



SIMILARITIES AND DIFFERENCES IN HOW SUPERVISORS AT CANADIAN AND UK INSTITUTIONS UNDERSTAND DOCTORAL SUPERVISION

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ABSTRACT

Aim/Purpose	The study seeks to establish the potential role that policy and disciplinary contexts of doctoral education play in supervisors' subjective understandings of PhD supervision. It also intends to show how research into the different ways in which supervision may be understood can help supervisors become more effective in their practice and additionally help institutions design more effective professional development opportunities for supervisors.
Background	Previous research has highlighted the linkages between quality PhD supervision and positive student outcomes; nonetheless, why supervisors do what they do remains poorly understood. A few studies with small samples sought to better understand supervisors' views on supervision and also identified qualitatively different ways of understanding supervision. The present study with a larger sample builds on and extends this work by looking specifically at the concrete intentions by which supervisors engage, in particular supervisory activities they consider important, differentiating the findings by policy context and discipline.
Methodology	Participants included full-time faculty members with extensive PhD supervision experience from UK and Canadian institutions, thirty from each country with ten each from History, Biology, and Engineering. The study was comparative in that a data set generated in a previous study of the same design the researchers carried out with thirty supervisors from the UK (Kreber & Wealer, 2021) was drawn upon and compared to the new Canadian data set. The study was

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primarily qualitative and relied on two rounds of face-to-face interviews with each participant. In the introductory phase supervisors in each sample identified their views on the purposes of PhD study in their field and the goals of their supervision, and in the main research phase they articulated the concrete intentions by which they engage in supervisory activities with particular students. Data from both phases were subjected to inductive thematic analysis, facilitated by NVivo and Excel software respectively. The thematic analysis of statements of intent, the main data source, revealed six qualitatively different understandings of supervision, in each sample, which then were further examined for differences across policy contexts and disciplines.

Contribution	Policy context did not appear to make a difference in the self-reported intentions by which supervisors engage in distinct supervisory activities. Six qualitatively different ways of understanding PhD supervision emerged from a thematic analysis of intentions within each of the samples: ‘Enculturation’, ‘Functional’, ‘Emancipation’, ‘Critical Thinking’, ‘Care/relationship building’ and ‘Preparation for career/life’. Given that the first five ways of understanding doctoral supervision were also identified by Lee (2008), the study enhances confidence that supervisors tend to understand supervision in terms of this limited range of qualitatively different ways. The six concepts also allow us to identify, describe, and better understand supervisors’ personal conceptions of their supervision practice (which concepts feature strongly and which are in the background), which is helpful for encouraging supervisors to reflect on why they do what they do in their supervision practice.
Findings	‘Enculturation’ and ‘Functional’ appeared as the dominant concepts for supervisors, in relation to the supervisory activities they had identified, with the other four concepts being addressed less frequently in their statements of intent. When intentions were articulated, not in relation to specific activities but as underlying their supervision practice more generally, supervisors tend to espouse objectives that emphasize core academic values, rather than the ‘functional’ perspective. The comparative design employed pointed to more commonalities than variations across the two policy contexts and three disciplines. Identifying statements of intent and sorting them into qualitatively different understandings or ‘concepts’ of supervision allowed us to describe the personal and multidimensional conceptions of supervision held by individual supervisors and observe their idiosyncratic nature.
Recommendations for Practitioners	Academic development professionals in universities charged with providing professional development on supervision are encouraged to make use of both the method employed in this study and its findings to encourage supervisors to become aware of the assumptions underpinning their supervision activities and to develop alternative conceptions and approaches to supervision that may be better suited to meet students’ needs.
Recommendations for Researchers	The findings call for a deeper investigation into the reasons for observed small variations in intentions behind supervisory practices, beyond a focus on the particular disciplines and national contexts considered in this study.
Impact on Society	Supervisors who are reflective practitioners and able to adapt their practices to the needs of particular students are likely to provide more effective supervision, which contributes to the completion of high-quality doctoral research and, by extension, to countries’ economic, social and cultural development.

Future Research	New directions for research include a focus on development or changes in conceptions of supervision over time as well as on the linkages between conceptions of supervision, effective supervision practice, and positive student outcomes. We also strongly recommend that attention be paid to the concrete practical value of research on doctoral studies and encourage the pursuit of actionable and engaged scholarship on doctoral studies and supervision.
Keywords	doctoral supervision, intentions, qualitatively different ways of understanding supervision, personal conceptions of supervision

INTRODUCTION

Like many countries around the world, Canada and the UK recognize the need for greater investment in research to boost the country's economic, social and cultural development, as well as its competitiveness in a global knowledge economy (Conference Board of Canada, 2018; UK Council for Science and Technology, 2007). It is not surprising, therefore, that the governments of both countries share the motivation to support and advance research studies at the doctoral level to make their economies more innovative, make substantial investments in the area, and recently have announced additional multi-million dollar initiatives aimed at expanding and enhancing doctoral research in the sciences, social sciences and humanities for the next five years (Government of Canada, 2020; UK Government, 2020). The focus of this article is on doctoral supervision in Canada and the UK and, more concretely, on how doctoral supervision is understood by supervisors in these countries.

