunter et al., 2006) of seminar practices in Standard Australian English in order to interact effectively. There were times, however, when this was too big a challenge: "Language, I can't understand what they are speaking totally, about 50% is missed" (B6). Feedback from a QUT student after the forum recommended that some Chinese language lessons be offered to the participants prior to departure to provide some foundational knowledge of the Chinese language.

Benefits

The responses of the participants showed that the BNU-QUT doctoral forum produced four major benefits associated with international collaboration, intercultural understanding, academic capaci-

ty, and doctoral program development (see Figure 2). These findings align with the boundary crossing mechanisms, presented earlier in this paper, and apply at the individual and institutional level.

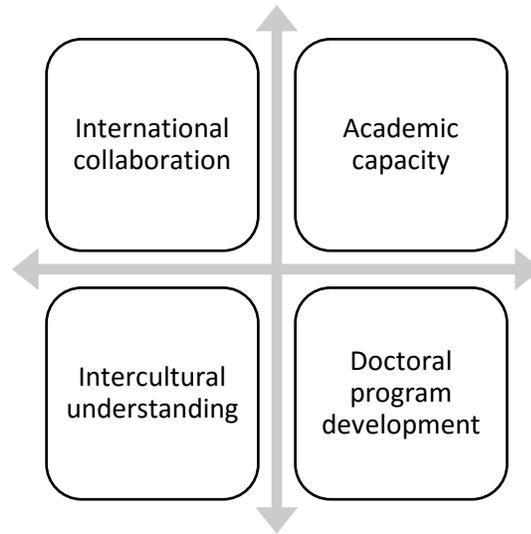


Figure 2. Four major benefits of the BNU-QUT doctoral forum

International collaboration

Of the four benefits in Figure 2, collaboration was found to be most dominant (mentioned 41 times in questionnaire responses). This finding applied to both the institutional and individual levels of the partnership. For instance, when asked about their university's expectations from the forum, participants frequently mentioned collaborative practices:

My university expects me to strengthen the mutual relationship and sincere friendship already established (B1).

My university expects me to build partnerships with international colleagues (Q1).

Feedback from all QUT participants after the forum indicated that a significant highlight of the week-long collaboration was the building of relationships. One comment indicated the new relationships established with students will be long term: "I have developed a great respect for the group and found common interests with each member...theirs was true collegial support."

At the individual level, the data were equally compelling. The majority of responses to a question about the types of boundaries participants crossed during the forum were also indicative of collaboration benefits. For instance:

I have personally established friendships with Chinese students and staff and closer bonds with QUT colleagues (Q5).

I crossed the friendship boundary, making lots of good friends (B5).

Collaboration was often assisted by the participants' reflections, particularly clarifying similarities and differences between BNU-QUT, and in learning something new about their own and other's practices. Reflection on the forum went beyond personal observation of an issue or situation. For instance, one participant described how the forum experience helped them to understand similarities between BNU and QUT: "Both universities want to extend higher degree research

student experience and create collaborative opportunities to build international partnerships” (Q9).

The opportunity for collaborative writing that sustained the connection between the universities was another important benefit to arise through the BNU-QUT doctoral forum. This was especially significant for the Chinese students, for whom publication in an English language journal is a major academic achievement in itself. This brings their work to a wider international audience, thus crossing further cultural and academic boundaries. Moreover, the Australian cohort benefitted from their experience as members of a cross cultural writing and editing team. The doctoral forum resulted in the development of two papers for future publication: a paper about negotiating power relations in an international doctoral forum jointly prepared by all of the QUT and BNU forum participants, planned at the forum and drafted collaboratively after the forum (Mu et al., in press); and this paper prepared after the doctoral forum by the QUT participants.

Intercultural understanding

Participation in the BNU-QUT forum was found to be an ideal context for developing intercultural capacity. This finding was distinguishable as a patterned response within the dataset. To demonstrate, Figure 3 presents eight representative extracts from a total of thirty responses. The development of intercultural awareness and communication skills was evident at both the individual and institutional levels, although the former was more prevalent. Enhanced individual intercultural capacity arguably benefitted both universities. For instance, the acquisition of individual intercultural capacity by doctoral students enabled international activities of value to both institutions, such as collaborative research projects.

My intercultural capabilities have been strengthened (Q1)	Doctoral forum helped me to understand cultural and language difference (B9)	My university expects me to form relationship with English speakers (B1)
It’s been challenging to adapt to unfamiliar ways of doing things (B6)	Intercultural benefits	Both universities contribute differences in thought, academic and cultural (Q3)
I am crossing boundaries in language, food and customs (Q3)	I’ve learn’t [sic] about international understanding, we should respect each culture (B8)	I have become more familiar with the Chinese way of doing things (Q5)

Figure 3. Representative responses on Intercultural Capacity

In practice, the BNU-QUT doctoral forum participants developed intercultural understanding by identifying shared similarities and differences across many areas. For instance, they came to realize that within their doctoral programs in education, the Chinese students typically undertake more quantitative course work, where the Australian students tend to place greater emphasis on theoretical conceptualization.

Reflecting in this way on culturally-related similarities and differences was seen to be beneficial in enabling doctoral students’ practice in unfamiliar settings. For example, participants were able to develop new ideas about the transformation of existing or future practice, including a suggestion to establish an “international office, further internationalizing the curriculum, joint projects, study exchanges, showcasing international teaching and learning practice, more international travel for higher degree students, an international summer school program and the promotion of cross-cultural communication and teaching practices” (Q11).

Academic capacity

This study found that the BNU-QUT forum contributed to the objective of developing academic capacity in doctoral students, with 34 responses identifying this benefit. It was most evident in two activities: (a) academic writing tasks (n=11); and (b) scholarly knowledge sharing (n=23). At the institutional level, QUT and BNU provided support for the development of academic capacity in forum participants. For example, a QUT student stated, “My university contributed academic support to the international doctoral forum partnership in terms of knowledge, advice and research presentations by professors and lecturing staff” (Q3). Similarly, a BNU student revealed, “My University encourages PhD candidates to this forum to improve the internationalization of the university and enhance mutual academic communication” (B1). University goals were achieved through the forum, as most students formed academic partnerships, “I’m crossing academic boundaries, establishing research partnerships with BNU colleagues” (Q5). Similarly, BNU students also emphasized how they were benefitting academically through the partnership, “QUT PhD students are different from me because they have more working experiences than those from BNU, therefore shared more knowledge gained from work. Very interesting, I really appreciate that” (B2).

The forum was also a structural catalyst for the academic staff members to cross international boundaries and, thereby, pursue academic activities. In addition to their leadership and mentoring role, they were afforded opportunities to form their own academic partnerships and strengthen existing relationships between the two universities. For instance, one QUT academic, a librarian, formed a new research partnership with a BNU academic librarian. That partnership has since grown into a cross-institutional research project that investigates international students’ experiences of the libraries at QUT, BNU, and a university in USA.

Doctoral program development

Questionnaire responses provided insights about development of the doctoral forum related to the following: (a) achievement of university aims and objectives; (b) the forum program structure; (c) risk management; and (d) basic project coordination of pre- and during forum program activities. Evidently, QUT and BNU participants received similar information prior to the forum about the program activities. For example, both universities spent considerable effort promoting the forum and selecting suitable participants to attend the forum. Aspiring QUT and BNU students and academics addressed similar criteria on the following: knowledge and experience with other cultures; engagement in university/professional communities; benefits derived from participating in the forum; benefits to QUT/BNU; a relevant topic for a presentation at the forum; and evidence of publications and scholarly presentations at conferences. Prior to the forum, there were considerable operational activities to support participants’ boundary crossing, including “disseminating information packs to participants, forum program, maps, travel tips and health and safety information” (Q4). This type of information is what Star and Griesemer (1989) call boundary objects. Boundary objects are particularly helpful in facilitating boundary crossing and are enablers for coordinating (coordination mechanism) between organizations. Doctoral students from QUT were also involved in a number of meetings prior to the forum, as cultural preparation and to develop plans for possible publications that may emerge from the forum. Feedback after the forum from the four QUT students commented on their preparedness for the forum. For example, one student stated, “Interactions prior to the forum enabled the QUT cohort to bond as a group then grow into a cohesive, supportive, productive team which contributed to the successful partnership building with the BNU cohort.” (Q7).

A QUT academic with previous experience with the BNU-QUT doctoral forums led the QUT group, supporting the students with practical guidance, assisting them to cross boundaries. Feedback suggested that the Australian leader “led the forum capably, affably managing many contin-

gencies and events” demonstrating “knowledge of Chinese culture.” The BNU group leader, a Chinese academic who had previously studied at QUT and been involved in past doctoral forums, “provided a BNU-QUT cultural bridge” (Q4). A boundary crossing relationship such as this is defined by Cash et al., (2006) as complementary expertise. Feedback indicated that the experience and leadership of both academics was critical to the success of the doctoral forum. In particular, the bilingual BNU group leader, with his detailed knowledge of both BNU and QUT, was seen as a fundamental and necessary inclusion. According to a QUT student, “His input was invaluable...he gave us huge amounts of advice and support about cultural and academic issues.”

As representatives of the host country, the Chinese doctoral students were afforded additional program responsibilities during the forum. For example, “Chinese students were involved in food preparation and general hospitality – each had a specific job, e.g., accommodation, transport QUT participants to and from airports” (B4).

From an institutional perspective, the BNU-QUT doctoral forum achieved the objectives outlined by the QUT Education Faculty’s Manager of Research. They indicated an expectation that the forum contributes towards the strategic priorities of both the university and the Faculty of Education through:

- an annual week long academic program that includes presentations and discussions about educational issues of mutual interest to Australian and Chinese doctoral students;
- development of relationships between students and staff for collaborative research and writing;
- appreciation of the Chinese education system and cultural heritage; and
- promotion of QUT as a site for doctoral study, short courses, research and consultancy (email, QUT Office of Education Manager, Oct 2, 2013).

To summarize, the findings of this qualitative case study, which have been theorized based upon the boundary crossing model (Akkerman & Bakker, 2011), present a snapshot of a recent international doctoral forum as experienced by a particular group of Australian and Chinese students. In particular, they outline the various ways participants experienced boundary crossing and identify the benefits of this forum for the individuals and their respective universities. The next section discusses their implications for the future development of international doctoral forum partnerships.

Discussion and Recommendations

This section discusses the implications of the findings of the 2013 BNU-QUT doctoral forum. Whilst the findings are not generalizable to every situation, new understandings arising from this case study allow some informed observations and recommendations for future development of international doctoral forums.

Conducting collaborative research within a cross-cultural team is complex because there are many intercultural boundaries to negotiate. A key contributor to successful boundary crossing is the capacity to recognize and respond to subtle intercultural cues. To this end, the key findings outlined above about the BNU-QUT doctoral forum support recommendations for developing partnerships to promote international doctoral forums. The previously discussed boundary crossing model with its four inter-related mechanisms provides a useful framework for the discussion in this final section.

Identification

The boundaries identified in this research offer suggestions for other students and universities seeking to develop international doctoral forum partnerships. They signal opportunities to pursue and pitfalls to avoid in organizing the forum, as well as provide insights about how to cross related cultural and academic boundaries. In particular, the evidence of the BNU-QUT forum highlights the importance for international doctoral forum planners and participants to identify similarities and differences across their social, cultural, and academic environments and then to build upon this knowledge to co-create supportive and mutually enlightening doctoral partnerships.

Language is closely associated with cultural identity. As a central element in intercultural capacity (Deardorff, 2006), it often represents a major boundary to cross. The BNU selection program required that BNU participants were all fairly fluent English users, but sometimes they lacked confidence to speak in formal or large group settings. In contrast, the QUT participants knew little or no Mandarin. Consequently, from the outset there was an assumption that English would be used throughout the BNU-QUT forum. There was no formal provision for sessions or materials to be translated from Chinese to English, or English to Chinese. While this had practical communication benefits, it also had a potential, if unintended, alienating effect for the Chinese participants despite being within their usual academic environment. In addition, it diminished the Australian participants' learning opportunity to experience linguistic challenges associated with intercultural partnerships. Thus, it seems important for future international doctoral forum partnership organizers to address the implications of privileging a particular language and who does the boundary crossing and who does not.

Coordination

Planning and organizing a doctoral forum across international boundaries requires effective coordination. The successful implementation and outcomes of the BNU-QUT doctoral forum demonstrate the importance of coordinated planning and organization of all aspects. Careful attention to partnership building between QUT and BNU over several years provided leaders that were experienced in past forums and enabled participants to cross considerable boundaries whilst experiencing minimal adverse impact. This finding indicates the importance of willing collaboration at the individual and institutional levels in developing productive international doctoral forum partnerships.

Reflection

Reflection can play a vital part in international doctoral forums. As evidenced by this case study, the participants' reflection enables them to develop deep understandings about the nature of boundary crossing and benefits of the program. In particular, personal reflections played an important role in removing barriers and advanced collaboration among forum participants. This finding supports the recommendation to incorporate continuous written and oral reflection before, during, and after a doctoral forum. Through reflection, participants can develop insights that support their growth as researchers and capacity to negotiate cross-cultural collaboration.

Transformation

Reflection can lead to transformation in a doctoral student's thinking and practice, so enabling academic work in culturally unfamiliar settings. This was demonstrated during the BNU-QUT forum by participants' openness to new ideas and ways of working. Their creative response reflects Deardorff's (2006) assertion that intercultural understanding is an ongoing process of interpreting and reflecting which leads to transformation of knowledge, attitudes and skills. This was

particularly true for the BNU students whose objective to publish research in an English language journal is being realized through continuing collaboration with their Australian counterparts.

Conclusion

As demonstrated by this qualitative case study, doctoral students and their universities can derive extensive and ongoing benefits through participation in an international doctoral forum. The success of the BNU-QUT doctoral forum derived in great part from the readiness of forum participants, both doctoral students and academics, to collaborate. This was critical to achieving the aims and objectives of the two partner universities. Arguably, the academic, inter-cultural, and program benefits would not have been realized without this. Equally, the focus on personal reflection, both written and oral, throughout the forum enabled participants to explore and gain understanding about the various boundaries they were crossing. It led to genuine transformation in the participants' intercultural capacity and research practice and further strengthened the partnership between researchers in education at QUT and BNU.

Despite the considerable benefits derived from the BNU-QUT doctoral forum presented in this paper, we acknowledge that it is exploratory, and that further investigation into the strengths and weaknesses of other international doctoral forums are required for deeper explanation. For instance, a study that compares multiple cases (other similar international university doctoral partnerships) may create compelling research. Critical to comparing multiple cases will be the application of a consistent theoretical framework that this paper has presented in the boundary crossing framework. Perhaps a limitation of the boundary crossing framework is that it stops short of identifying and exploiting the productive outcomes of doctoral forums. The present paper has attempted to head in this general direction by asking, "What benefits does an international doctoral forum partnership produce for participants and their universities?"

We also suggest that future international doctoral forums might investigate ways to foster greater mutual exchange of knowledge and practices. A key finding in this paper was that Chinese students generally do more quantitative course work, where the Australian students tend to place greater emphasis on theoretical conceptualization. In the co-production of a future paper we suggest that the BNU students lead and teach the QUT students to adopt a quantitative approach and, in so doing, strengthen the mutually beneficial partnership and offer research that appeals to a wider readership. Research into the language(s) used as the medium of exchange and how this might constrain or enable mutually beneficial outcomes in doctoral forums could also be useful.

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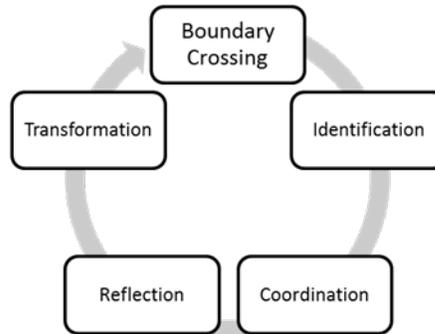
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Appendix: Questionnaire

Survey Purpose:

This survey is primarily interested in the institutional effects of International Doctoral Forum Partnerships rather than the personal effects. To this aim, the survey is framed by theory on boundary crossing mechanisms to help understand how the partnership is enacted. The survey is divided into four sections that align with the boundary crossing mechanisms, which include: identification; coordination; reflection; and transformation.



Background Information

- Your current academic status in this forum: *Academic BNU, Doctoral student BNU, Academic QUT, Doctoral student QUT*
- Your age: *18-25, 26-40, 41-55, 56-65, Over 65*
- Your gender: *Male, Female*
- How many years have you been at this university?

For doctoral students:

- In which year did you start your doctoral study?
- In which year do you expect to complete your doctoral study?

For academics:

- How many doctoral students are you currently supervising?
- How many completed doctoral students have you supervised?

Identification

1. What do you think your university expects you to gain from this International Doctoral Forum Partnership?
2. What things do you think QUT and BNU might have in common, in terms of approaches to the International Doctoral Forum Partnership, and how do you think that they might differ?
3. What do you believe your university contributes to the partnership?

Coordination

4. What strategies does your university use for coordinating the BNU-QUT International Doctoral Forum Partnership?
5. What 'boundaries' are you crossing in this International Doctoral Forum?
6. What challenges are you experiencing in crossing these boundaries?
7. Who and/or what is helping you to overcome these challenges?

Reflection

8. What new things have you learnt about your university or your partner university's coordination practices?
9. Describe how your doctoral forum experiences help you to understand the similarities and/or differences between your university and your partner university?
10. Can you describe a situation where QUT and BNU forum participants seemed to view the same forum event differently? Why do you think this was?

Transformation

11. How could the International Doctoral Forum Partnership lead to the creation of new practices or improvements to existing practices for your university?

[Note: Instructions on how to respond and spaces provided for responses and have been removed.]

Biographies



Dr Matthew Flynn is a Director at Well Grounded Consultancy with research interests in the innovative application of vocationalism, systems theory, and collaboration. Extensive real-world experience in vocational education in many industries provides him with a well-grounded approach to his research.



Dr Marilyn (Lyn) Carter (corresponding author) is an educational consultant in mathematics and numeracy, advising schools and providing professional development for teachers. She also works with the YuMiDeadly Centre at Queensland University of Technology, Brisbane, Australia, developing mathematics programs for indigenous and disadvantaged students. Her research interests include national standardized testing programs and literacy in mathematics. She draws on her experience as a teacher of mathematics to students in the secondary and primary years (for fifteen years) and in school management positions.



Dr Jennifer Alford is a Senior Lecturer in TESOL and English as a Second Language (ESL) studies in the Faculty of Education at Queensland University of Technology, Brisbane, Australia. Her research interests include applied linguistics, critical discourse analysis, and intercultural competence for teachers. She is currently working on a longitudinal research project that will investigate the academic transitions of ESL learners in Queensland metropolitan primary and secondary schools and the variables associated with increasing academic achievement.



Dr Hilary Hughes is an Associate Professor in the Faculty of Education at Queensland University of Technology, Australia, where she teaches several Master of Education units. Her research interests include informed learning, learning space design, international student experience and teacher-librarianship. Hilary is an active member of QUT's Children and Youth Research Centre. She has received several learning and teaching awards and in 2010 was Fulbright Scholar-in-Residence at the University of Colorado Denver. Hilary draws on previous experience as reference librarian and information literacy educator.



Dr Jillian Fox is a Senior Lecturer in the Faculty of Education at the Brisbane campus of Australian Catholic University. She lectures in the fields of early years mathematics, technology and pre-service teachers field experience. Jillian's research focuses on prior-to-school mathematics and teacher and parent impact on young children's mathematics. Current projects are exploring the nexus between digital technology and numeracy in the early years.



Dr Jennifer Duke worked in an Education Ministry for over 25 years as a teacher and school leader in early childhood, primary, secondary, general and special education contexts before becoming an academic. She is a lecturer in inclusive education in the Faculty of Education at Queensland University of Technology, Brisbane, Australia. Her research and teaching interests are in the area of Inclusive Education – Disability.

Cite as: Devos, C., Van der Linden, N., Boudrenghien, G., Azzi, A., Frenay, M., Galand, B., & Klein, O. (2015). Doctoral supervision in the light of the three types of support promoted in self-determination theory. *International Journal of Doctoral Studies*, 10, 438-464. Retrieved from <http://ijds.org/Volume10/IJDSv10p439-464Devos1858.pdf>

Doctoral Supervision in the Light of the Three Types of Support Promoted in Self-Determination Theory

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Abstract

The purpose of the present study was twofold. First, we used the three types of support depicted in Self-Determination Theory (SDT) (structure, involvement and autonomy support) to examine supervision practices in the doctoral context. Conversely, we used this material to discuss the theory and suggest new developments to it.

To this end, we conducted semi-structured interviews with 21 former PhD students (8 completers and 13 non-completers). The data were analyzed using deductive content analysis. The first aim led us to illustrate how supervisors offer structure, involvement, and autonomy support to the doctoral students, and to support the relevance of this theoretical framework in this particular

context. The second aim led us to provide three avenues for reflection on SDT.

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First, a set of practices belongs both to structure and involvement and are therefore at risk of being overlooked in research. Second, there is a thin line between structure and control (and between autonomy support and chaos) and intentions to offer the first may easily

Editor: Holly Sawyer

Submitted: April 3, 2015; Revised: August 21, September 21, 2015; Accepted: September 22, 2015

turn into providing the second in practice. Finally, we developed the hypothesis that a necessary condition for supervisors to be able to offer positive support to their doctoral students is to consider them as trustworthy.

Keywords: Doctoral students, PhD, supervision, supervisor, self-determination theory, qualitative.

Introduction

According to Barnes and Austin (2009, p. 297), “the doctoral advisor is said to be one of the most important persons - if not the single most critical person - with whom doctoral students will develop a relationship during their doctoral degree program (Baird, 1995)”. A large body of research focuses on the relationship between PhD students and their supervisors and on the influence that this relationship may have on their doctoral journey (McAlpine & McKinnon, 2013). According to Jones’ (2013) literature review, 15% of the research in doctoral studies focuses on the student-supervisor relationship.

Supervisor Support

Studies investigating doctoral advisors’ supervision practices take various perspectives and focus on different aspects of this issue; they advise supervisors with good practices, identify supervision styles and related questionnaires, analyze the influence of supervisory styles on students’ outcomes, or, more recently, investigate students’ expectations regarding their ideal supervisor. We describe these lines of research below.

First, several authors have identified different supervisory management styles (e.g. Deuchar, 2008; Franke & Arvidsson, 2011; Gatfield, 2005; Grant, Hackney, & Edgar, 2014; Lee, 2008; Vilkinas, 2008) and developed questionnaires in order to assess the quality of supervision in various dimensions (e.g. Bell-Ellison & Dedrick, 2008; Berk, Berg, Mortimer, Walton-Moss, & Yeo, 2005; Mainhard, van der Rijst, Tartwijk, & Wubbels, 2009; Rose, 2003; Schlosser & Kahn, 2007). Gurr (2001) distinguished between “hands-on” and “hands-off” supervision styles. Gatfield (2005) identified the pastoral, contractual, laissez-faire and directorial supervision styles. Franke and Arvidsson (2011) found two main supervision structures, which they called the research practice-oriented and research relation-oriented styles; these arose when PhD students were working on research similar to or different from that of their supervisor. Rose’s (2003) “Ideal mentor scale” considers three dimensions: integrity, guidance and relationship.

Second, another line of research has investigated the influence of the advisors’ support style - or of the student-advisor relationship - on various students’ outcomes (Hollingsworth & Fassinger, 2002; Jairam & Kahl, 2012; Martinuso & Turkulainen, 2011; Paglis, Green, & Bauer, 2006; Wao & Onwuegbuzie, 2011). In a longitudinal study over five years, Paglis et al. (2006) found that the quality of advisors’ supervision had an impact on PhD students’ research productivity, career commitment, and self-efficacy. In a quantitative study, Martinuso and Turkulainen (2011) found that supervisor and time commitment considered together had a positive impact on research progress. Zhao, Golde and McCormick (2007) found that advisor behaviors (e.g. academic advising, interest and support, career coaching) were related to doctoral students’ satisfaction. Finally, in a qualitative study, Jairam and Kahl (2012) underlined the role of advisors’ professional support, that is, feedback, advice and problem-focused assistance, for degree completion.

Third, more recently and from the students’ perspective, several studies have investigated students’ expectations with regard to their supervision and the characteristics that they value in a supervisor (Barnes, Williams, & Archer, 2010; Bell-Ellison & Dedrick, 2008; Lee, 2008; Pole & Sprockereef, 1997; Zhao et al., 2007). Barnes et al. (2010, p. 34) concluded, on the basis of open-ended survey responses, that “students spoke most positively about advisors who were accessible

and helpful as well as socializing and caring. Conversely, they identified being inaccessible, unhelpful, and uninterested as negative attributes of advisors". Bell-Ellison and Dedrick (2008) found that the ideal mentor's most valued characteristics were to believe in the doctoral students, to value them as persons, to help them to maintain a clear focus on their research objective, and to treat them as adults who have the right to be involved in the decisions that affect them.

Limitations of Previous Work

A significant number of studies have therefore highlighted those supervisory practices likely to play a positive role in their emotions, motivation, engagement and persistence. However, existing studies have often relied on an inductive approach or on previous empirical work. Few studies have based their qualitative analysis or questionnaires on a sound theoretical framework (e.g. Lee, 2008; Mainhard et al., 2009). As stated by Lee (2008, p. 267), "literature about doctoral supervision has concentrated on describing the ever lengthening lists of functions that must be carried out. This functional approach is necessary, but there has been little exploration of a different paradigm, a conceptual approach towards research supervision". This line of work therefore lacks a strong theoretical grounding, which would offer new perspectives for understanding these processes. First, using a sound theoretical framework for the analysis makes it possible to consider supervisory practices in the light of validated categories of analysis and to interpret the results in the light of this framework. Second, it allows comparison and integration of the results with those obtained in other contexts and studies using the same framework. Third, it offers a deeper understanding of the psychological processes underlying the relationship between supervisor support and students' outcomes. Fourth, and conversely, the new data are likely to question and contribute to the development of the theoretical framework used in the analysis.

A theoretical framework that is particularly relevant for investigating PhD students' supervisory experiences is Basic Need Theory (BNT), which is part of Self-Determination Theory (SDT) (Deci & Ryan, 2000). We present this framework below and then develop its relevance for studying doctoral advisors' supervisory styles.

Self-Determination Theory

SDT is an extensive theory of motivation. It encompasses different aspects and processes. Vansteenkiste, Niemiec and Soenens (2010) present these aspects as "five mini-theories": the cognitive evaluation theory (focusing on the factors that undermine or support intrinsic motivation), the organismic integration theory (suggesting that extrinsic motivation can be more or less internalized and that six types of motivation can be identified and placed on a continuum ranging from controlled motivation to autonomous motivation), the causality orientation theory (considering the different types of motivation at the dispositional level), the goal content theory (examining goal content) and the basic needs theory (stating that individuals experience three basic needs, which may be supported or thwarted by the environment), which is of particular interest for the present study.

In the present study, we focus on one aspect of BNT: the three dimensions of the social environment that support individuals' basic needs and therefore lead to positive motivational, emotional and behavioral outcomes. This theoretical framework is developed in two sections below. First, we present a brief overview of SDT. Second, we develop in more detail the three types of support described in the theory.

SDT: Overview

SDT states that individuals may display different types of motivations - or "regulations"- when engaging in activities and pursuing their goals. These motivations can be presented on a continu-

um ranging from controlled (e.g. external regulation) to autonomous motivations (e.g. intrinsic regulation) (Deci & Ryan, 2000; Vansteenkiste et al., 2010). According to the authors, autonomous motivations lead to more positive outcomes (e.g. well-being, learning, persistence and performance) than controlled motivations. Upstream, autonomous and internalized motivations are “facilitated by conditions that conduce toward basic need satisfaction” (Deci & Ryan, 2000, p. 228).

These three basic needs are innate, universal, and essential for ongoing psychological growth, integrity and wellbeing (Deci & Ryan, 2000). First, the need for competence refers to experiencing mastery. This is the propensity “to have an effect on the environment as well as to attain valued outcomes within it” (Deci & Ryan, 2000, p. 231). Second, the need for affiliation or relatedness refers to the desire to feel connected to others, to love and care, and to be loved and cared for. More precisely, it refers to the tendency “to seek attachments and experience feelings of security, belongingness, and intimacy with others” (Deci & Ryan, 2000, p. 252). Third, the need for autonomy refers to volition; that is, to “the organismic desire to self-organize experience and behavior and to have activity concordant with one’s integrated sense of self” (Deci & Ryan, 2000, p. 231). According to the authors, autonomy is often incorrectly equated with the ideas of internal locus of control, independence, or individualism. Autonomy in SDT, however, concerns “the experience of integration and freedom, and it is an essential aspect of healthy human functioning” (p. 231). It may be related to the construct of individual agency used in doctoral research (McAlpine & Mitra, 2015).

These needs may be supported or thwarted by the social working environment. Deci and Ryan (2000, p. 229) “expect to observe optimal development and well-being under facilitating conditions that support need satisfaction, and to observe degradation or ill-being under conditions that thwart basic need satisfaction”. More specifically, the authors have identified three dimensions of the social environment likely to support (or thwart) need satisfaction: autonomy support (rather than control or coercion), structure (rather than chaos) and interpersonal support/involvement (rather than cold, neglect or rejection) (Stroet, Opdenakker, & Minnaert, 2013; Vansteenkiste et al., 2010). A large body of research has focused on these three types of support; in particular, to study their antecedents and consequences (see Stroet et al., 2013 for a review; Gillet, Gagné, Sauvagère, & Fouquereau, 2013). These three dimensions are described in details below.

SDT: Types of support

Autonomy-supportive style versus control or coercion. Autonomy support refers to the amount of freedom one is given to determine one’s own behavior (Skinner & Belmont, 1993). More specifically, autonomy-supportive socializers promote students’ volition by adopting three categories of behaviors (Jang, Reeve, & Deci, 2010). First, they nurture inner motivational resources. That is, they create opportunities for students to take the initiative, provide choices, offer latitude in learning activities, display patience in allowing time for self-paced learning, and facilitate the congruence between the proposed activities and the students’ autonomous sources of motivation (Jang et al., 2010; Reeve, 2009; Skinner & Belmont, 1993). Second, they rely on non-controlling informational language. That is, they offer rationales for the requested activities and communicate through messages that are informative, flexible and rich in competence-related information (Jang et al., 2010; Vansteenkiste, et al., 2010). Third, they try to understand and acknowledge students’ perspectives and feelings. That is, they are curious about and value them, and accept the expression of negative affects. In sum, they support motivational development and the capacity for autonomous self-regulation (Reeve, 2009).

Controlling socializers, on the other hand, “pressure students to think, feel, or behave in a specific way” (Reeve, 2009; Vansteenkiste et al., 2010). Reeve (2009, p. 161) stresses that the starting point for a controlling motivation style is “the prioritization of the teacher’s perspective to the

point that it overruns the students' perspective". Asking a student to behave, feel or think in a certain way becomes controlling only if the teacher neglects the student's perspective (not asking why the student is doing what s/he is doing), becomes intrusive, or applies pressure (i.e. forceful language, guilt-inducing criticisms) to think, feel or behave in a specific way.

In addition, control can be direct (or external) or indirect (or internal) (Reeve, 2009). Direct control involves a teacher's "explicit and overt attempts to motivate students by creating external compulsions to act, such as through the imposition of deadlines, verbal commands, or environmental incentives" (p.161). Indirect control involves a teacher's "subtle or covert attempts to motivate students by creating internal compulsions to act" (p. 161), such as through feelings of guilt, shame, and anxiety, by threatening to withdraw attention or approval, or by cultivating perfectionist standards.

Structure versus chaos. Structure refers to "the amount and clarity of information that teachers provide to students about expectations and ways of effectively achieving desired educational outcomes (Skinner & Belmont, 1993; Skinner et al., 1998)" (Jang et al., 2010, p. 589).

More specifically, these authors identify three categories of behaviors adopted by structured socializers. First, they offer clear, understandable, explicit, and detailed directions, that is, "they establish clear expectations with respect to students' future behavior and prescribe ways for students to manage their moment-to-moment activity during a forthcoming learning activity" (p. 590). Second, they offer a program of action to guide students' ongoing activity, that is, they offer strong guidance, and they provide students with "the leadership and the scaffolding needed for students to instigate and maintain effort toward achieving their plans, goals, and learning objectives" (p. 590). Third, they offer constructive feedback on how students can gain control over valued outcomes, that is, "they help students diagnose and build on their skills and sense of competence" (p. 590). These behaviors are likely to "help students to develop a sense of perceived control over school outcomes, that is, to develop perceived competence, an internal locus of control, mastery motivation rather than helplessness, self-efficacy, and an optimistic attributional style (Skinner, 1995; Skinner et al., 2008)" (Jang et al., 2010, p. 590).

The opposite of structure is chaos, where "teachers are confusing or contradictory, fail to communicate clear expectations and directions, and ask for outcomes without articulating the means to attain them" (Jang et al., 2010, p. 589).

Involvement versus rejection and neglect. The third type of support, derived from people's need for relatedness, is involvement. Involvement refers to "the quality of the interpersonal relationship with teachers and peers; its opposite is rejection or neglect" (Skinner & Belmont, 1993, p. 573). It is provided through "warmth (or the ability to amicably connect with others and to partake in mutually enjoyable activities) and responsiveness to distress (or the ability to empathize with and respond to others' unpleasant feelings in a way that provides solace and comfort)" (Vansteenkiste et al., 2010, p. 132). More precisely, it refers to behaviors such as taking time for, expressing affection toward, enjoying interactions with, being attuned to, and dedicating resources to someone, for example doctoral students (Deci & Ryan, 2000).

SDT in the analysis of advisors' supervision styles

Surprisingly, SDT has very rarely been used to investigate advisors' supervision styles in the doctoral context. To our knowledge, only one piece of research has done this (Litalien, 2014). Yet SDT is a particularly relevant framework for investigating advisors' supervision styles, and this for at least three reasons.

First, it is one of the main theoretical frameworks used to analyze teacher support at other educational levels such as in compulsory and higher education. There is a large body of research inves-

tigating, in the light of SDT, how teachers' supportive behaviors foster students' outcomes such as persistence, learning and performance (Vansteenkiste et al., 2010).

Second, it is interesting to observe that the three support dimensions of SDT correspond to a number of supervision dimensions identified in the doctoral literature. The "Ideal Mentor Scale" (Bell-Ellison & Dedrick, 2008; Rose, 2003) covers three dimensions (integrity, guidance and relationship), which are reminiscent of autonomy, structure and involvement, respectively. The advisors' perspectives and roles identified by Barnes and Austin (2009) may also be related to the SDT dimensions. For example, collaborating and collegiality relate to autonomy; mentoring and honesty relate to structure; and accessibility, support/care and friendly/professional refer to involvement. Three of the advisor behaviors scale designed by Zhao et al. (2007) (academic advising, personal touch and cheap labor) are also reminiscent of structure, involvement and control, respectively.

Third, this framework is particularly relevant to doctoral work and its context. Firstly, the issue of autonomy versus control is predominant in the doctoral experience. Within the earlier education stages (compulsory education, higher education), although some room may be allowed for students' choices, the content and directions of the work are largely determined by teachers, programs, standards, and so forth. Similarly, few other professional occupations require employees to carry out a personal project over a period of several years. In the doctoral context, although some advisors are more controlling than others, the final responsibility for specifying a research question, working on it for a period of several years, ensuring it progresses, and being able to present and defend it in front of other scholars at the end is the responsibility of PhD students. A sense of autonomy and self-determination is therefore central in this process. Advisors' support for autonomy may therefore lead to increased motivation and engagement, while a controlling style may lead to doctoral drop-out. Secondly, when confronted with the typical challenges of doctoral work, that is, uncertainty, disappointment (e.g. non-significant results), and/or criticism (e.g. from peers and reviewers), PhD students' sense of competence is likely to vacillate. Yet, at the same time, feeling competent will play a central role in allowing the students to complete their PhD. A structured - and not chaotic - style from the advisor is therefore likely to be crucial in helping students to complete their PhD. Thirdly, PhD students have a special relationship with their supervisor: a relationship that is one-to-one, long-lasting, in which the supervisor plays both a formative and an evaluative role, and in which both protagonists face different and sometimes opposed challenges and constraints. The quality of the relationship between the two will therefore be crucial in ensuring a successful collaboration.

Fourth, and finally, the research on doctoral students often reports a tension between their need for guidance and autonomy and considers those two needs as opposing forces (e.g. Gardner, 2007, 2010). On the one hand, doctoral students are happy to be independent, to be allowed freedom to choose their own direction, to use their own motivation to guide them, and to have a supervisor who is not a "control freak" constantly "looking over your shoulders" (Gardner, 2007, p. 733). But, on the other hand, this independence is sometimes a bit too much for them, they feel "left alone" or "lost" and wish they had received "a little more feedback and supervision" (Gardner, 2010, p. 71). The distinction offered by SDT between structure and autonomy allows for consideration of these two needs as independent and complementary dimensions, and therefore of the prospect of needing and receiving both autonomy and structure.

Aims of the Present Study

The general aim of the present study is to analyze doctoral supervision in the light of self-determination theory. More precisely, we confront doctoral supervision practices to the three types of support described in the basic needs theory (BNT), which is one of the "mini-theories" composing self-determination theory (SDT). Doing so, we are pursuing two objectives.

On the one hand, we use these three types of support (involvement, structure and autonomy support) as an analytical framework to categorize the advisors' supervisory practices described by doctoral students. This first objective makes three contributions to the existing knowledge. First, it tells us whether this theoretical framework is relevant to reflect supervisory styles in the doctoral context; that is, whether these practices correspond to the definition of these three dimensions and can be categorized according to them. Second, it offers to the theory an illustration of how doctoral supervisors offer involvement, structure and autonomy support to their students, that is, how these types of support are embodied in this particular context. Third, it offers to the field lists of practices that correspond to these three types of support and that, according to the theory, are likely to support doctoral students' needs and therefore raise/trigger/lead to positive motivational outcomes. These lists of practices may therefore be used in doctoral supervisors' training or in order to develop questionnaires of doctoral support based on the SDT.