STATEMENT OF THE PROBLEM

The study reported here builds on and extends previous research on doctoral supervision we carried out within the UK context (Kreber & Wealer, 2021). That research, conducted with thirty supervisors from three disciplines (History, Biology, and Engineering), identified six distinct ways by which supervisors understand the nature of PhD supervision based on a thematic analysis of the intentions underlying their supervisory activities. The current study draws on new data from supervisors from the same three disciplines at Canadian institutions as well as the original UK data set to address the following question: What are the ways in which doctoral supervision is understood by supervisors, and what if any differences can be observed in supervisors' understandings across national policy and disciplinary contexts? The study is significant in that it directly attends to three underexplored areas in doctoral supervision, which are outlined next.

LIMITED KNOWLEDGE OF THE REASONS SUPERVISORS DO WHAT THEY DO

A series of studies carried out over the past thirty years have shown that the quality of doctoral supervision has a strong effect on positive student outcomes. Specifically, studies have demonstrated linkages between supervision practice and students' timely program completion, level of preparedness upon graduation, satisfaction with the experience of doctoral studies, and general well-being (e.g., Amundson & McAlpine, 2009; Cullen et al., 1994; Galt, 2013; Ivis & Rowley, 2005; Mainhard et al., 2009; McCallin & Nayar, 2012; Sadlack, 2004). However, it has been observed that our knowledge of the reasons behind supervisors' practices is still limited (Åkerlind & McAlpine, 2017; Cullen et al., 1994) and that empirical work should place greater emphasis on the question of why supervisors do what they do (Pearson & Brew, 2002). In response to these observations, a limited number of qualitative studies with small samples have been carried out investigating the linkages between supervisors' understanding of the purposes of graduate education and their supervision (Lepp et al., 2013), between their perspectives of knowledge production and their supervision (Bøgelund, 2015), and how recognizing research supervision as rigorous professional work might change faculty's supervision practices (Halse & Malfroy, 2010). Other research concentrated on how supervisors experience the

nature and purpose of supervision itself (Halse, 2011; Wright et al., 2007). Our qualitative study builds on and also extends this work in two important ways. Firstly, it presents an in-depth investigation specifically into the self-reported intentions by which supervisors engage in certain supervisory activities they consider important. On this first point, the study explores alignment between these intentions and supervisors' views on the purposes of PhD studies in their fields as well as the goals of their supervision. Secondly, our research is based on a larger sample than previous studies. Drawing on an existing data set from a previous study we carried out with supervisors at UK institutions as well as a new data set generated with supervisors in Canada, the present study allows for a more systematic analysis of similarities and differences across sub-groups.

LIMITED KNOWLEDGE OF THE RANGE OF POSSIBLE WAYS OF UNDERSTANDING RESEARCH SUPERVISION AND POTENTIAL VARIATION IN THESE WAYS ACROSS POLICY CONTEXTS OF DOCTORAL EDUCATION

A second and infrequently investigated area relates to whether there is a finite range of ways in which research supervision is understood by supervisors. In Lee's (2008) interview-based study with twelve academics in the UK, five different ways of understanding supervision were identified and labelled: Functional, Enculturation, Emancipation, Critical Thinking, and Care/Relationship Building. Five of the six ways of understanding supervision we identified in our recent previous study with supervisors in the UK (Kreber & Wealer, 2021) were compatible with those Lee (2008) proposed. A few years ago, Lee (2018) argued that since the publication of the original five-dimensional framework it had been developed further through new research as well as practical work with supervisors in a range of countries. However, to our knowledge no direct comparisons have been made between countries of how supervisors understand supervision. Taking into consideration the distinct contexts of doctoral education and specifically PhD studies in the UK and Canada, our study explored the range of possible ways of understanding supervision and potential variation in these ways across these two countries.