Conversely, we discuss the theory in the light of the present material and context. Categorizing the doctoral supervisory practices into the three categories of support will lead us to question and discuss limitations and avenues for reflection about this theoretical framework. Confronting the SDT framework with this new context will stimulate reflection and outline paths for the future development of the SDT.

Method

Data Collection

Sample and context

In our national context, doctoral students are supported by a supervisor (who is on a tenure track), sometimes a co-supervisor (typically a post-doctoral student), and a committee that they meet once per year. The doctoral process lasts 4 years if the doctoral students are on a research grant and therefore work full time on their research or 6 years if the students are research assistants and therefore work part-time on their research and research and part-time on their teaching.

In the present study, we conducted interviews with 21 former PhD students. Their names were changed in order to ensure anonymity and their characteristics are presented in Table 1. We conducted interviews until the point where: (1) our sample reflected the common and diverse characteristics of PhD students in our context; and (2) adding new participants offered little new information. First, we sampled participants so that they reflected both prototypical profiles of PhD students and the diversity of experiences and contexts PhD students are likely to work in. Diversity and balance were sought for the issue of the PhD (8 completers and 13 departers), their PhD the discipline of their PhD (8 from Sciences & Technology, 7 from Social Sciences, 6 from Health Sciences), the type of funding they received (7 on research grants, 13 in research assistant positions, 1 without funding), their gender (12 women, 9 men), and the university they were working in. Second, we used saturation as a guiding principle. We kept interviewing new participants until reaching the point of diminishing return, which is the point where we started to recognize patterns in the participants' experiences and where adding more data offered little new information. Paraphrasing other authors, Mason (2010) explained that this is "the point where it becomes 'counter-productive' and that the 'new' that is discovered does not necessarily add anything to the overall story, model, theory or framework" (p. 2)

Table 1: Summary of the participants' characteristics

NAME	GENDER	DISCIPLINE	FUNDING	AGE	DURA-TION	ENDING	SUPERVISORS
Amanda	F	Agronomy	Grant	23	4	C	Supervisor
Amy	F	Management	Research assistant		1	N-C	Supervisor + resource person
Angie	F	Medical sciences	Research assistant	24	3	N-C	Supervisor + co-supervisor
Anna	F	Linguistics	Grant	26	3	C	Supervisor
Carol	F	Psychology	Research assistant			N-C	Supervisor
Carrie	F	Medical sciences	Grant	28	2	N-C	Supervisor + co-supervisor
Cathy	F	Arts	Research assistant	26	2	N-C	Supervisor
Faith	F	Public health	Research assistant	31	6	C	Supervisor + co-supervisor
Francis	M	Informatics	Research assistant	23	2	N-C	Supervisor
Frankie	F	Psychology	Part-time research assistant	34	12	C	Supervisor
Gerald	M	Engineering	Grant	23	4	C	Supervisor + resource person
Irvin	M	Medical sciences	Self-funded	40	18	C	Supervisor + co-supervisor
Jordan	M	Pharmacology	Research assistant	28	3	N-C	Supervisor
Justin	M	Computing	Grant	23	2	N-C	Supervisor
Lucas	M	Medical sciences	Research assistant	29	5	N-C	Supervisor + co-supervisor
Luke	M	Engineering	Research assistant	24	1	N-C	Supervisor
Marvin	M	Informatics	Research assistant	25	2	N-C	Supervisor + co-supervisor
Melody	F	Linguistics	Grant	24	3	C	Supervisor + resource person
Nicholas	M	Mathematics	Research assistant	28	7	C	Supervisor + co-supervisor
Olivia	F	Agronomy	Grant	23	1	N-C	Supervisor
Valerie	F	Psychology	Research assistant	23	3	N-C	Supervisor

Note. Funding = Type of funding (Grant = 4 years and full time research; Research assistant = 6 years, Part-time research and Part-time teaching). Age = Age when starting the PhD. Duration = Duration of the PhD before completion or departure (years). Ending = Issue of the doctoral process (C = Completion; N-C = Non-Completion). Supervisors = Whether the participants had: (a) only one supervisor supervising their work; (b) one supervisor and one co-supervisor; or (c) one supervisor and one resource person.

Furthermore, this number of 21 participants corresponds or exceeds the number of participants generally used or recommended in studies using content analyses. For example, Bertaux (1981) argued that fifteen is the smallest acceptable sample size in qualitative research and Mason (2010) observed that studies that use content analyses generally rely on 2 to 30 interviews (mean = 28). Finally, other authors tie their recommendations to heterogeneity and research objectives. For example, Kuzel (1992) recommended “six to eight interviews for a homogeneous sample and twelve to twenty data sources when looking for disconfirming evidence or trying to achieve maximum variation” (Guest, Bunce, & Johnson, 2006, p. 61). Given that our study focuses on a rather homogeneous group and had precise objectives, 21 participants appeared to be an adequate number.

Procedure

The three first authors of the present article conducted the interviews. They took place in the researchers’ offices or in the participants’ offices or houses. An interview protocol was designed and composed of the four following steps. First, the interviewer provided the participants with a short introduction to the study and its ethical considerations (e.g. freedom to withdraw at any time). Second, following the designs used by Vekkailla, Pyhältö and Lonka (2013) and Meijer, de Graaf and Meirink (2011), we based the interviews on participants’ own sketches of their individual doctoral journeys. We presented participants with graphs that illustrate developments and changes over time. These pictures were taken from Leclerc-Olive (1997) and represent orthogonal axis with lines departing from the origin and taking different shapes and directions (e.g. a straight diagonal arrow, a wavy line, a dotted and broken line, an upward and then downward line, and so forth). We then invited the participants to sketch the line(s) representing their own doctoral journey. Third, this drawing was used to support the subsequent discussion and sharing of experiences. The first question was to ask the participants to explain what they had drawn. Later during the interview, three other large open-ended questions were formulated: “What was a good/bad day for you during your PhD?” and “Have you ever considered quitting your PhD?”. Between the open-ended questions, the discussion developed freely between the participant and the interviewer, punctuated by follow-up questions from the interviewer (e.g. what happened exactly, who was implicated, how did you feel, what did you do). The purpose was to address “what” and “how” questions and to understand the participants’ experience from their own point of view (Blanchet & Gotman, 2012). We also had a thematic guide with a list of themes that had to be addressed in the interview (e.g. relations with the supervisors, teaching assignments). These were addressed at the end of the interview if they had not been previously raised (Hsieh & Shannon, 2005). The interviews lasted about one hour and were recorded. They were transcribed according to the guidelines of McLellan, MacQueen and Neidig (2003) and Oliver, Serovich and Mason (2005). Notes were taken by the interviewers before and after the interviews (to be aware of our possible biases and to write down our spontaneous impressions, respectively).

Data Analysis

The data were analyzed using a thematic analysis approach (Boyatzis, 1998; Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006; Vaismoradi, Turunen, & Bondas, 2013). Thematic analysis is “a method for identifying, analyzing and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). This method is used to organize and describe the data in rich detail, and to interpret various aspects of the research topic (Boyatzis, 1998; Braun & Clarke, 2006).

First, data were read and listened to several times, writing down initial ideas for the coding and analysis. Second, codes and larger themes were identified. Several authors have pointed out that codes and themes can be identified either in an inductive or deductive way (Braun & Clarke, 2006; Hsieh & Shannon, 2005; Gilgun, 2005). In the present study, we used a deductive ap-

proach, which is referred to as “directed content analysis” (Hsieh & Shannon, 2005) or “deductive qualitative analysis” (Gilgun, 2005). This approach is to be used when an “existing theory or prior research exists about a phenomenon that is incomplete or would benefit from further description” and when the aim of the analysis is to “validate or extend conceptually a theoretical framework or theory” (Hsieh & Shannon, 2005, p. 1281) or, in other words, when the study begins with “a conceptual model for the purpose of testing it, refining it, or refuting it and coming up with a better set of concepts and hypotheses” (Gilgun, 2005, pp. 41-42). In this approach, the initial coding of the data is based on a theory and, during the data analysis, “the researchers immerse themselves in the data and allow themes to emerge from the data” (Zhang & Wildemuth, 2009, p. 2). Following this approach, we relied on the central concepts of SDT and Appleton’s model of engagement (Appleton, Christenson, & Furlong, 2008; Deci & Ryan, 2000) to determine our initial coding categories and to identify operational definitions for each category. Individual themes were coded into these categories and data that could not be coded into them were analyzed “to determine if they represented a new category or a subcategory of an existing code” (Hsieh & Shannon, 2005, p. 1282). Progressively, new coding categories were therefore created and the definition and label of the existing code were modified in order to reflect the themes related to these categories emerging from the particular context of the PhD (Miles & Huberman, 1994).

This coding scheme was designed and validated progressively by two coders. A sample of the data was first coded by the two coders, who then discussed “doubts and problems concerning the definition of categories, coding rules, or categorization of the specific cases” (Schilling, 2006) in order to improve the coding scheme. This iterative process was implemented until sufficient coding consistency was achieved (Weber, 1990). Finally, after coding the entire dataset, the consistency of the coding was rechecked by proofreading the definition and content of each of the coding categories. Finally, we interpreted the content of these categories. This interpretation is presented in the results section below.

Results

The first aim of the present study led us to list the doctoral advisor’s supporting practices corresponding to the definition of the three support dimensions from SDT, and therefore to illustrate how supervisors offer autonomy support, structure and involvement to the doctoral students. The second aim of the study led us to consider three directions for development of SDT: (1) the issue of supervisory practices (labeled “encouraging achievement”) which relate both to involvement and structure; (2) the danger of supervisors confusing structure and control (and confusing autonomy and chaos); and (3) the suggestion that the seedbed for offering positive supervision is the level of trust that the supervisors have in their PhD students. A summary of the results is presented in Figure 1.

On the one hand, we illustrate the six SDT supervising styles with practices from the doctoral context. On the other hand, we provide three avenues for reflection on SDT: (a) the set of practices (labeled as “encouraging achievement”) that belong both to structure and involvement, (b) the risk that supervisors’ intentions for structure and autonomy turn into controlling and chaotic practices, respectively, and (c) the suggestion that trust is an enabling condition for offering autonomy, structure and involvement to the students.

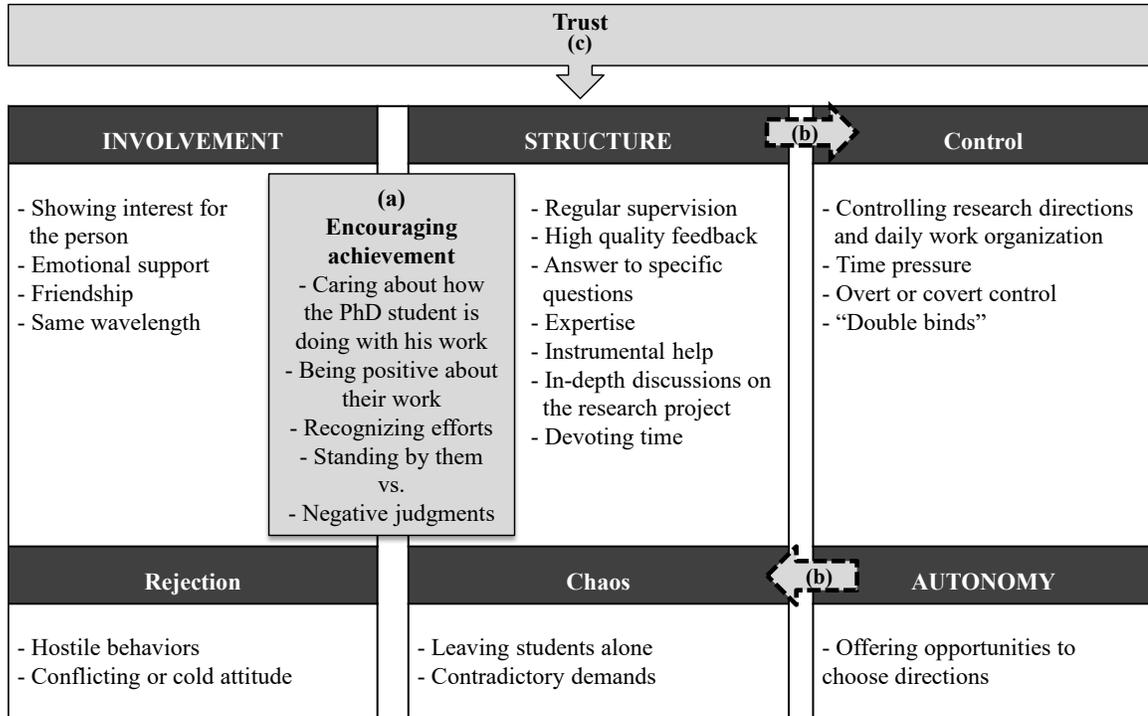


Figure 1: Summary of the main results

First Aim: Analysis of Doctoral Supervisory Practices in the Light of SDT

Autonomy support versus control

While participants rarely mentioned autonomy-supportive practices from their supervisor, controlling practices were found to be a central source of concern in their experience.

The typical sequence of a controlling interaction is the situation presented hereafter. First, the supervisor has a strong opinion on how to do something. For example, s/he considers that it is important to collect data quickly without spending too much time reading articles or refining the data collection method (Valerie, Anna), s/he is sure that the current research direction is the best and that the best option is to pursue it even if the results were not successful during these last years (Nicholas), and so forth. Second, the supervisor intrudes in the PhD students’ work and pressures them to think or behave in a specific way, which differs from their preferred approach, often without offering any rationale for it. For example, a PhD student in Linguistics explains how her supervisor intruded into her way of working in order to pressure her to work in a different manner: “Sometimes he told me ‘stop asking yourself those questions’, it doesn’t make sense, it’s useless’... Because...basically, he is not much into theory...He did not see the point of my questioning, which was sometimes very... Well, I studied another discipline before, and I learned a specific research method there. And he was telling me ‘You can’t do it this way, you can’t use a method from this other discipline to do research in Linguistics, that’s not how we work here’. I was a bit disappointed, because it was my method. I knew it was a good method, and that’s how I wanted to do it” (Anna).

The target behavior may relate to: (1) the directions taken in the doctoral research (e.g. using a specific questionnaire, investigating a specific direction, engaging in a side-research project which is more valuable for the supervisor); or (2) the way the PhD students organize their daily

work (e.g. prohibiting home working or listening to music when working, requiring them to keep the office door open all day long, cancelling a day off). For example, in the following excerpt, Valerie explains that she suffered from the fact that her supervisor did not let her work from home: “Some days, I stayed at the office until 10 pm. The day after I arrived later or I felt like working from home. This also played a role [in my dropping out]; she did not like us working from home, because she had had a bad experience with a former PhD student, who worked a lot from home and dropped out of her PhD. And so we were very rarely allowed to work from home, and I suffered a lot from that because I worked much better at home, at least for writing”.

Imposing time pressure may also be one of the controlling behaviors (e.g. tight deadlines, requirement to do more and more work before the deadline, publishing more and quicker). In the following example, a PhD student in medicine explains how his supervisor and co-supervisor intruded into his preparation of the coming meeting with the thesis committee, asked him to change everything at the last minute, which ended in a profound experience of failure at the meeting: “They said to me ‘You need to check all your results and work on it all over again’ (...). They did that four days before my committee meeting. So, four days before, changing everything, thoroughly reconsidering the way to present it, well it doesn’t work. And the day before my committee, my supervisor popped into my office and gave me a new article that she thought I should read and relate to my results... And ... Well it did not make any sense ... My presentation was not ready yet ... and doing this new reading ... well ...” (Lucas).

The types of pressures that are exerted on PhD students may be direct when their content is socially acceptable (e.g. keep searching in this direction even if you are stuck and do not find any interesting results for a long time), or indirect when the content crosses boundaries of what is socially acceptable (e.g. doing some work or attending a conference during a maternity leave, collecting data from children while being pregnant). For example, Valerie explained how her female supervisor applied indirect pressure on her to do some work during her maternity leave: “My supervisor was talking a lot about herself: ‘Five days after I gave birth I was attending this congress’, ‘I left the baby with my mother’, to send me the message ‘You should attend this and that conference’ ... ‘By the way, would you like to attend this conference?’ ... She was not insisting, but she said it once, twice, three times ... I also had to work on something - I don’t remember what - during my maternity leave ... Well ‘had to’, I ‘agreed to’, but I was annoyed because I wanted to be left alone ... It was rather insidious ... like ‘I did this, I did that’, she was always talking in the first person. And after a while I became fed up hearing it because I knew that these were all implicit messages, which I had to decode” (Valerie).

Controlling behaviors sometimes lead to even more toxic relationships when they turn into “double binds”. In this type of situation, even if the PhD students follow one of the requirements of their supervisor, they will fail to meet another of his/her recommendations. Lucas illustrates this by explaining about his co-supervisor that “On the one hand, she criticizes us for not making enough suggestions, but when we do make suggestions, they are never good enough, never what she expected”.

Structure versus chaos

Participants made extensive reference to their supervisors’ structuring behaviors, either because they were happy to benefit from those behaviors or because they were frustrated that these practices were too rare or non-existent. The aspects mentioned below are the indicators of structure that were mentioned by the participants.

First, a structuring supervisor has time available to discuss their projects with PhD students (as opposed to being involved in so many time-consuming activities and responsibilities that s/he has little time left for the PhD students), offers regular supervision (e.g. regularly asks PhD students

how they are doing with their work, suggests meeting up to discuss the research) and sets energizing short-term and mid-term objectives for their work. Conversely, PhD students are sometimes left alone with their work for weeks or months, which often happens when PhD students are research assistants and are therefore also busy with teaching assignments in addition to their research work. For example, Amy regrets that her supervisor did not have enough time to supervise her: “He answered my e-mails only very briefly, and he had little expertise in the area so ... When you don’t know much about the subject and you have very little time, it is not easy to mentor someone ...”.

Second, a structuring supervisor is responsive to PhD students’ requests for feedback (e.g. on a text that has been written), and rapidly gives a feedback that is relevant (as opposed to off the topic), in-depth (as opposed to quick and superficial), rigorous and constructive (as opposed to overly positive) and consistent (as opposed to inconsistent, for example suddenly stating that the direction of the research is wrong although this has never been mentioned before). Further, the supervisor answers the specific questions that the PhD student asks and suggests relevant directions and advice for the research. For example, Anna reported that she lacked such feedback from her supervisor: “When I had written something, I submitted it to him and waited for his feedback ... And, generally, he corrected my use of language, he edited the style, he showed me my mistakes, you see. And he did not really answer my questions. Or, he was trying to help, asking ‘Have you read that?’ but it was not relevant”. Relevant feedback is related to the level of competence and expertise of the supervisor with regard to the thesis’s topic. For example, Melody stated that “My supervisor had limited expertise in ... Well, I had to use specific methods, statistics, etc. and he was not into it. He became my supervisor because he was working in the field but ... And so every time I did something, he was like ‘Yeah, that’s great, it’s good, it’s good!’. I never had an in-depth or a constructive comment”.

Finally, the supervisor may play a crucial role in: (1) helping the students in “containing” their work, that is, remaining focused on one research direction and not spread themselves too widely in the literature; (2) offering instrumental help (e.g. suggesting questionnaires to be used, helping to write parts of the manuscript); and (3) offering administrative help to the students (e.g. with the documents that need to be completed for the doctoral school).

On the basis of what has been mentioned above, we can see that what is particularly important for PhD students is that their supervisor “gets his hands dirty” with offering in-depth feedback on written work or thorough discussion of the research project. Amy illustrates this lack of in-depth feedback: “If you write something which makes the student feel that you did not really read it ... Or if you print the document and sketch some comments on it because ‘he needs some support but you lack time to supervise him/her for this or that reason’... well ... (sigh). PhD students feel all that. We know when someone has read our work or not. We know whether someone read it and did not understand something, or if s/he just leafed through the document and that’s it”. Another PhD student remembered the time when he finally sat down at the table with his supervisor and co-supervisor and had a very useful discussion of his mathematical model: “One of the supervisors told me ‘We will check the model from A to Z’. And how long did it take? Fifteen minutes, seriously. We checked it together and he told me ‘There are two things’. He told me ‘There, you can write it this way’, something that I didn’t know. And with the second, we found an error in one part of the model. He told me ‘You can’t do it this way; you need to do it that way’. And that was it, the problem was solved” (Nicholas).

Conversely, participants also mentioned instances of chaotic support. Lucas, for example, explains about his co-supervisor that “So it’s like anything and everything. One day, she tells me something and, the day after, she tells me the opposite. (...) I did not understand what they expected from me anymore. Because they asked me to do different things, because they do not even agree with each other ... After a while, you’re just lost, you know”.

Involvement versus neglect

With regard to involvement support, participants described both their supervisors' behavior and the relationship that they had with them.

First, participants identified several involvement practices displayed by their supervisors. A first such practice is showing interest in them as a person and not only as a worker. For example, Angie recalls about her supervisor that "We did not feel that he cared about us, you know, he never asked 'How are you?' or things like that. These are small things but they make you feel that you are more than two hands executing a job, that you are a person. Stopping two minutes to ask 'how you are doing' makes you feel like a real person. But he did not see things that way".

Other involvement practices valued by the participants are: reassuring them in case of stress, taking time to listen to them, and trying to sort things out when they are facing a relational or emotional problem (e.g. being in conflict with another member of the team, suffering from loneliness in an isolated office). For example, Angie stated that "I had some constructive discussions with my supervisor when I was encountering problems with my co-supervisor. One day I gathered all my courage and went to my supervisor to discuss these issues. He was receptive to it, which contributed to improving my perception of him. I said to myself that behind his cold appearance, it was possible to discuss my problems with him. He may not come to me to ask me how I am doing, but if I go to him to tell him that I am not doing well, he listens. It turned out that he had no solution to propose for this given problem, but at least he had listened to me".

Conversely, doctoral students also experienced perceived adverse behaviours from their supervisors, such as an unpleasant tone when talking to them, unfriendly comments, abrupt interactions and formulations of requirements, aggressive attitude, being shouted at when they did something considered as wrong by the supervisor, and, at the extreme, being psychologically or sexually harassed (e.g. isolation, seduction, ruining reputation). For example, Angie says of her supervisor that "He was rather unpleasant with me. It was particularly noticeable during meetings. I felt like when it was my turn to talk, the tone of his voice changed a bit. I don't know ... there was no chemistry".

Second, participants also characterized the relationship that they shared with their supervisor. These relationships ranged from conflicted ones to friendship (i.e. having fun together, going out together outside work). For example, Gerald reported that "We were like friends, which allowed us to see each other outside work, to have a drink, to attend a thesis defense and to stay there until the end of the evening, discussing everything". The advisor-advisee relationship may also be "professional only" and therefore rather cold (i.e. sharing only work-related discussions, not inquiring on how the person is doing more generally). For example, Luke reported that "He was my boss and that's it. No close relationship for sure. Our relationship was rather distant ... We did not get on particularly well ... It was a purely professional relationship. This is it I think, I don't know (laugh) ... When I compare it to other PhD students who shared rather close relationships with their supervisor, I realize that it's not the type of relationship that developed between us. I know that some doctoral students even share friendly relationships with their supervisor. Here not at all. There was a distance between us. I felt that he was the boss and I was there to work in his team. There was no way we could have become friends or anything that was very clear".

The PhD students particularly appreciated being on the same wavelength as their supervisors. Inversely, a large gap between the doctoral students and their supervisors with regard to their life- and work-related views and values, their aspirations for the doctoral work, or the supervision (i.e. incongruence between the supervision offered and the students' needs and expectations) may impair their collaboration in the long run. For example Valerie stated that "I started to see a discrepancy with my supervisor, I realized that we did not see life the same way, we did not have the same priorities. I started to think 'well, it is your choice, I am not judging you, but I am not head-

ing toward a career like yours, this is not what I want”’. This finding may be interpreted in the light of the Person-Environment (P-E) fit framework (Edwards, 2008; Pyhältö, Vekkaïla, & Keskinen, 2012). Fit is defined as “the congruence, match or similarity between the person and environment” (Edwards, 2008, p. 168) and it plays a role in students’ and workers’ satisfaction and achievement (Kristof-Brown, Zimmerman, & Johnson, 2005).

Second Aim: Questioning SDT in the Light of the Data

The second aim of the present study was to discuss our theoretical framework in the light of our data and context. The data led us to question the support dimensions depicted in the SDT in the three following ways. First, we observed that some supervision practices (labeled “encouraging achievement”) referred to both structure and involvement. This finding therefore questions the belonging of this important type of practices in the SDT dimensions, and underlines the risk of overlooking or setting them aside in future research as they are at the frontier between the two. Second, we observed that, in practice, intends to offer structure or autonomy may easily turn into control or chaos practices. We therefore discuss the proximity of these two dimensions and the danger of slipping from the first to the second. Third, we came to the hypothesis that a necessary condition for supervisors to be able to offer positive support to their doctoral students may be that they trust their competence, efforts and likelihood of PhD completion.

Practices referring to both structure and involvement

Involvement focuses on the warmth of the human relationship while structure refers to the guidance offered for performing a given task. There was one set of practices that was difficult to place in either of these two categories because they referred to both. These practices are named “encouraging achievement” below and are represented at the intersection of the two types of support (structure and involvement) in Figure 1.

These practices include interpersonal support aspects (e.g. warmth, expressing affection) but that refer only to the research task itself. They therefore relate to involvement as they include warmth, responsiveness to distress, expression of affection, enjoyment of interactions, and so forth, but depart from it as they do not only refer to the quality of the relationship in itself, but to a warm relationship *within* a discussion on the dissertation and its progression. On the other hand, these practices also relate to structure as they refer to the thesis work and they promote perceived competence, but they are beyond the spectrum of structure as such as they depart from genuine structuring of the work and are strongly colored with involvement aspects.

An example of these types of practices is caring about how the PhD students are doing with their work. For example, Gerald recalls that he enjoyed “The presence of the supervisor, who was asking for results ... Well, asking for results is not the right term. He was not requiring results, but caring about how I was doing, how the research was going. My co-supervisor was the same. They were in the office next door and did not hesitate to come and ask if everything was going ok.”

Another example is being positive about the PhD students’ work (e.g. letting the PhD students know that they are doing a good job, providing positive feedback and encouragement, congratulating them when they do something particularly well) and letting the PhD students know that they are going to be fine and/or succeed in an upcoming challenging task (e.g. intermediate reports, PhD defense meeting).

On the contrary, the supervisor may communicate negative feedback and general, as well as negative judgments (e.g. “When you are permanently told that your work is not progressing, that you’re not working enough, that you’re doing nothing, that you’re not good enough, well, yes, there are times you feel like giving up” (Lucas)). The supervisor may also fail to offer recognition for the work that has been done (e.g. acknowledging the quantity and quality of work that has

been agreed on a study even if no significant results came out of it). For example, Angie explained that “With the first supervisor, when an experiment went wrong, I felt like it was my fault, while he [the second supervisor] did not judge my work Because not obtaining significant results in an experiment does not mean that you have not been working hard on it. And this was often the case [with the first supervisor]. In fact, I had said this to him, that I felt that when there were no results with an experiment, he seemed to think that I had not put enough effort into it. But it is just not the case, you know”.

Finally, a specific supervision attitude that appeared to be important in the PhD students’ experience is their perception that their supervisor stands by them even in the face of weaknesses or failures, for example, recurring non-significant results, criticism from other academics of their work (e.g. during thesis committee meetings), rejection of a paper, and so forth. This seems to be of particular importance for PhD students. They need to feel that their supervisor is on their side even when facing obstacles or failures, and report high levels of distress when they feel that their supervisor is turning their back on them when they are facing such experience of failure. For example, Valerie remembers that her supervisor let her down in front of the committee members during a committee meeting: “And when I saw my supervisor letting me down in front of them, asking ‘Well yes, why did you do that?’, I said to myself ‘No, it’s not possible anymore, I can’t keep working with someone who is playing a double game’. It has been very hard for me to see my supervisor saving face in front of her colleagues and choosing to put me down. This was the point of no return.”

In sum, all of these practices refer to involvement practices (e.g. warmth, expressing affection), which are expressed with regard to the PhD students’ advancement and success or failure experiences in their work (e.g. during feedback situations). The involvement and structure aspects are therefore intertwined in these practices, which are therefore suggested to relate to these two categories of support.

Confusion between structure and control

Autonomy and structure were found to be of central importance in promoting PhD students’ motivation and engagement. Yet, it also appeared that the border between the autonomy and structure is a fine line. Socializers who wish to provide structure may actually offer (or perform actions that are perceived as) control. For example, a supervisor may wish to avoid that their doctoral students are at sea in their research and so provide them with structure (e.g. promising research directions, clear expectations, explicit and detailed information on how to achieve these objectives, and so forth). Yet, these good intentions may quickly turn into prioritizing his/her perspective over the PhD students’ one, neglecting their doubts or opposition against these directions, and pressuring them to behave according to his/her requirements. For example, according to Anna, her supervisor had it in mind to encourage her progress in her work, but this intention turned into a controlling pressure: “I think that he saw his role as kicking me in the behind, but, me, I needed to explore different directions. And this . . . sometimes I was disappointed by him”.

Several characteristics of the doctoral context make it particularly prone to this confusion between structure and control. First, whereas in the school context the standards and content of the program are defined by external/higher authorities, in the doctoral context, although some criteria exist (e.g. one published article), the content, directions, purposes, are to be chosen and negotiated between the supervisor and the doctoral students. There are therefore more decisions to be taken and more opportunities for the intention of structure to turn into control. Second, PhD students maybe have particularly high needs for autonomy. They are not students any more but researchers, and this new role calls for more autonomy in their work. Further, the intrinsic nature of research work requires a high level of appropriation of one’s work and therefore a sufficient level of autonomy to allow this appropriation to take place. Because of this strong need for autonomy,

a structuring attitude from the supervisor may be considered by PhD students as attempts to control them.

Trust as a seedbed for support

Finally, these results raise the following question: what enables supervisors to provide their doctoral students with autonomy, involvement and structure? Inversely, what leads supervisors to adopt behaviors that thwart their students' basic needs? Despite the importance of this question, it appears that it has rarely or never been addressed in the literature. Several factors may lead supervisors to adopt one supervision style or another; for example, their personality, their beliefs about good supervision, their concerns and priorities in their own work, and so forth. On the basis of our material, we suggest that one of these antecedents is the level of *trust* that supervisors have in their doctoral students, that is, the extent that supervisors trust their students' competence, involvement and likelihood of PhD completion. This construct of trust appeared in the background of what doctoral students told us about their supervisor. The supervisory relationship of the participants whose basic needs were satisfied appeared to be based on mutual trust. Despite common difficulties, the students' competence and involvement were not questioned. In contrast, the supervisory relationship of the participants whose basic needs were thwarted appeared to be colored with doubt, suspicion and permanent questioning of the students' involvement and quality of the work done. For example, Angie remembered that "I feel like my supervisor thought that I wasn't doing a damn thing, but that was not the case. I agree that the results weren't there but it was not due to a lack of engagement". Valerie also reported suffering from having a supervisor "who still saw me as a student, who did not trust me, who was still testing me, to whom I still had to prove my abilities".

This assumption is in line with the growing body of research investigating the effects of trust in other contexts. In educational literature, recent studies have highlighted the positive role of teachers' trust in their students for the students' achievement (Goddard, Tschannen-Moran, & Hoy, 2001; Meirieu, 2008; Van Maele & Van Houtte, 2011; Watson & Ecken, 2003). In organizational psychology, research has stressed the importance of managers' trust in their subordinates for persistence and productivity in individuals and organizations (Brower, Lester, Korsgaard, & Dineen, 2009; Colquitt, Scott, & LePine, 2007).

In this last body of research, trust is commonly defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, Davis, & Schoorman, 1995, p. 712). Applied to the doctoral context, it would reflect that supervisors agree to be vulnerable to the actions of their doctoral students based on the expectations that they will perform actions such as doing a given task well or completing their dissertation. Further, Mayer et al. (1995) review the literature on the antecedents of trust and identify three recurrent components of trustworthiness: trustees' ability (i.e. the skills and competencies in a specific domain); benevolence (i.e. the will to do good to the trustor); and integrity (i.e. the adherence to a set of principles that the trustor finds acceptable). We suggest that the first element, ability, is particularly important in the doctoral context.

High levels of trust have been shown to lead to more positive and less suspicious views of others (Weibel & Six, 2013), as well as to more social exchange relationships, risk taking and citizenship behaviors (Colquitt et al., 2007). Further, recent work from organizational and trust literature suggested that "trust theory has the potential to complement self-determination theory in important ways" and that "supervisor's trust in the employee is an important variable in the framework" (Weibel & Six, 2013, p. 67). According to these authors, supervisors' trust is likely to reduce suspicious monitoring of employees, and therefore to increase intrinsic motivation and cooperation. On the basis of our results, we could make the hypothesis that trust enables supervisors

to provide autonomy, structure and involvement to their doctoral students. First, supervisors who trust their students are likely to be confident that the latter are able to make good choices in their PhD and therefore to offer them more autonomy. Second, supervisors who experience trust are also likely to feel more confident and relax, and therefore more likely to be warm and caring. Third, because these supervisors trust their students' ability, they are likely to behave in a way that makes the students feel more competent (e.g. displaying higher expectations, investing more time in them, offering more detailed feedback). For example, Gerald explains that to be chosen by his supervisor to engage in a PhD with him meant that his supervisor trusted his abilities, which made him feel confident and competent. When asked what played an important role in his doctoral journey, he answered "Maybe also trust ... Well, this was maybe unconscious but having someone who tells you 'I appreciate working with you and I would be happy to do a PhD with you', it also played a role". This is in line with theories about self-fulfilling and the Pygmalion effect, which suggest that one's expectations about a person can eventually lead one to behave in accordance with these expectations, and that person to behave and achieve in ways that confirm those expectations (Brower et al., 2009; Van Maele & Van Houtte, 2011).

Conversely, supervisors who mistrust their students are likely to discredit the choices made by the students and to pressure them to act in accordance to their own will (control). For example, Valerie recalls that "We were not allowed to work from home, and I suffered a lot from it, because I worked much better from home, and because I had the impression that she did not trust me". Considering that students are not going to perform expected actions is also likely to affect the quality of the relationship between the two, which gets colored with suspicion, reproaches, blames, frustrations, and rancor. Finally, lack of trust is likely to lead supervisors to adopt behaviors that make students feel incompetent. For example, Lucas reports about his co-supervisor that "It is so hard for her to trust people that ... This experiment I was talking about ... She asks me to do it. But she does not trust me at all, so she asks someone else to do it, and then to someone else, and then someone else, until she obtains a result she is satisfied with. It is very disturbing".

In sum, our material leads us to formulate the hypothesis that trust may be a crucial antecedent of structure, involvement and autonomy support. Supervisors who experience high levels of trust and expectation will be in a good position to offer constructive support, leading to positive outcomes in their PhD students. Conversely, a growing feeling of mistrust is likely to worsen the relationship, to preclude supervisors providing a supportive supervision style, to make PhD students doubt the quality of their work and their abilities and to lead them to consider quitting the doctoral track. This yet needs to be investigated in future studies, which would explicitly address the influence of trust on supporting styles among pairs of supervisors and PhD students.

Conclusion

The aim of the present study was to analyze doctoral advisors' supervising styles in the light of the three types of support promoted in self-determination theory and, conversely, to discuss SDT in the light of this new context and material. The first aim led us to illustrate how supervisors offer structure, involvement and autonomy support to the doctoral students, and to support the relevance of this theoretical framework in this particular context. The second aim led us to highlight three considerations about SDT that deserve future attention: the set of practices that stand between structure and involvement (e.g. encouraging achievement); the risk of confusion between structure and control (and between autonomy and chaos); and the hypothesis that trust may be a necessary antecedent for constructive support. These main results are summarized below and illustrated in Figure 1. We also discuss the limits of the present study and the related perspectives for future research.

Summary of the Main Results

First aim: analysis of doctoral supervisory practices in the light of SDT

With regard to the first aim, the present study offers a list of valued supervisor practices corresponding to the three types of support described in SDT. First, although autonomy support is rarely explicitly mentioned, the participants extensively cited controlling practices. These direct or indirect pressures to follow a direction or behave in a way that did not make sense for the PhD students (e.g. with regard to the general directions of the research or to the way of organizing one's work) were associated with a negative emotional and motivational experience.

Second, the participants also make numerous references to structure, either being grateful for receiving such help or regretting not having benefitted from it. More specifically, they value the fact that their supervisor allocates time for meeting and discussing their research project, gives them relevant feedback, and help them structure and define their work; in sum, they expect a deep cognitive and behavioral engagement from their supervisor in their doctoral work. Conversely, they are disoriented when feedback and instructions for research direction change over time or from person to person.

Third, with regard to involvement, the participants value that their supervisor shows interest in them as a person, listens to them and reassures them in case of stress. Conversely, they are negatively affected by aversive behaviors such as unpleasant tone, unfriendly comments, and at the extreme, harassment. They also characterize the relationship that they share with their supervisor, in a range from friendly to cold/professional or even conflicting, and mention episodes of tensions or conflicts that they experienced and could or not be solved.

In sum, these behaviors are in line with and complement those found in previous studies, and this theoretical framework offers a new light to consider and understand them. Further, it is interesting to note that these supporting styles were found to be similar across doctoral students' types of funding and disciplines. While we were expecting that they would vary from one discipline to another (Gardner, 2010; Golde, 2005), we observed that the supporting practices described above occurred indistinctively across disciplines. More precisely, we found very different supporting styles and relationships, but we could not categorize and interpret them in the light of the disciplines. We therefore chose to analyze these results transversally in the present study. Nevertheless, this prevalence of common features over differences across disciplines and types of funding may be specific to our sample and context (universities, country) and therefore should be more deeply investigated in future studies.