LIMITED KNOWLEDGE OF VARIATION ACROSS DISCIPLINES IN HOW RESEARCH SUPERVISION IS CONSTRUED

The third area relates to similarities and differences in how supervisors from different disciplines think about doctoral supervision. Previous research on supervisory cultures, models, policies, and procedures demonstrated disciplinary differences (Carter et al., 2017; Chiang, 2003; Donald et al., 1995; Holdaway et al., 1995; Wisker & Claesson, 2013). However, little is known in regard to how supervisors from different disciplines conceptualize doctoral supervision. A few disciplinary differences have been reported in how academics understand the nature of research (Brew et al., 2016) and the nature of teaching (Samuelowicz & Bain, 2001; Stark et al., 1988). In view of these findings, it is conceivable that there might also be disciplinary differences in how the nature of doctoral supervision is understood, given that research supervision lies at the intersection of both research and teaching. Following this reasoning, we explored potential variation in supervisors' subjective understandings of doctoral supervision not only across two different policy contexts of PhD studies but also across three disciplines.

RATIONALE

The rationale for investigating this problem is two-fold. On a first level, the advances in knowledge that the study affords, especially with regard to potential variation in the understanding of doctoral supervision across policy and disciplinary contexts, are of interest to higher education researchers concerned with seeking deeper insight into aspects of doctoral studies from a comparative perspective. In support of comparative studies, Bryman (2012) highlights that we can "understand social phenomena better when they are compared in relation to two or more meaningfully contrasting cases or situations" (p. 72). Speaking specifically to the knowledge to be gained from cross-national

research, Thomas (2009) notes that “educational and social thought can develop in an insular way in particular environments and the recognition that another country or region does things differently can offer new avenues for ideas and development” (p. 138). These advances in knowledge gained through this study are also significant to society in that research supervision has been shown to be a critical factor in the quality of doctoral research, the latter recognized as an essential asset to countries’ economic, social, and cultural development (Conference Board of Canada, 2018; UK Council for Science and Technology, 2007).

On a second level, the study offers insight that is of significant practical value to supervisors and institutions. Specifically, a deeper appreciation of how differently supervision may be construed and, by extension, how differently it may be practiced can help supervisors become more effective in their practice and, additionally, help institutions design more effective professional development opportunities for supervisors. With this latter purpose in mind, we discuss how individual supervisors’ personal conceptions of supervision can be identified and reflected upon in a professional development session aimed at promoting supervisor success. This is important in view of observations that “Highly successful supervisors tailor their approaches to guiding individuals, rather than adopting a one-size-fits-all model” (Nulty et al., 2009, p. 3) and that the capability of supervisors to be adaptive could be enhanced through “ongoing professional commitment to development, and engagement with reflective and reflexive practice” (Nulty et al., 2009, p. 3).

Before turning to the methodology and research questions, it is essential that we now offer an overview of the contexts of PhD studies in Canada and the UK.

THE UK AND CANADIAN CONTEXTS OF PHD STUDIES

The UK now ranks third in the world (after Germany and the US) in the number of doctorate holders, having graduated 25,000 doctoral students in 2017, while Canada graduated just over 7000 the same year (World Economic Forum, 2018). Although Canada (next to Korea) has the greatest percentage of young adults (in the age group of 25-34 year-olds) participating in tertiary education (61%), the percentage of students pursuing degrees beyond the Bachelor’s level is lower than in the UK (Organisation for Economic Co-operation and Development [OECD], 2019; World Economic Forum, 2018). Indeed, while the UK’s proportion of adults with a master’s or doctoral degree (in the age group of 25-64 year-olds) is just above the OECD average (1.1% in 2018), Canada is below the OECD average. Nonetheless, as was noted in the Introduction both countries have made strong investments into doctoral education.

CONTEXTS OF PHD STUDIES COMPARED: A NATIONAL STRATEGY VERSUS DECENTRALISED INITIATIVES

The UK’s strategy for research investment and doctoral education is well established and entails a comprehensive and systematic approach to the provision of doctoral training, prompted largely by some influential publications over the past three decades starting with the Dearing Report (Dearing, 1997), the Metcalfe Report (Metcalfe et al., 2002), and the Roberts’ Report (Roberts, 2002). Examples of this strategy are national cross-institutional initiatives such as the launch of doctoral training centres (Research Councils UK [RCUK], 2014) and the UK Vitae Researcher Development Framework (Vitae, 2020). The strategy also involves institutional training programs intended to equip doctoral students with a wide range of “transferable skills” that are deemed useful for success in work context outside the academy.