Second aim: questioning SDT in the light of the data

With regard to the second aim, we found that the doctoral context and the content of our interviews questioned the SDT framework in three ways. First, we were confronted with a series of behaviors ("encouraging achievement") that belonged to both structure and involvement categories and referred simultaneously to those two types of support (e.g. being positive about the PhD students' work). This phenomenon also appears in factor analyses of quantitative questionnaires measuring these dimensions. Despite these being crucial behaviors in promoting motivation and engagement, there is thus a risk that they are overlooked and removed (e.g. from questionnaires or definition of the constructs) because of this overlap. It would therefore be interesting to acknowledge their existence and discuss the dimension they refer to. In addition, this result highlights the fact that the support categories are combined in practice (e.g. a supervisor might offer guidance with a warm or a neglectful attitude). It would therefore be interesting to investigate their interactions. In the literature, involvement is generally found to have a lower impact on stu-

dents' outcomes than the two other dimensions. We hypothesize that the main role of involvement is to increase the positive impact of structure and autonomy. Involvement may be a necessary condition in order for structure and autonomy to have a positive influence on students' outcomes. It "oils" these processes, helping the reception of structure (e.g. critical feedback) and reinforcing the positive effect of autonomy. This should be investigated in future studies.

Second, our results highlighted the risk of confusion between structure and control; that is, the danger that an advisor who wishes to offer structure takes actions that are (perceived as) controlling. This confusion may happen in every context but is particularly prone to develop in a doctoral context. On the one hand, many choices need to be negotiated between supervisors and students and many opportunities for structuring support may therefore turn into controlling ones. On the other hand, students are likely to need particularly high levels of autonomy because of their status and the nature of their work. They are therefore more likely to consider behaviors that are intended to be structure as a form of control. It therefore seems very important that advisor training addresses this issue and stresses the difference between the two orientations.

Finally, we suggest that what lies behind the three types of support and allows them to be displayed is the extent to which advisors trust their PhD students. In other words, we suggest that a supervisor who firmly believes that their students have the required competences, that they will follow through to the end and succeed in their PhD, and that they are working conscientiously, will be in good position to offer them support for autonomy, involvement and structure. Conversely, an advisor who does not experience such trust will not be able to offer a supportive attitude to his/her PhD students.

Limitations and Perspectives for Future Research

A first limitation of the present study is that these results were based solely on interviews with doctoral students. These interviews were self-reported and retrospective stories. They do not reflect an objective reality but the doctoral students' perception of this reality (Vaismoradi et al., 2013). Further, because the interviews focused on participants' past experience, participants may have been liable to rewrite their stories in a way that is meaningful to them and that protects their self-esteem.

A second limitation is that we have no information about the supervisors' perceptions of the situation, about the supervisors' objectives, constraints, pressures and issues at stakes, or about the broader context they are working in (Bøgelund, 2015). This prevents us from cross-checking the information in order to reach a more objective view of the situation, or to get a better understanding of the reasons that lead supervisors to act in one way or another. For example, if the research direction that the PhD students wishes to pursue is inappropriate and if the student persists in this direction, then the supervisor has no other choice than to be controlling and ask them to change direction. Other advisors might also be reluctant to let students follow a research direction they have less expertise in because they know that this would make them unable to offer students as much structure as they had wished to. This may therefore lead supervisors to be controlling in asking students to remain within their area of expertise. The students are also very different from one another and it is sometimes difficult to know the extent to which a particular style is best suited to a particular student.

Yet, the purpose of the article was not to assess the quality the supervisors' practices or to reach objectivity. The aim of this study was to understand doctoral students' subjective experiences of supervision, to analyze the practices that they reported in the perspective of SDT, and to question and discuss this framework in the light of these findings in order to suggest new developments.

In order to improve our understanding of doctoral supervision, future research could explore these dimensions of the supervisory relationship from different perspectives and using different meth-

ods, such as interviews of completers and non-completers coupled with interviews of their advisors and observational investigations of the working context. A central aim for future studies would be to address the influence of trust on supporting styles and students' outcomes, both in qualitative studies that explicitly address this question and in quantitative studies that analyze the relationships between these constructs. Further, as mentioned above, it would be relevant that future studies investigate more deeply the possible differences in supervisor support across disciplines, possibly with theoretical frameworks that enables to better identify and investigate these differences (e.g. organizational and/or sociological perspectives that depict cultural specificities) than SDT, which focuses on universal processes across contexts. Quantitative multi-level analyses would also be needed to locate the level in which those differences in supporting styles appear more strongly (e.g. individual, supervisor, team, university or discipline level). Finally, an aspect of supervisory relationships that has not been taken into consideration here and which would be worth exploring is how they evolve in time. Supervising styles are likely to vary greatly across the length of candidature (e.g. offering more structure in the beginning and more autonomy in the end) and there is a need for studies investigating these changes and their effect on doctoral students' motivational outcomes.

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Cite as: Satchwell, C., Partington, H., Barnes, L., Gurjee, R., Ramsdale, S., Dodding, J., & Drury, K. (2015). 'Our breadcrumb trail through the woods': Reflections on the use of a secret Facebook group as a strategy for surviving and thriving on the doctoral journey. *International Journal of Doctoral Studies*, 10, 465-482. Retrieved from <http://ijds.org/Volume10/IJDSv10p465-482Satchwell1859.pdf>

'Our Breadcrumb Trail through the Woods': Reflections on the Use of a Secret Facebook Group as a Strategy for Surviving and Thriving on the Doctoral Journey

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Abstract

This article explores the value of attending to the emotional side of the doctoral journey by focusing on the use of a 'secret' Facebook group amongst a cohort of EdD (Professional Doctorate in Education) students at one English university. Presented as a piece of action research in which the participants created an intervention to address a perceived problem and then reflected on its effectiveness, it is co-authored by the cohort of six students and their tutor. The stresses and loneliness of the doctoral journey have been well documented and constitute the 'problem' addressed by this cohort of students. Their inception and use of a Facebook group was a response to challenges experienced in their studies, with the expectation of facilitating peer support. As will be

shown this aim was successfully met with enhancements in academic, social, and emotional support. However, unexpected benefits arose from the interactions within the group including a normalization of the challenges of the doctoral quest and the advantage of being able to follow the 'breadcrumb trail' found in the group postings as group journal and aid to reflection. Further, both tutors and students have noted the

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Editor: Michael Jones

Submitted: March 27, 2015; Revised: August 17, September 25, 2015; Accepted: September 30, 2015

development of a strong sense of ‘cohortness’ and inclination to work collaboratively. Through a process of individual and group reflection on experiences of the intervention, combined with analysis of the content of the postings, this article examines the characteristics of the Facebook intervention and considers some ethical implications. We suggest that key characteristics that have contributed to its success include the student ownership, the protection of the secret format, and the combination of emotionally supportive, academic, and irreverent exchanges between group members. It is hoped that these insights may be useful to future doctoral candidates and their tutors as they negotiate their own way through the doctoral woods.

Keywords: Reflection, cohort, emotion, social, Facebook, support, secret, professional doctorate, education

Introduction and Review of the Literature

This article explores the value of attending to the emotional side of the doctoral journey by focusing on the use of a ‘secret’ Facebook group (Khare, 2011) amongst a full year cohort of six EdD students at one university in the North-West of England. The Doctorate in Education (EdD) at this university is a taught programme, using a closed-cohort model (Bista & Cox, 2014). There are currently around 40 students enrolled on the programme, with an intake of approximately eight students per year. The participants in each year’s cohort come into the university once a month, with occasional additional weekend meetings or workshops and some opportunities for cross-cohort interaction at joint workshops and conferences. The students study taught modules alongside reflective participant-led modules facilitated by tutors, at the same time as working on individual research and developing the final thesis with support from a supervisory team. This means that each group comes together relatively infrequently, and the opportunity for peer support is therefore also relatively infrequent, and the loneliness of the long-distance researcher (Gannon-Leary, Fountainha, & Bent, 2011) can be inescapable.

This article is co-authored by one complete cohort of six students who have instigated the Facebook group and their tutor in an attempt at performing the collaborative nature of the topic we discuss. The students and tutor in this instance are all female, and although half the teaching team is male, there is a predominance of female students on the programme as a whole. While we do not address the factor of gender at length here, it is likely to have had an impact. Indeed, in keeping with this paper, there is ‘a growing literature on female students’ experiences of doctoral study which portrays emotion as an integral part of the process’ (Aitchison & Mowbray, 2013, p. 860). All authors have agreed to the use of first names and are aware that they are clearly identifiable as simultaneously authors of this article, EdD students, professionals, and contributors to a Facebook page. One member classified herself as predominantly an ‘Observer’ rather than a ‘Sharer’, but her reflection in the section on ‘cohortness’ makes clear that she is firmly established and fully accepted as a group member.

This absence of anonymity may appear ironic in the face of our assertion that the ‘secret’ nature of the group is paramount. However, this secrecy relates to the fact that the Facebook ‘group’ is closed and only members of it can contribute or view posts. Indeed, the tutor amongst the present authors has still not accessed the Facebook postings and feels that this would be a significant breach of the boundaries that have been especially constructed. This issue of ‘identifiability’ or ‘anonymity’ is also highly relevant to the topic of this article, in that the authors are all lecturers and aspiring academics as well as doctoral candidates. They, therefore, have conflicting identities as both students and professionals, and each of these identities has different needs and expectations. While research participants and students are entitled to confidentiality, academics have an increasing need to exhibit a public profile and to be named on publications. Exploring a way of fulfilling the requirements for both personal safety and academic endeavour is largely the subject of this article.

Isolation of post-graduate students is commonly commented on (Ali & Kohun, 2006; Pauley, 2004; Trujillo, 2007), although there is limited literature available examining the experiences of doctoral students. However, that which is available suggests that doctoral students frequently assume that they will become a part of a vibrant, supportive research scene, when in fact they are often disappointed in this belief and may even feel isolated in their studies (Janta, Lugosi, Brown & Ladkin, 2012). A review of the literature also shows an acknowledgement that different kinds of support are required for doctoral education. For example Brooks and Fyffe (2004) examine the use of online resources, Dabbagh and Kitsantas (2011) focus on the use of ‘personal learning environments’ to blend social and academic elements of the course, and Gannon-Leary et al. (2011) consider the benefits of a ‘Community of Writers’ in the context of lonely researchers engaged in academic writing. While these interventions touch on the social and emotional side of learning, they tend to be provided by institutions rather than led by students.

Hadjoannou, Shelton, Rankie, and Danling (2007), however, describe how student-led doctoral groups can create a dynamic supportive community, which provides its members with essential emotional sustenance (cited in Janta et al., 2012). The use and benefit of social networking sites to provide such learning spaces is also acknowledged (see for example Ellison, Steinfield, & Lampe, 2007; Gray, Annabell, & Kennedy, 2010; Selwyn, 2009). Derks, Fischer, and Bos (2007) reviewed studies of the communication of emotion in computer-mediated communication and concluded that ‘social sharing’ (p.5) can be just as successful on-line as face-to-face. The importance of socialisation in building on-line learning communities or ‘communities of inquiry’ is reinforced by Garrison (2011) and Preece (2000) who suggest that socialisation of learners can be a significant factor in both student retention and ultimately successful outcomes of their studies.

All of this supports the present authors’ own experiences; however, here we explore the creation of a ‘secret’ space instigated by the students themselves *outside* of the institution, which seems to give the intervention its special identity. We consider the importance of the various strands of support that can be provided – and that seem to be needed by part-time doctoral students in particular.

Within the course, as exemplified by the learning outcomes, relationships between personal, academic, and practitioner aspects of self are frequently referred to as part of the EdD journey. The journey metaphor is well-worn (see for example, Batchelor & Di Napoli, 2006; Fenge, 2012; Rockinson-Szapkiw, 2011). Its pertinence is partly because, for those who have completed a doctorate, there is a significant difference between the start and end-points with numerous obstacles to be negotiated along the way. This difference is not just in terms of qualification or status; it is also a deeply personal and emotional change. The experience of sharing with others these changes and this growth is in itself an expression of change and growth. This article will contribute to understanding how the social side of doctoral study can improve the quality of that journey in terms of personal, practitioner, and academic development. Recognising the different facets of ourselves and our various needs can help us to meet those needs. Recognising them in others can be reassuring and liberating in that we feel less alone, more connected, and therefore more able to continue on the journey.

Methodology

The literature and our own reflections have covered notions of individual and group identity, including student, academic, and practitioner identities. We have also addressed different kinds of support and uses of technology. A discussion about how to nominalise the topic of our paper highlighted methodological considerations. Are we most interested in the participants, the technology, or the function? While all of these aspects are relevant, we find the notion of an ‘intervention’ the most useful, carrying as it does an intimation of a methodology of action research. The students – who as it happens are all also lecturers – identified a problem (feelings of isolation

on their doctoral course) and then devised an innovation to help them overcome the problem (a secret Facebook group) and to reach their goal (achieving a doctorate). The students then both individually and collectively reflected on the effectiveness of the innovation, which in turn both revealed and inspired further reflection in and on their postings on Facebook. As Newby (2014) explains, action research is particularly popular with educators because, “Action research embeds reflective practice in its processes. Reflective practice raises the question for action research to answer and may even determine the nature of the action” (p.630). Further, action research “is designed to improve outcomes and/or processes while, at the same time, enabling personal and professional development” (Newby, 2014, p.631). The EdD course is clearly designed to do just these things, and both the intervention and the writing of this article have contributed further to improving outcomes of the students’ own educational development. While the authors have addressed a problem identified by themselves as students, the fact that these students are also lecturers, and the inclusion of their own tutor in the writing of this article, means that the ‘usefulness’ of the research is that it has implications for curriculum development both for the authors in their various contexts and for the readers of the article.

An initial group analysis of written and spoken reflections on the value of the intervention provided the themes of Support, Humour, Affection, Reflection, and Emotion, which conveniently made up the acronym SHARE. Further analysis of and reflections on the postings subsequently produced the headings presented here. A collaborative (sharing) process of re-writing, editing, and revision was then undertaken to such an extent that different reflective headings emerged, and the article became fully ‘co-authored’. Our article is mainly reflective, synthesising perspectives from each writer, but using the framework of action research we first present ‘the problem’ and ‘the intervention’.

The Problem

The production of a doctoral thesis is often referred to as a lonely affair (e.g. Janta, Lugosi, & Brown, 2014). It requires concentration, focus, representation of one’s self as a trustworthy researcher and academic, and also – when it is for a professional doctorate – practitioner. It means extensive periods of time grappling with concepts, complex texts, collecting data from the field, writing, and re-writing. By definition, most of these activities are done by oneself. For the students in this study, the research is usually carried out alongside holding down a full-time job in Higher Education.

This cohort of six began studying together on the EdD course in January 2013. Originally there were seven, but the one male member of the cohort moved to a professional doctorate programme within his own discipline. In some respects this event was a catalyst for the remaining students experiencing feelings of unease. Although they remained (and still remain) in contact with this member, the loss of one of the group appeared to both expose insecurities and encourage bonds to form. Several months into the doctorate, the group began to experience difficult times: some were still in the process of refining research proposals or applying for ethical approval, others had tentatively begun their research fieldwork, and all were working to complete assignments and trying to balance the demands of doctoral studies with work and personal lives. Classes were once a month and, whilst the cohort apparently worked well together and were beginning to get to know one another, it seemed that it was easy to lose touch in between sessions, leading to feelings of isolation and struggle.

Doctoral study is intense by its very nature and the doctoral candidate often runs the whole gamut of emotions during the process due to the personal investment in the research (Burgess, Sieminski, & Arthur, 2006). During the professional doctorate this is further intensified as professionals are investigating their own professional practice, ensuring that feedback from the course team on submitted work is sometimes met with an inordinate amount of dismay (Aitchison &

Mowbray, 2013). Doctoral candidates often feel that feedback is a very personal criticism of their abilities, and this, once more, can create feelings of isolation and questioning of knowledge and skill (Cox, Carr, & Hall, 2014).

The group members have professional identities; between them they hold senior or principal lecturing positions, teach undergraduate and postgraduate students, support and guide students through dissertation and Master's level study, give conference papers, and undertake national and international consultancy work. It is therefore not easy to admit to feelings of inadequacy, of an inability to write or to understand, of frustration at course materials and assignment briefs, or of marking criteria and deadlines, especially where the doctoral supervisors are university colleagues. The group felt the need for a safe space in which to offset the emotions that could not comfortably be displayed in class; somewhere for the students to feel comfortable and confident enough to share their lack of confidence.

The Intervention: Evolution of the Facebook Group

As a senior lecturer who worked with e-learning students, one of the group had previously looked into the use of social media as an aid to socialisation and knew of the potential advantages of a Facebook group, including the familiarity and ease of use for many students, the scope for creativity, and the ability to foster a sense of belonging and exploration of identity (Mason & Rennie, 2008).

She felt that a Facebook group might offer the students a way to enhance their social processes and to facilitate and strengthen peer support (Brooks & Fyffe, 2004). There were also potential drawbacks, however, for example with issues of boundaries and confidentiality and the realization that not everybody might be keen to join such a group (Beninger et al., 2014; Lupton, 2014; Mason & Rennie 2008). As professional people it felt essential to set the group up as secret; nobody but members could see the group's existence or any of the postings. The initial implicit agreement of confidentiality within the group enabled a sense of trust and security to develop, but the secret nature of the group was also a significant factor in the way the students regarded it as a safe space, ensuring that its members knew where they could turn to for support in any circumstance.

The original purpose was to offer a space in which to "vent, sympathise, and share our triumphs and disasters" (Hazel on 25.10.13). However none of the group at the outset foresaw the additional benefits that it would afford the cohort as use of the group evolved over time. As Hazel reflected later:

"Scrolling through the posts provides a group journal – it reminds us of the triumphs and disasters, the story of our journey – it's like our breadcrumb trail through the woods. I didn't expect that messing around on Facebook would provide an aid to reflexivity, I didn't see that one coming!"

The importance of reflection and professional learning is examined in the next section, followed by the group's reflections collected together under four broad headings.

Academic Reflection and Professional Learning

For all members of the group, reflection is a vital and purposeful activity, giving momentum to their learning and their continuing evolution as educators and doctoral candidates (K. Williams, Wooliams, & Spiro, 2012). Brookfield (1995), writing of the importance of critical reflection for educators, identifies four interconnected lenses which may facilitate or trigger reflective processes: the autobiographical lens, the lens of students' perspectives, the lens of colleagues' perspectives, and the lens provided by perspectives drawn from the literature.

According to King (2011), “An individual’s use of social media as professional learning spans understanding, networking, professional identity development and transformative learning” (p.40). While each individual might use social media for different ends, both as professionals and in their personal lives, one of the unpredicted benefits of the secret EdD Facebook group was that it could function as an aid to reflection on the collective and individual doctoral experiences. Further, when reviewing the postings, each person engages with both collective and individual autobiographical lenses. The various and seemingly random musings, cries for help, jokes, requests for information, and expressions of triumph not only provide a breadcrumb trail through the woods, but also provide an opportunity to reflect on that journey.

The facility for reflection within the group appears to work on two main levels: on-the-spot, surface reflection, often taking form as ironic, self-affirming, or self-deprecating declarations (or sometimes a combination thereof); and the deeper more considered reflections arising from reviewing and revisiting the trail of postings which engages with the autobiographical lens (Brookfield, 1995).

Shades of the ironic may be found in Susan’s posts referring to reflection, where she plays with the concept of reflection and in doing so reflects on her own reflective processes and the resulting impact on her evolving and multiple identities:

“On reflection, I have lost the will to live” (Susan, 12.1.14)

or

“I have done so much reflecting on professional, academic and personal self, I no longer know who I am!” (Susan, 11.3.14)

A further example combining irony and self-deprecation can be found in Hazel’s ‘rant’ prior to preparing for a critical discussion to be presented in class, in which she expresses frustration with the difficulties of balancing assignments and fieldwork, and reveals feelings of inadequacy when assessing progress so far.

“So I started looking at what we have to do for the critical discourse on 25th and it seems that my talk will be very short and will consist of ‘I have hardly done any research because I am busy doing assignments. I don’t have a clue about impact, significant contributions to practitioner knowledge or change theory because I am too busy doing assignments. I don’t know what the foundations and rationale behind my research are anymore because I have been too busy doing assignments and have forgotten what I said in the first place.’ Can you base some good questions on that Lynne?

It’s a good job we didn’t do this in June; I’d have had even less to say then!” (Hazel, 31.8.14)

However, being able to address feelings of inadequacy in a safe space and receiving ‘mirroring’ comments from peers allowed Hazel both to reflect on her achievements to date and also to realize that she could address feelings about the assignment load within her presentation.

Lynne’s post a few days later about the same critical discussion assignment also demonstrates self-deprecation: by describing her draft discussion as ‘Jackanory’ (a children’s television storytelling programme) she is reflecting on her sense of not having anything important to say at this stage in her journey.

“I’ve started the critical discussion - but am at a loss. Is anyone using theory here and how? In 7 minutes?”

I am trying to answer the Learning Outcomes but my discussion is looking like Jackanory ... i.e. just a story of where I am up to - and the fact that I don't have anything significant yet to say. Any advice?" (Lynne, 17.9.14)

The response from the group here showed a resonance for many: the term 'Jackanory' provided a commonly agreed metaphor for the discussion scripts, but also, engaging with the lens of colleagues' perceptions, helped the group members to see that their position in the research process was appropriate and acceptable.

Self-affirming postings within the group are often simple declarations of achievement, as in "I've got data" or "I've submitted my assignment", not necessarily including reflection; however, on occasions a reflective tone can be detected as in Susan's post about her first forays into thematic analysis where her postscript expresses her enjoyment of the process and her surprise at that enjoyment:

"Wow just applied a little thematic analysis (I think) to first interview in readiness for next assignment! Would have been nice just to be able to do more analysis rather than consider the essay. However, the weekend calls so everything shelved. There's always next week. Have a good week end x

PS actually enjoyed it but don't tell anyone!" (Susan, 15.8.14)

As can be seen, within these postings reflection has been with a light touch. However when three of the group decided to collaborate on a poster presentation about the benefits of the Facebook intervention in facilitating peer support, they discovered that sifting back through the posts in order to code them became a reflective and reflexive process in which they were able to see their identities as doctoral candidates and researchers evolving and growing. For example, Hazel was surprised to realise that when she wrote:

"Tying myself up in Foucauldian knots - why do I keep going deeper and deeper when I was nearly finished?" (Hazel, 22.2.14),

although using a joking tone she was also establishing her scholarly identity. The sub-text was "I am a scholar and a researcher who is trying to engage with difficult concepts." Looking back at another post reveals uncertainty about the significance and value of individual research:

"Anyone else suffer from project envy? I was talking to two people today who are doing doctorates, one was doing the temporal perceptions of online students, and the other was looking at the assessment of competences in social workers. They both sounded much more important and interesting than mine." (Hazel, 10.12.13)

Yet, a year on from this, it is clear that progress has been made with fieldwork, and Hazel is feeling more confident of her own contribution.

As the concepts of personal and professional identity feature strongly in professional doctoral research, the facility to review postings within this group and to compare them to entries in reflective journals has provided the students with an invaluable – and unpredicted - tool with which to monitor and track their own multiple and evolving identities as educators, doctoral candidates and researchers (Fenge, 2010). An important aspect of the reflective and reflexive process for practitioner researchers is to understand one's professional self in relation to one's personal self (Costley, Elliot, & Gibbs, 2010); collectively examining the postings in the Facebook group has given the group a further tool for understanding themselves and each other and for forging a strong group identity. This, in turn, strengthens all of their individual identities as doctoral candidates and researchers.

Reflection 1: Bonding of the Group – The Value of ‘Cohortness’

Although many prospective doctoral students look forward to engaging with a supportive academic community, this group appeared to have few such expectations. As Susan wrote:

“When I began my doctoral journey, I really didn’t see a breadcrumb trail through the woods. It seemed to me more like being parachuted into a jungle with only a penknife to cut through the tangle of vegetation. I saw a dark and lonely path ahead, filled with obstacles and setbacks; a perception fuelled by doctoral folklore and backed up by colleagues undergoing or recently ending their own doctoral journeys”.

Therefore the group’s experience has been ‘surprising’, an epithet each member has applied in their reflection on the success of the group. Jacqueline, for example, states:

“It was a surprise, therefore, from the outset, how the cohort became a cohesive, supportive whole, and the introduction of the Facebook group, during a difficult time for the students, only cemented this and allowed our group to become ever more supportive of each other”;

and Susan concludes:

“So how is it that two years into this cold and lonely journey I am actually really enjoying it and have completely banished these dark images and replaced them with scenes of pleasure and laughter? The obstacles are still there but I view them as challenges that I will overcome, not as a single combatant, but as part of an eager band bound by commitment, a sense of community and not least through laughter.”

Their experience concurs with Fenge (2012) and Bista and Cox (2014) that ‘cohortness’ is key to a successful professional doctorate journey. We suggest that the support offered among the doctoral colleagues in this Facebook group has enhanced the cohort identity (Fenge, 2012): each knows what is happening in others’ lives external to the doctoral process, and such knowledge allows the group to be caring on both an academic and a personal level. Whatever one of the members is undergoing, the others are party to it if they post on Facebook and therefore can be supportive in many ways, whether it is a good or bad experience. This type of behaviour is typically described as ‘mutually empowering’ (Fletcher, 1995), where members of the group are “keen to demonstrate genuine care for others and proactively avoid conflict” (Devenish et al., 2009).

It is significant that the relative non-user of the group also considers herself to have benefited from the group membership. Her own perspective on Facebook generally is that it is unwieldy and overwhelming, and her limited experience fuels her lack of engagement. Regarding herself as an ‘Observer’ (with some ‘Sharer’ characteristics) (as defined by Beninger et al., 2014), Ridwanah (known as Riz) has made only seven posts, mainly to demonstrate support or to share information, for example:

“Just catching up on all your comments, ha ha, u guys r ace!x” (6.12.13)

“I am teaching [...] 2moz and I will miss the session. Will c u all afta 4pm” (22.1.14)

However, Riz describes an experience in a face-to-face meeting, which demonstrates the far-reaching beneficial effect of the Facebook group:

“I feel that my lack of engagement with the site has not made me feel isolated from my peers in any way. We are a very close-knit team with the shared experience of completing a doctorate and there are many times when I have received advice and felt extremely supported by my colleagues; for example, a recent revision of a data analysis paper was completed through the support and encouragement of my doctoral peers. They picked up

on my low levels of enthusiasm and kindly stayed behind past 6pm after a long day's workshop to give me direction on how best to make improvements and boosted my motivational levels. I was very much overlooking the positive feedback that I had received and my peers were central in helping me recognise the many good comments on my work. This would not have been possible if we did not have this sharing and caring ethos cultivated by the Facebook group."

Beninger et al.'s (2014) finding that social media helps facilitate rather than replace in-person contact appears to be borne out by this experience. The bonding that has occurred through the use of Facebook is reflected both within facilitated workshops and in social interactions outside of the academic environment.

Reflection 2: The Benefits of Peer Support

If we accept the definition of support as "to bear all or part of the weight of; to hold up" ("Support," 2015), we can see by reflecting on the posts in the Facebook group that members have employed different means of "holding each other up" and preventing each other from falling – frequently through humour and by showing affection. Support has been provided for different ends: to support academic endeavour or emotional unease, to provide practical assistance, or to empathise as a peer. Although the initial intention may have been to provide emotional, practical, academic, or peer support, the posts usually transformed into humorous expressions of encouragement and empathy, signalling that the problem could be overcome:

Jacqueline: *Well here goes... One day to write my presentation... Done the reading now just need to sort it out in my head – Could get messy!*

Hazel: *You can do it Jacqueline! May the force be with you.*

Susan: *Go Jacqueline You'll ace it!*

Hazel: *[X] will be missing such a treat listening to our ramblings, sorry erudite discourse in policy.*

[Later]

Jacqueline: *We are all exhausted –post traumatic presentation disorder!*

Lynne: *That's what I'm feeling ... Post traumatic presentation disorder! Like it... Will wine remove the symptoms?*

(April 2014)

Within this example can be seen something of the difference between the support offered from the course team and that from peers. The students, in this safe Facebook environment, are able to express emotions which they know will be shared by their peers. Jacqueline explains:

"Personally, it was a relief for me to know that other people were experiencing difficulties with ethical procedures, assignments, time limitations, data collection, and more, but I believe we *all* were relieved when we began to understand that we were all undergoing a collective experience and could empathise and support one another throughout."

The Facebook group offered and continues to offer a safe, informal, non-competitive space. This stands in contrast to other alternatives, such as formal discussion boards available on the university's virtual learning environment where students often feel there is a sense of rivalry among their cohort as they endeavour to intelligently answer posed questions and comment in a competitive way since they are in the public domain (Aitchison & Mowbray, 2013).

The Facebook intervention has had the effect of diluting negative feelings for this cohort, as they are able to vent feelings, thoughts, and worries to the group, without fear of reprisal or sarcasm. In fact, the opposite is true: although members may feel upset or angry at times with the doctoral process, the other group members' supportive insistence that "we are all in this together and will all pull each other through" is both impressive and very reassuring. No one will sink, because the other members will be there to prevent it. As Devenish et al. (2009) explain, a study group encourages its members to "keep going, to reinforce that the studies are worthwhile and that completion is an attainable goal" (p.61). One of the ways this group has kept such encouragement going is through emotional support, with a specific emphasis on humour.

Reflection 3: The Value of Emotional Support and the Importance of Humour

Whilst there are multitudinous theories of emotion (see, for example, Denzin, 2009; Strongman, 2003), the concept most relevant to the emotional journey we describe is that of emotional labour. This was first defined by Hochschild in 1983 in relation to service workers who need to maintain emotional responses appropriate to the service users with whom they are interacting and is later encapsulated by Aitchison and Mowbray (2013) in their research into emotional management amongst female doctoral students. Emotional labour can be defined as when one disguises and suppresses one's true feelings and puts on a 'public face' that all is well. In reflecting upon this female cohort journey through the doctorate via social media, it is possible to see that the Facebook site is frequently used to express emotions that remain hidden during taught – or even facilitated – classes.

The emotional themes coming from the posts can be classified in many ways, but largely they fall into the following categories:

- *frustration* at things not going right, at an inability to write, to understand, to get on with it
- *fear* that others are doing better, collecting more data, beginning transcription; of being left behind
- *guilt* at not spending enough time studying, undertaking fieldwork and writing juxtaposed with the ever-present conflict with work pressure, the changing, unsettling HE climate and general family life of birthdays, births, deaths, and holidays
- *anger* at tutor feedback, a perceived lack of direction, a lack of clarity
- *confusion* at not knowing what was supposed to be done, by when, and how
- *joy* and (a shared) celebration at getting the work completed, the data collected, the transcription finished, the essay passed
- *affection*; a sharing of 'likes', smiley emoticons, photographs, and metaphorical pats on the back.

Lynne readily admits to using the Facebook group as "a huge emotional crutch". A typical comment from Lynne reflects a number of the above themes: a fear of being left behind, that others know what they are doing, a plea for moral and literal support:

'Ok guys, now I'm panicking! No idea what I am meant to be doing or for when :-(Seriously behind on all things EdD. Can we meet up?' (Lynne, 7.1.14)

On reflection Lynne realises that many of her comments reveal similar doubts: despair at not being able to submit work on time, inability to engage with an assessment, needing reassurance. In return came encouragement, motivation, and a vindication of her ability to complete the task. This resonates well with research undertaken by Selwyn (2009) with 909 students using Face-

book for educational use. He discusses supplication and the seeking of moral support as being a major theme:

“Students would often present themselves as rendered helpless in the face of their university work in the expectation that their peers would offer them support and comfort.”
(p.167)

Whether or not this was the subconscious strategy, it appears to have worked, for Lynne and for the rest of the cohort. Clearly, they share emotions as a means of motivation. This might be all the more meaningful and significant because they see each other only once a month and need not only encouragement to keep them on track, but congratulations and a recognition that they have managed to do doctoral study in the midst of competing demands:

“Well done Hazel! Just going to shout this, NOT STARTED YET!! .. Enjoy your feeling of satisfaction, I will take inspiration from you” (Susan, 17.7.14).

The development of the Facebook group enabled the cohort to communicate with each other and engage in banter “as though we were actually talking to each other” (Susan). This is an interesting perception as a positive characteristic, as often online forums are seen as beneficial for some students precisely because they avoid face-to-face contact (e.g., Cox et al, 2004) and provide an ‘anonymous’ space for students to contribute to a discussion.

When considering academic views on building resilience it is evident that humour is seen as a key component. Humour is defined as a general positive attribute and is one of the character strengths that contribute most strongly to life satisfaction (Peterson, Ruch, Beermann, Park, & Seligman, 2007). Looking at a small selection of the group’s posts we can see how, by the use of what Kuiper (2012) describes as affiliative humour, a warm, witty but respectful banter, the use of Facebook has enhanced this group’s cohesiveness and morale and has itself developed into a positive presence within the group. A typical post would involve cries of panic about feeling unable to grasp the learning outcomes for an assignment or even feeling unable to begin to write. This is an excerpt from a post concerning the writing of a literature review:

Susan: *“Hi Gang, finally made a start on lit review! 375 words – not that I am counting – and already, on reflection, have lost the will to live! It’s going to be a long day x”*

Lynne: *“Just realised that in order to write a literature review, you should first have read something? Oh God!!! xxx”*

Hazel: *“You gonna reflect on that Lynne? How is the literature affecting you? It’s making me read...I think that would go down well don’t you?”* (05.07.14)

What at first seems like just a few words of banter can in fact be seen to be a very supportive discussion; the humour in ‘not that I am counting’ and ‘lost the will to live’ acknowledge the stress of trying to even begin an essay and imply a request for sympathy. The supportive response, with the comforting implication, “You are not alone”, and the joke about reflection bring everything into perspective – it is an essay, not the end of the world.

As the group began to prepare their assignments relating to methodology, Hazel posted a semi-serious question:

“When discussing methodological choices is it acceptable to say I decided not to do this because it looks too hard?”

Kathryn: *“I think that would be OK as long as you made it sound reflective lol.”*

Jacqueline: *“I’d definitely say yes ☺”*

Susan: *“Yes. Definitely! I’m thinking along the same lines! X”*

Hazel: *“Not that I’m writing you understand, just thinking about it ☺”* (05.07.14)

Again the posts begin with a request for help, and again the responses work in a light-hearted fashion to normalise the situation, i.e., all the group are in the same position and therefore it is ‘OK’. Reference is made to general feelings of inadequacy and hesitancy in embarking on assignments, and again encouraging responses appear that help to put this into perspective. The use of humour within the group’s postings clearly confirms Kuiper’s (2012) findings that affiliative humour supports the development of group cohesion and support. As Windle (2011) suggests, a sense of humour is one of the most important facets of personal resiliency that an individual can draw on when confronted with stress.

So, reflecting on the use of humour within the Facebook group it is clear that it has played a major part in sustaining and developing the cohort. It has enabled the creation of a distinct and vibrant identity within the doctoral programme, a group that is now renowned to be enthusiastic and happy and who will laugh and work together to find a solution rather than cry and withdraw in isolation.

“It has seen us through some quite dark times but more than that, it has banished those dark times to a distant memory and for me, the forest is now full of opportunity and good natured company.” (Susan)

Reflection 4: Academic Endeavour and Social Support: A Balance

A need for support is most clearly evident in the Facebook group when individuals have received feedback on assignments and presentations. Academic feedback is not always perceived as positive, and the Facebook group is seen as a place to vent frustration and receive emotional support. While a positive supportive response is evident in the interactions, there is also a realistic engagement with the feedback received and its potential to assist development. Rather than a universal rejection of the feedback, there is encouragement to engage with it and offers of help from other members of the group who have fared better. Kathryn reflects:

“I have found this particularly useful, as confirmation of my initial negative feelings would only have limited my engagement with the feedback and further prevented me from valuing comments aimed at my development. The responses from the group recognise the effect of the feedback and the resulting expression of emotion but avoid the establishment of a reversal of the ‘halo effect’ where individuals receive only confirmation of their own frustrations.”

The affectionate yet challenging support that is evident in the Facebook group is what distinguishes the use of social media to support academic study from the use of social media in general and, also, from a more conventional academic online forum. A typical comment, which incorporates encouragement, advice and offer of further support, is:

Susan: *“Of course you can do it but I think there is some good advice on the earlier comments. Try to look at it in bite size chunks and do a bit at a time. Want to meet up soon?”*

There is a need in academic study for analysis and reflection that results in interactions that engage emotions differently from within purely social interaction. When expressing disappointment within a social environment there is the expectation that other participants will concur and confirm individual experiences; whereas within an academic support group there will be critique and analysis. The key to continued engagement in this Facebook group appears to be that useful critique is given but within an affectionate, supportive framework. Yet the participants also appreciate the ‘mirroring’ comments they receive which have the function of reassurance.

A highly positive aspect of the Facebook group is being able to celebrate academic success, where, especially following disappointment, an emotional response is warranted:

Kathryn: “*Passed my resubmitted lit review Yayyyy. So back on track. Now need to get my head around what I am supposed to do next!!!*”

Hazel: “*Hooray!*”

Jacqueline: “*Well done! X*”

Lynne: “*Well done. Not done mine yet ...*”

Lynne’s admission of inadequacy in this context both contributes to the group cohesion and offers up a request for confirmation that she too might need emotional support.

It is this realistic, grounded, ‘we are all in this together’ approach that has cemented the group together and kept each individual using it as they have pulled and pushed each other along the doctoral pathway.

Discussion

As we have said, a great deal of the literature detailing doctoral education uses the metaphor of a journey. In re-reading the Facebook posts from 2013, in a linear and chronological sequence, it is very much evident that this is indeed a journey. It is easy to chart the emotional experience of the doctoral process along a series of outpourings largely related to anxieties surrounding assignments and confusion compounded by academic discourses and unfamiliar literature. In reviewing the past eighteen months via a frozen capture of questions, expressions of despair, congratulations on a job well-done, pleas for help and the ever-present ‘thumbs up’ emoticon, it is apparent how emotional the journey has been so far, and how the social media space has become a sanctuary for emotional expression and, perhaps more importantly, emotional support.

In this piece of action research the students have addressed “a felt need ... to initiate change” (Elliott, 1991, p.53) by creating a space in which to communicate with one another on a regular basis in a different context and space from the academic/work-based setting. It is a collaborative space, rather than an individual writing space, and it allows conversation on a variety of themes. While the individuals are brought together by their academic ambition, the virtual space enables a combination of academic, social, and personal issues to be discussed, shared, offloaded, and explored. The eclectic nature of the posts highlights the multiple identities of the participants – as academics, teachers, nurses, practitioners, students, etc. – but also as parents, friends, and individuals with their own complex lives. We suggest that this specific ‘secret society’ use of Facebook allows these aspects of self to intermingle and inform one another, but in a different way from more usual uses of Facebook. The social space enables communication on different levels, while also contributing to the original purpose of the group, i.e., completing their doctorate.

We have identified several characteristics of this intervention that contribute to its success. One of these is the ‘secret group’ setting. While some (e.g., Barnes, 2006) have identified a fear of intrusion into one’s private life due to the public nature of social media platforms and the potential risk of sharing online content, some professionals are using social networking in educational contexts and consider it to be important for student development (Davis, 2010). The choice to make the EdD group secret obviates these risks but also differentiates the group from other uses of Facebook, either academic or social.

The spontaneity of the group’s development as such suggests that it is a true requirement of the students and one that they have defined themselves. We suggest that the student-initiation element is crucial to its success, in that it is truly ‘student-centred’ and exclusive. As the participants have pointed out, there is no competitive element to the posts; there is also no surveillance from

tutors. Attempts have been made at institutional level to introduce VLE spaces to encourage social interaction on this course as well as many others. However, the scenario of the unpopulated discussion forum is familiar to many tutors, and the forum provided by tutors for students on this EdD programme is little different. B. Williams (2013) explains that “digital media, by themselves, do not make the contemporary university a more participatory and creative educational space” and further makes the point that, conversely, VLE systems actually work “to reinforce traditional conceptions of the university as hierarchical, controlling, print-based, and obsessed with assessment” (p.182). The characteristics of the Facebook intervention are the opposite of these; and unlike a formal academic forum, continued use and engagement in this group is dependent on the usefulness it has for them as individuals.

We are also given insight into the impact of Facebook interactions on face-to-face relationships. It is clear that the group works as an extension of a face-to-face group; it is doubtful that it could be effective as the only means of communication, but it is rather a supplementary resource. These part-time professional doctoral candidates might be considered to have a particular need for this supplement, in that they are not full-time students located in departments or faculties with other PhD students with access to research groups and their facilities. However, it also seems that this use of social media has impacted positively on how they interact as a group, to the extent that the relative ‘non-user’ of the group also benefits from the inclusivity it engenders. Terms that are repeated in these students’ descriptions of the Facebook group include safety, empathy, and familiarity, along with the original headings of Support, Humour, Affection, Reflection, and Emotion. Ultimately the acronym SHARE sums up the value both in terms of its constituent elements and the notion of ‘sharing’ in its own right. It seems to be the egalitarian, non-judgmental, giving, and receiving in equal measure that contributes to the success of the group. The use of ‘we’ in some of the posts, such as “We are all exhausted” and “We are a great group” is truly inclusive, rather than the pseudo-inclusive ‘we’ as often employed by teachers. The tutors for these students can never genuinely include themselves in synchronous reflection on the experience of the doctoral journey. The inclusivity and equality that arise from using this medium to share the lived experience of the group is what lends the Facebook group its effectiveness as an emotional tool. The sharing can only really be undertaken by members of the group who are experiencing the same journey at the same time, with comparable reactions to the demands and challenges of that journey.

Conclusion

The Facebook intervention introduced in order to address the problems of isolation, loneliness, and academic challenges has been successful in overcoming these negative phenomena. All six of the students are currently writing up their theses and comprise the first cohort to have completed all assignments without recourse to extensions on deadlines. They continue to communicate as a group using their Facebook intervention for support during the potentially isolating phase of individual writing-up.

As a piece of action research the project has had the benefit of providing insight for the participants that, as practitioners in education, it is crucial to pay attention to the emotional aspects of learning. To celebrate the success of the intervention, the EdD programme provides the opportunity for existing candidates to inform new recruits of strategies that have helped them. This has inspired other groups to design and implement their own interventions, the outcomes of which are yet to be seen.

Perhaps the significance of this Facebook intervention is most relevant for other students on similar programmes, i.e., part-time, professional doctorates. All the same, there are implications here for the value of student-led networking, and some indications of what might make it successful. One of our conclusions must be that the group ought not to be tutor-led, nor even tutor-

influenced. Its secret, irreverent nature, which excludes outsiders, itself gives rise to the inclusivity within the group that has been so productive. While the posts quoted here might appear trivial and inconsequential, the writers have been surprised by the value of the group, surprised by its usefulness as a reflective tool, and surprised by how much they have enjoyed being a part of it and how this has been reflected in their academic engagement. The relevance of irreverence should not be underrated. As one participant said, “The doctorate is really serious. This isn’t”, and yet the humour and affection expressed has had an effect of normalisation, providing a safe place of hidden depths. The knowledge that there is recourse to this safe space has been enabling in that no-one has given up or fallen down: they have all supported one another over and around the obstacles, laying down for one another the breadcrumb trail that will eventually lead them out of the woods. The production of this article has been an extension and manifestation of the characteristics of the group, albeit with the concession of allowing a tutor to collaborate.

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Cite as: Bertrand Jones, T., Osborne-Lampkin, L., Patterson, S., & Davis, D. J. (2015). Creating a “safe and supportive environment:” Mentoring and professional development for recent black women doctoral graduates. *International Journal of Doctoral Studies*, 10, 483-499. Retrieved from <http://ijds.org/Volume10/IJDSv10p483-499Jones1748.pdf>

Creating a “Safe and Supportive Environment:” Mentoring and Professional Development for Recent Black Women Doctoral Graduates

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Abstract

Formal structures that support doctoral student socialization are limited, while formal programs for Black women doctoral students specifically are even more scarce. The purpose of this research was to examine an early career professional development program for Black women doctoral students and its influence on the mentoring relationships developed by participants. We conducted individual interviews with six Black women who participated in the Research BootCamp®, an early career professional development program, as doctoral students. Two salient features of the program were identified, including its structure and intentional focus on intersectionality. Our findings also indicate that early career professional development provided opportunities for participants to develop sustainable mentoring relationships. The formal structure of the Research BootCamp® facilitated Black women doctoral students in developing mentoring networks through continued engagement with senior scholars and peers, provided social support, created outlets for professional development, built research capacity, and contributed to Black women's overall socialization to the academy.

Keywords: doctoral student socialization, Black women, mentoring, professional development

Introduction

Underrepresented doctoral students need to feel a sense of belonging (Winkle-Wagner, Johnson, Morelon-Quainoo, & Santiago, 2010).

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Institutions and departments signal this to students in many ways, one of which is through the support they receive.

Young and Brooks (2008) suggest that support for underrepresented racial/ethnic doctoral students occurs in phases throughout the students' program, beginning with recruitment. The authors propose that effective support

Editor: Nicole Buzzetto-More

Submitted: February 27, 2015; Revised: September 26, 2015; Accepted: September 30, 2015

for underrepresented doctoral students involves attendance at national conferences; publication opportunities; internship experiences; and networking with practitioners and scholars, and other graduate students of color locally and nationally. While these activities may be effective, these mechanisms “suffer from a lack of sustainability or can be disconnected random acts of improvement rather than a coherent, integrated component of a strategic plan to support graduate students of color” (Young & Brookes, 2008, p. 404). Young and Brooks found that informal supports were most effective when complemented by a comprehensive formal structure. Unfortunately, formal structures that support underrepresented racial/ethnic doctoral student socialization are limited.

Not all institutions or departments recognize the need for formal programs for doctoral students of color, resulting in a gap for doctoral students of color, and Black women in particular. Other institutions or departments that do recognize the inherent benefits of these support structures may simply lack the resources needed to create and sustain such efforts. In response to the gaps left by this unmet need for Black women doctoral students, Sisters of the Academy (SOTA) Institute developed the Research BootCamp®, an early career professional development program designed to support Black women’s socialization to academe, and contribute to their social support outside of their home institutions.

In other work, we proposed that socialization includes three components; academic preparation; mentoring; and professional development (Bertrand Jones & Osborne-Lampkin, 2013; Davis-Maye, Davis, & Bertrand Jones, 2013). For doctoral students, coursework lays the foundation for research and creative scholarship, as well as a solid grounding in a professional context (Golde, 2010; Turner et al., 2012). Mentoring refers to formal and informal professional relationships between doctoral students, as well as early career and senior faculty (D. J. Davis, Reynolds, & Bertrand Jones, 2011). Professional development typically includes formal and informal opportunities for professional growth. For the purposes of this study, we focus our attention on the mentoring functions of early career professional development.

Our research is grounded in understanding the ways that formal structures for socialization contribute to the development of graduate students for faculty positions and other professional careers in academia. In conducting interviews with doctoral students, we answer the following: What are the most salient features of the Research BootCamp®, an early career professional development program for Black women? And, in what ways did participation in the Research BootCamp® influence participants’ development of mentoring relationships?

Understanding the role of professional development and mentoring in the socialization of Black women doctoral students brings attention to ways that institutions can improve upon their development and retention initiatives for diverse populations. Moreover, further unpacking key elements embedded in components (e.g., mentoring and professional development) of the socialization process can provide insight for models, frameworks, and programs to support institutional, departmental, and program initiatives. In the next section, we review what we know about the socialization process for graduate students with a particular focus on Black women doctoral students.

Socialization: Preparing Academic Scholars and Competent Professionals

Doctoral education functions to prepare students to become academic scholars and competent professionals. This preparation involves many facets, including knowledge of content in the chosen field and a capacity for independent scholarship (Mendoza & Gardner, 2010). Socialization is a critical component of doctoral preparation. Socialization entails a process whereby the values, norms, knowledge, and beliefs of a group are imparted to a new member (Clark & Corcoran,

1986; Johnson, 2001; LaRocco & Bruns, 2006; Reynolds, 1992). Effective socialization typically begins during graduate school and occurs prior to a new faculty member's first professional appointment (Johnsrud & DesJarlais, 1994; McCray, 2011). Consequently, socialization as a graduate student is an important component of a new faculty member's success (Clark & Corcoran, 1986; Johnson, 2001; Lucas & Murry, 2007).

Often socialization activities focus solely on the discipline-based or professional knowledge and common skills required in these areas. Moreover, most socialization activities fail to address the many unstated and undocumented aspects of academic culture that new faculty identify as crucial to their professional success (Johnson, 2001; LaRocco & Bruns, 2006; Reynolds, 1992). Research suggests that socialization of doctoral students should include discipline based knowledge received from academic integration, as well as relationship and network development received from social integration in doctoral programs (Ellis, 2001; Golde, 2000; Tinto, 1993). Underrepresented racial/ethnic doctoral students receive the academic preparation needed for socialization, but frequently lack the social interaction with faculty and others where knowledge of the "rules for success" is provided. Consequently, underrepresented racial/ethnic students are not privy to the knowledge and comprehension of the rules, both written and unwritten, that govern life in higher education and prepare new faculty for assessing and evaluating departmental culture and that can facilitate professional success (Bertrand Jones & Osborne-Lampkin, 2013; Gonzalez et al., 2001; Turner & Thompson, 1993).

Socialization and Black women

The small number of Black women in academia further exacerbates the issue of inadequate socialization resulting in limited Black women faculty role models. For example, only 0.6% of Black women 25 years and older held doctoral degrees in 2009 (United States Census Bureau, 2010). In the same year, only 4% of doctorates were awarded to Black women. It is not surprising then that Black women faculty comprised only 3.6% of all faculty, and 5.8% of executive/administrative positions in higher education (NCES, 2009).

The underrepresentation of Black women can be especially detrimental for Black women doctoral students. Underrepresented racial/ethnic faculty in general, and Black women in particular, face challenges in academia (Cook & Sorcinelli, 2005; B. A. Davis, 2004; Freeman & Taylor, 2009; Hendrix, 2007; Tuitt, 2010) that often confound the influence of inadequate socialization at the doctoral level. Black women experience isolation and alienation in departments where they are the only person of color (D. J. Davis, 2008; Jean-Marie & Brooks, 2011; Johnsrud & DesJarlais, 1994; McCray, 2011; Phelps, 1995), routinely have poor access to critical networks and mentoring in their respective fields of study (Bertrand Jones & Osborne-Lampkin, 2013; Tillman, 2001; Tuitt, 2010), and, oftentimes, lack guidance while progressing through graduate programs (Border & von Hoene, 2010; Davis-Maye, Davis, & Bertrand Jones, 2013; Patton & Harper, 2003). The lack of a critical mass of senior Black faculty further limits the chances for same-race or same-gender mentoring for both Black women faculty and doctoral students (Jean-Marie & Brooks, 2011; Stanley & Lincoln, 2005; Turner & Gonzalez, 2015). Limited, to no, access to the formal and informal networks that exist in many departments, and more broadly disciplines, ultimately compromises these women's potential for socialization to support their professional success (Frierson, 1990; Grant & Simmons, 2008; Patitu & Hinton, 2003; Turner & Thompson, 1993).

Mentoring

Mentoring is typically characterized by the relationships developed between a less experienced and an experienced professional. Mentoring may alleviate feelings of isolation and alienation in early career faculty experiences (Zellers, Howard, & Barcic, 2008), be utilized as a tool to social-

ize new faculty (Cawyer, Simonds, & Davis, 2002; D. J. Davis, 2008; Ponjuan, Conley, & Trower, 2011; Tillman, 2001), facilitate scholarly engagement (submission of publications, research, or funding opportunities) (Gregory, 2001), and contribute to the recruitment and retention of faculty of color (Johnson-Bailey & Cervero, 2008; Stanley, 2006). The ideal mentor-mentee relationship supports doctoral students as they transition to faculty by (1) becoming familiar with institutional culture; (2) navigating office/departmental politics; (3) developing substantial relationships with senior scholars and campus partners; and (4) developing efficient, productive scholarship (Bel lows, 2008; Collins, 2009; Janosik, 2009).

Opportunities for Black women to be mentored are limited (Thomas & Hollenshead, 2001). However, Black women are more likely to serve as mentors, particularly for students of color and other faculty of color (Griffin & Reddick, 2011). These women use a peer approach to mentoring (Thomas & Hollenshead, 2001) and this mentoring typically takes place outside of the department or institution (Stanley, 2006; Tillman, 2001). Ensher and Murphy (1997) found that satisfaction and contact with a mentor were higher when there were more perceived similarities between the mentor and protégé. Similarly, Jackson, Kite and Branscombe (1996, as cited in Bowman, Kite, Branscombe, & Williams, 1999) found that Black women preferred other Black women as mentors. While the literature suggests that same race, same gender mentoring is effective, for Black women, limited Black women faculty at predominantly White institutions makes these mentoring matches limited (Tillman, 2001).

Early career professional development

Doctoral students come to academia with a range of professional experiences and qualifications which may necessitate support during the early career years and beyond (Stanley & Watson, 2007). Professional development in doctoral education typically includes attendance or presentation at professional conferences, workshops on dissertation writing, teaching, and career track specific offerings (Gaston, 2004). Professional development may also take the shape of graduate program or human resources orientation, training or skill development workshops, classroom observations, research and teaching assistantships, individual consultation, internships, and practicum (Border & van Hoene, 2010; Kuh & Cuyjet, 2009; Lee, 2010; Stanley, 2010).

Through professional development, doctoral students become socialized to the many departmental, institutional, and disciplinary environments and learn about resources available to them that will assist in their academic and future professional success. In a study of doctoral students, Austin (2002) found that students perceived they were not being adequately socialized for faculty life in academia. Adequate socialization reveals the “hidden curriculum” that contributes to success in academia (Bertrand Jones & Osborne-Lampkin, 2013; Gaston, 2004). Students needed more consistent mentoring, advising and feedback, more opportunities to talk with peers about future career related concerns, and more information about the full range of faculty life and work (Austin, 2002). Gaston (2004) suggests that mentoring and networking, and professional development experiences are part of the hidden curriculum and advises Black graduate students to engage in these activities during their doctoral programs. Moreover, the professional development of Black women doctoral students is often tied to their future productivity and ability to successfully navigate life in academia (Felder, 2010; Grant, 2012).

Methods

Context of the Study

In 2005, Sisters of the Academy (SOTA) Institute started the Research BootCamp®; an intensive, bi-annual seven-day professional development program designed to socialize Black women to academe, particularly to assist advanced doctoral students with developing their dissertation re-

search and junior faculty in preparing peer-reviewed manuscripts. Daily seminars and workshops on research methodology, the preparation of scholarly publications, and life management within academia, among other topics specific to the participant level (i.e., doctoral student or junior scholar), are offered. Time is also allocated for individualized writing and feedback sessions with an assigned Senior Scholar Mentor, a tenured Black female in the same or a related discipline. A panel of Senior Scholar Mentors offers critique throughout the week and provides suggestions for future direction.

Participants

All participants in this study attended the Research BootCamp®, the early career professional development activity sponsored by SOTA, during their doctoral studies. Attendees of the Research BootCamp® are organized by levels (i.e., doctoral student or junior scholar), which served as the basis for participant sampling for the study. A stratified purposeful sampling strategy based on attendee level was used to recruit research participants for a larger study of the Research BootCamp®, in which this study was a part. The sampling strategy was used to facilitate comparisons within and across groups (Miles & Huberman, 1994). The use of this technique particularly enhanced our ability to conduct future analyses across participant levels and program years (Bertrand Jones & Osborne-Lampkin, 2013).

Doctoral student participants of the Research BootCamp®, who are the focus of this study, were organized into two levels. Participants were either: (a) preparing dissertation research proposals (designated as Level One participants) for their approved studies; or (b) collecting or had collected data (designated as Level Two participants) for their studies. Table 1 provides details about the participants. Pseudonyms were used to maintain the anonymity and confidentiality of each participant. Each participant signed a consent form approved by the Institutional Review Board. Incentives for participation were not provided.

Table 1: Research Participants

Participant	Field of Study	Degree	Year of RBC	Level at RBC	Graduation Year
Katrina	Educational Leadership	Ph.D.	2005	Level One	2007
Adriane	Education	Ed.D.	2007	Level One	2009
Carol	Social Work	Ph.D.	2007	Level Two	2008
Tracie	Social Work	Ph.D.	2007	Level One	2011
Tina	Cultural Studies	Ph.D.	2009	Level One	2011
Anita	Public Administration	Ph.D.	2009	Level Two	2011
Marshay	Public Administration	Ph.D.	2009	Level One	2012

Data Collection

Semi-structured interviews, ranging from 60-75 minutes, were conducted with Black women who had previously participated in the Research BootCamp® as doctoral students and completed their doctorates within the last five years. In order to explore the research questions, participants responded to questions about their experience at the Research BootCamp® and how this professional development experience influenced their future career experiences. For example, participants were asked: What significant challenges have you experienced since attending the Research BootCamp®? How could the Research BootCamp® experience help address those challenges? The interview protocol also included questions to identify the extent to which the Research

BootCamp® facilitated supportive relationships to potentially enhance participants’ future career experiences. For example, participants were asked: After attending the Research BootCamp® how does the social network continue to support you? A total of six interviews were tape-recorded and transcribed verbatim for analysis.

While the interview transcripts were the primary data used for analysis, the research team also compiled observational field notes and reviewed program documents of the Research BootCamp® activities.

Data Analysis

We employed a multi-stage approach for coding and analyzing the data. Enumerative (i.e., collecting a number and variety of instances going in the same direction) and eliminative (i.e., testing hypotheses against alternatives and looking carefully for qualifications that bound the generality together) pattern coding was used to identify central constructs in the data (Miles, Huberman, & Saladana, 2014; Yin, 2014). Coding was initially theory driven, guided largely by the socialization framework developed for this study, and Patricia Hill Collins’ (2000) notions of Black feminism. Collins affirms the unique perspectives Black women contribute and believes this contributes to a shared understanding among Black women. Given the role of Black women in the Research BootCamp®, attention to race and gender were major components in our framework.

An *a priori* coding framework was developed that expectedly captured race and gender in our data; a more in-depth examination of the data captured these codes and others related to the components of socialization for Black women. Descriptive codes included “professional development,” “academic experiences,” and “support.” We began by analyzing the data categorically using these basic descriptive codes. For example, identifying “types” of “professional development activities” (e.g., professional conference activities, workshops) provided insight into the “structure” of those activities in which participants had previously engaged. By analyzing within “support,” for example, we found evidence of “peer support” and “senior support.” The findings were primarily organized around these codes.

At the second stage of coding and analysis, we used constant comparative analyses to further identify patterns and themes in the data (Fetterman, 1989; Merriam, 2009; Miles et al., 2014; Yin, 2014). We also used an iterative approach to capture constructs and emergent themes in the data. Data were coded and analyzed by multiple coders to minimize research bias and to ensure the quality of the conclusions (Miles et al., 2014). For example, memos were used throughout the process to record reflective thoughts as we read each interview transcript and individual responses. We all also employed strategies to test and confirm findings [e.g., triangulating across sources (i.e., participants on administrator track, participants on faculty track); checking for representativeness in findings]. NVivo 10, a qualitative data management software program, was used to organize, code, and analyze the data. The software also facilitated reliability checking between coders.

To establish dependability, we employed systematic, iterative coding approaches (Strauss & Corbin, 1990). Member checks were also conducted with participants to confirm the accuracy and clarity of our interpretations to enhance trustworthiness. Finally, in qualitative research, the role of the researcher cannot be ignored. Patton (2002) labeled the researcher “the instrument,” while Bogdan and Taylor (1975) argued “the researcher must identify and empathize with his or her subjects in order to understand them from their own frames of reference” (p. 8). As four Black women, three doctoral graduates who have transitioned into faculty positions, and one current doctoral student, we were able to identify with and understand the emerging scholars’ perspectives and their experiences that were studying. Accordingly, throughout the project, Gearing’s

(2004) typology of bracketing helped us to collect our individual assumptions so as not to unintentionally impose our own experiences with those articulated by our participants.

Limitations of the study

As noted, we used semi-structured, individual interviews as a method of data collection for the study. Interview data is self-reported, relying heavily on the ability of participants to honestly recollect accounts and clearly articulate information. The use of individual interviews enabled us to obtain information that participants may perceive as personally sensitive or would not otherwise share in a larger setting. While the use of focus groups, for example, would have provided participants an opportunity to build upon and react to responses of others, participants might have been reluctant to honestly divulge information. Information surrounding academic and/or professional challenges, for example, might be perceived by participants too personal to share in group setting.

Findings

Interviews across participants suggest that almost all of the women interviewed participated in professional development activities during graduate school and prior to the Research BootCamp®. Those activities included professional association conference attendance, campus workshops related to writing, and formal programs like Preparing Future Faculty, a national initiative with campus based programs that prepare graduate students for faculty life. With this exposure to a variety of professional development activities, the women identified ways that the Research BootCamp® differed from other professional development. The data suggest two distinct, salient features of the Research BootCamp® including the program's overall structure and the attention to intersectionality of identity. Findings also revealed the role the Research BootCamp® played in facilitating sustainable mentoring relationships with other Black women in the academy.

This section is divided into two sections. We begin with a discussion of features that distinguish the Research BootCamp® from other professional development activities in which participants engaged. Second, we turn to the ways in which the Research BootCamp® fostered informal and formal mentoring relationships with other Black women.

Program Structure

Participants identified the intensity of the schedule and individualized structure of the Research BootCamp® as some of the key features of the program that distinguished it from other professional development activities. Typical professional development attended by the women in our study included short-term one-day activities or, in the case of Preparing Future Faculty, longer term programs with weekly engagement. However, the Research BootCamp® is a week-long program in which attendees arrive on Sunday for orientation with program activities concluding the following weekend. Participants' days throughout the program involve intentionally scaffolded activities, including allotted times for workshops, writing, and meetings with their assigned Senior Scholar Mentors. On average, attendees spend between 10-12 hours each day engaged in planned Research BootCamp® activities. In our interviews, women spoke of returning to their lodging at the end of the official day of activities and continuing to work for another four to six hours in the company of other participants, many of whom shared living space.

Participants described the intense, tailored structure of the program, and expectations set from the beginning of the program as motivation for their active engagement throughout and even after the Research BootCamp® ended. They used words like "transformative," "dynamic," and "intense" to describe their experience. Carol noted the challenge and encouragement she experienced:

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It was as the name implies. It was a BootCamp it was challenging, it was very intense, but I appreciate the experience. I can almost equate it to if someone is almost in the military. When they go through the BootCamp it’s intense, but the sole purpose is to prepare that individual for challenges they’ll face on down the road. It was challenging, but it was encouraging and the challenge helped me develop more independent skills as it relates to working on my dissertation.

Participants have access to and engagement of session facilitators throughout the week-long program. Most of the Research BootCamp® workshop presenters remain throughout the entire week of the program. As a result, participants have access to these women long after their session ends. Katrina, a participant of the first Research BootCamp®, mentioned the opportunity to follow-up with workshop presenters, or other participants, after sessions unlike other professional development experiences:

Most of those outside professional development opportunities are normally just a one day workshop or seminar. So if you leave that seminar and think of something you really wanted to ask the person you’re not able to because the workshop is over. At the BootCamp® you came in on a Sunday and you were there until the next Sunday and you had the opportunity to write down those questions and your questions were answered before you left. So it was more of a turnaround effect where you didn’t have to wait or call someone. You were there and you had that contact where if you left the campus, fine, and you went for dinner there was a possibility that those same people would be eating dinner with you so you could get your questions answered.

In the application process, participants were asked to identify “the most pressing issues” for them. The program was also structured to meet the individual needs of participants based on the stage in which they were in their programs or careers. For example, Anita described how the program provided the foundation for organizing her dissertation work and attributed the short time that elapsed between her dissertation proposal defense and subsequent graduation. She explained:

I defended my dissertation proposal in October of 2010 and I graduated in May of 2011. So, I was able to do everything in a very small frame of time and that’s largely because of what I was able to do the foundation I was able to lay in the BootCamp. The BootCamp really helped me to kind of get through everything that followed once I left, so the drafting the mini draft of the proposal getting that done, going through the presentation having had that experience at the BootCamp really helped me, defending my dissertation proposal, and then going through the dissertation process.

Marshay, who participated in two Research BootCamps®, identified the personal attention she received as holistic, explaining:

It’s very centered, you get a holistic experience and you’re not limited to academics, you get the sisterhood, you get the nurturing, you get the ... I don’t want to say emotional, but yeah you do get the emotional support you need that lacks in professional programs of this nature ... you get the personal attention as well.

Intersectionality of Identity

As previously noted, the Research BootCamp® is sponsored by SOTA Institute. The organization’s mission is to provide a network for Black women in higher education. The SOTA Leadership Team was responsible for program implementation. As a result, the Senior Scholar Mentors, workshop presenters, and most volunteers at the Research BootCamp® identifying as Black women was not an accident. Program materials reflected a purposeful emphasis on the intersection of race and gender. Research BootCamp® participants in another study identified the inten-

tional attention to race and gender as unique to the Research BootCamp® (Bertrand Jones & Osborne-Lampkin, 2013). Similarly, participants in this study described how those attending and leading the program being Black women was a unique feature of the professional development experience and helped to create a “safe and supportive environment.” Tina explained:

I find going through the process that while I love my colleagues of all stripes that there are some very specific experiences that women of color face in the doctoral process. I wanted to be in an environment where I could speak about that openly without judgment or ridicule and feel a sense of camaraderie, understanding and also get some support and some real strategies about navigating those strategies from people who knew them well.

Authenticity was an important feature of the all Black woman environment. Tina relayed a story of her previous experience in what she called “woman-centered places” and the disappointment she felt when those environments failed to meet her expectations of safety.

One of the things that make it [the RBC] so special is that I have been in other places in my life that were supposed to be woman-friendly or woman-centered places and that were supposed to be full of encouragement and support and that has not always been the case. When it hasn't been the case I find that I felt emotionally hurt by that. I was really hoping that at the BootCamp I would be there with women who were really committed, not there for their own success, but who really were interested in me and what I was trying to do. Who really wanted to help me and were not just saying they were going to be my sisters, but they really were my sisters and that's what really happened.

While Tina's comments highlight the importance of attendees' emotional safety, other attendees identified a level of care they experienced from the other Black women at the Research BootCamp®, further illuminating the role race and gender played in creating a unique professional development experience. Anita noted:

Faculty who were there really care about the women at the BootCamp and they really care about them finishing and ending up with a quality project. It's so evident and it's nothing that's necessarily verbalized in a very specific way but everything that's done the conversations that are had you could really tell that there is a genuine interest in getting you to where you ultimately needed to be as a doctoral student and I think that is where by far the one thing that sets the BootCamp apart from anything else. There is a group of women there that want you to be successful, that care about your success, that care about you finishing. You don't even know them, but you come in knowing from that first dinner you get the sense there's this understanding that they are there to get you where you need to go and that doesn't always mean to tell you what you want to hear. But there is that genuine interest, there is that genuine care that's there.

Similarly, Tracie depicted a connection amongst the participants inspired by race and gender and the added pursuit of a doctoral degree or a career in academia. She stated:

You have a sense of camaraderie with women of color from different walks, but yet striving for the same goals and having someone to say, 'I've done this', or that they have gone through the fire before you. So it gives you a sense of comfort knowing that it is attainable and achievable irrespective of what you've seen already or other experiences you've had.

Other participant responses were aligned with those discussed above.

Sustainable Mentoring Relationships

The second research question was specifically designed to understand the extent to which the Research BootCamp® facilitated sustaining, supportive relationships and networks. Mentoring is

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one of the hallmarks of the Research BootCamp® as reflected in program materials. Each Senior Scholar Mentor has both doctoral students and junior scholars assigned to their small group for mentoring. The program also offers numerous opportunities for networking with participants at all levels throughout the week. All participants identified the mentoring they received at the Research BootCamp® as another key feature of the program, acknowledging the mentoring from Senior Scholar Mentors, as well as peers, and other members of Sisters of the Academy who attend the Research BootCamp®. While we expected that opportunities to develop relationships with peers and senior faculty members would be identified as a key feature, the extent to which the Research BootCamp® facilitated relationships that extended beyond the professional development opportunity was notable.

Marshay identified the encouragement provided by the mentoring relationships as an essential component of her experience. She said: “Definitely the mentorship, the access to the Senior Scholars, as well as other scholars, my peers, for encouragement and things like that.” Anita noted, “the potential to develop all of these great relationships stemming from that one week BootCamp.”

In the program participants are matched with Senior Scholar Mentors from their academic disciplines or with individuals whose research interests are closely aligned. Tracie discussed the benefits of the relationships she developed with scholars from her field, including opportunities for scholarly collaboration.

Through BootCamp I was able to connect and network with some senior scholars and junior scholars and through that relationship I have two publications. Actually maybe three, but definitely two publications and I am making progress. And I think a lot of it has to do with having the exposure from BootCamp and being introduced to other individuals like me that were doing the same type of work.

Tina, however, expressed her initial concern about being matched with a scholar outside of her area. She explained:

At first I was nervous saying to myself maybe this is something that’s discipline specific and I won’t be able to get the kind of help that I need. But because the SOTA model is so open and is so flexible and also so thoughtful, I feel that in matching me with the kind of mentoring support that I got I didn’t feel at any point that there was a problem around what discipline I was in, what I wasn’t studying.

While we expected that opportunities to develop relationships with peers and senior faculty members would be identified as a key feature, the extent to which the Research BootCamp® facilitated relationships that extended beyond the professional development opportunity was notable. For example, the women in our study not only described the level of engagement and the specific roles the mentors played during the Research BootCamp®, but also described subsequent interactions after the event. According to participants, the Senior Scholar Mentors at the Research BootCamp® exhibited a higher level of engagement than experienced in other professional development activities, and even some home institutions. Anita said:

It’s very rare to have an opportunity to where you have senior faculty members sit down with you one on one. It’s very basic, but it’s so needed. This is what you do here, this is what you do there, this is what you do in step three. I mean it was crucial to getting me finished.

Participants discussed the continued engagement with peers and Senior Scholar Mentors after the Research BootCamp®. Many reported using email, phone, and social media (e.g., Facebook) to maintain communication. Katrina described the role her Senior Scholar Mentor played in reviewing her dissertation after the program.

At the BootCamp I met a lot of people so it was an opportunity for networking and having an opportunity to get a mentor, [Senior Scholar Mentor] was my mentor. She worked with me at the BootCamp, after I left the BootCamp ... she critiqued my dissertation, she gave me feedback, so she followed me through my process and after that also with other activities I was involved in. I could call and get information on things that I didn't understand.

Anita reflected on her relationship post-BootCamp, with a Senior Scholar Mentor who lived in her area:

You have your senior scholar that you are assigned to and then you find that you develop relationships with other people and I ended up developing a relationship with [another Senior Scholar Mentor] which was nice. She's close to where I am so I have been able to see her since leaving the BootCamp and she gave me some qualitative articles that were very beneficial for me in finishing. So it was nice to be able to have that mentoring during that week and then also have the opportunity of having it extend beyond that week.

Similarly, Katrina noted:

I still have an opportunity to talk with people that I met at the BootCamp. If I need to know anything or I need any help we communicate via e-mail, sometimes we talk on the phone and we do Facebook so it's really a never ending process as far as the people you meet at the BootCamp, you may not communicate with all of the ones, but I ended up still continuing to talk to some of them.

Adriane articulated the personal and professional functions the network she developed at the Research BootCamp® served:

I have people that I can call and say I'm working on this can you help me? But then I can also use it for several aspects of my life, not just professionally but personally and spiritually. I have one of the people that I met at the BootCamp that we are of the same faith and we can continue to converse back and forth about a number of issues, but also about our faith and about how to kind of be strong in this time of whatever time we're in. I have several layers and several levels of people that I can talk to about a lot of different things so I know if I need to talk about a specific topic I know I can talk to these five people that I met during the BootCamp. So that's how my network continues to work for me because I'm still in contact with people and I'm able to continue to integrate them into my space and my life and what I'm doing now and use them as a tool.

Conclusion

The benefits of mentoring and contribution of early career professional development for doctoral students related to the rigors of the academy cannot be denied. As the responsibilities of new faculty continue to shift, the training approaches, foundational theories, and best practices associated with the profession, should be altered in order to paint a more accurate portrait of what professional life in academia entails (Ouellett, 2010). The complexity of this work is only magnified by the recognition of the intersectionality of identity that further contextualizes Black women's lives in academia. Consequently, there are nuances to academia for Black women that are not often articulated in traditional socialization processes. Traditional mentoring and professional development typically fail to address the intersectionality of Black women's experiences (Bertrand Jones & Osborne-Lampkin, 2013).

The Research BootCamp® is a formal structure that serves as a mechanism for tailored support in an environment that not only acknowledges, but embraces, the intersections of race and gender. The Research BootCamp® also facilitates formal mentoring relationships to support the devel-

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opment of Black women who aspire to serve in the academy and potentially enhance the short-term and long-term success. As such, the tenets of the Research BootCamp® model can be used to serve as a framework for other institutional and departmental models to enhance the socialization process for Black women, and potentially students of color more broadly.

For example, while the findings regarding the value of developing mentoring relationships was not surprising, the Research BootCamp®’s ability to facilitate sustaining relationship is aligned with other research that has found that such networks are especially important for Black women’s socialization (Denton, 1990). These networks provide social support, create outlets for professional development, build research capacity, and influence socialization to the academy. This support increases the likelihood of exposure to collaborative research opportunities, and the development of social relationships with women who not only share a common profession, but can also relate to challenges these early career faculty face related to race and gender. Given the small numbers of these women in institutions, Black women often look outside of their home institution for mentors (Bertrand Jones, Wilder, & Osborne-Lampkin, 2015). This fact further underscores the need for formal structures available at institutions and within departments that address these needs for Black women in particular, and students of color broadly.

Findings from our study provide a deeper understanding of the participants’ experiences at the Research BootCamp® and aspects of the professional development program that were most salient to these Black women. While the key findings that highlight the Research BootCamp®’s structure and attention to race and gender provide credence for the uniqueness of the model of the professional development program, findings from this study can also inform professional development initiatives being implemented within institutions, departments, and programs, alike.

Research, for example, suggests that the academy could improve upon growth and development efforts for Black women specifically, and underrepresented faculty broadly, by acknowledging the pressures unique to their experience, validating their contributions to the academy, and increasing their access to role models and networks (Tuitt, 2010). Consistent with findings from prior studies, our findings on the significance of the intersection of race and gender in professional development activities and in mentoring relationships beckons the call for institutional and departmental administrators to critically reflect on and evaluate existing programs and policies to determine missing elements that further support the development of underrepresented students, particularly students of color and women.

As administrators recognize the perpetual inequity that underrepresented students and faculty experience within the academy, they can potentially improve their opportunities for recruitment, socialization, and advancement (Tuitt, 2010). Comprehension of pertinent issues can also assist institutions as they assess traditional methods of supporting emerging scholar development (students and junior faculty) and position them to design innovative programs that effectively address the complex needs of underrepresented groups. As institutions move towards, as Young and Brooks (2008) put it, “a coherent, integrated component of a strategic plan” to support students and junior faculty of color, formalized structures and supporting mechanisms are key. For example, Johnson and Snider (2015) assert that formalized programs, specifically mentoring programs, at the institutional and departmental levels to support graduate students and junior faculty, particularly those of color, “spread the responsibility and send a message from the top-down that the university values mentoring and acknowledges the tremendous benefits mentoring provides” (p.13).

Institutionalized programs targeted towards underrepresented racial/ethnic doctoral students can prove critical in doctoral student success and transition into the academy. Looking to professional development opportunities like the Research BootCamp® can potentially move institutions, de-

partments, and programs closer to a more systematic approach to socializing graduate students and faculty of color, particularly Black women.

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