Significant reports and articles on the state of higher education in Canada published in the 1990s (Association of Universities and Colleges of Canada [AUCC], 1992; Canadian Association for Graduate Studies [CAGS], 1992; Donald et al., 1995; Royal Society of Canada, 1991) included no mentioning of a need for doctoral studies to be broadened. Indeed, speaking of supervision specifically, Donald and colleagues (1995) repeated the traditional view that supervision played “a critical role in

the introduction to and preparation of graduate students for scholarly life” (p.72). There is surprisingly little literature on the current state of doctoral studies in Canada. However, a report published through the Conference Board of Canada (Edge & Munro, 2015) highlights several relevant points that were also taken up in various opinion-based essays featured in the Canadian higher education magazine *University Affairs*. The report revealed that fewer than 20% of all PhD students in Canada find jobs as university professors, calling for greater attention being paid in PhD study to key outcomes such as skills in written and verbal communication, analysis and problem-solving, communication, information management, and project management (Edge & Munro, 2015).

In line with Edge and Munro’s (2015) report, Brenda Brouwer (2016), then President of the Canadian Association for Graduate Studies, wrote in *University Affairs* that, given that each year there were more PhDs graduating from Canadian universities than there were openings for new faculty, some universities in Canada had begun to broaden their training for graduate students to help them to adapt to non-university work contexts. Examples of this included the University of British Columbia’s Graduate Pathways to Success program (Galt 2011), and Concordia’s GradProSkills Development program (Venkatesh et al., 2014). However, Suzanne Bowness (2015), also in *University Affairs*, shared that in her opinion graduate students seeking alternative (i.e., non-academic) careers were still not well supported by Canadian universities. Echoing parts of Edge and Munro’s (2015) report, she suggested that doctoral programs in Canada continued to convey the message that the academic career path was the most worthwhile career choice, an observation that was reiterated by Angela Rooke (2018) writing in the same magazine three years later.

While in the UK a national policy focus on graduate education, including a shift to preparing for general or transferable skills, has been evident for some time, the same cannot be said about Canada where higher education is decentralized with responsibility being delegated to the provinces (Jones, 2014). However, despite the lack of a national strategy on doctoral education in Canada, several noteworthy initiatives have taken place over the past fifteen years: In 2005, the Canadian Association for Graduate Studies (CAGS) organized a conference on new developments in graduate education; two years later, the three major Canadian research councils collaborated with CAGS and the national Society for Teaching and Learning in Higher Education (STLHE) on an event in the country’s capital that brought together academics and employers/professionals and focused on the development of professional skills in graduate students. In 2011, an international conference on graduate student development (funded through the Social Sciences and Humanities Research Council of Canada) was held in Toronto, and in 2012 the Higher Education Quality Council of Ontario (HEQCO) hosted a symposium on graduate students entering the workforce. Six years ago, the Canadian Journal of Higher Education published a special issue that focused specifically on new career trajectories and professional development needs of graduate students. In their Introduction, the editors remarked that “the conversation about graduate student development is changing and the debate about professional development in higher education institutions across Canada increasingly addresses the kinds of skills that graduate students need to navigate changing labour markets” (Osbourne et al., 2014, p. ii). As well, in 2017, the Canadian Association for Graduate Studies (CAGS) launched an initiative called “Rethinking the PhD” that was meant to inform a “national strategy” on doctoral education. The outcome, however, were guidelines on best practice and an observation (or prediction) that “Issues of employment and skills are becoming an integral part of graduate education” (CAGS, 2017).

PHD PROGRAM STRUCTURE, DURATION, QUALITY ASSURANCE AND PROFESSIONAL DEVELOPMENT FOR SUPERVISOR

Four further observations can be made about doctoral studies in the two countries. First, Canada and the UK differ in the basic structure of the PhD program. While Canadian universities typically require one year of substantive course work often followed by a comprehensive exam before students can embark on their research proposal (CAGS, 2012), course work is often not required of PhD students in the UK. Second, the two countries differ in the duration of the regular study period for the

PhD degree. While in Canada PhD study typically takes three to seven years, the regular study period in the UK is shorter with the UK Funding Councils stipulating that studies be completed within three to four years. Third, there are differences in how the quality of research degrees is managed. The national quality assurance agency in the UK sets requirements that must be met by each institution, while Canada has no national quality assurance framework. Canadian universities offering doctoral degrees have to meet requirements set by the institution (and approved by provincial authorities), which are *guided* by the Canadian Degree Qualifications Framework. Both countries ensure quality of PhD student performance through external examiners. Fourth, there are differences in regard to supervisor training in doctoral supervision.

Regarding the last point we note that worldwide one can observe that many universities providing doctoral education now offer training initiatives and resources to support supervisory practice (Connell & Manathunga, 2012; Halse, 2011; Kiley, 2010; Lechuga, 2011; Taylor & McCulloch, 2017; Wisker & Claesson, 2013). In the UK, most universities require new academics to participate in post-graduate certificate programs (which are accredited for their alignment with a UK-wide Professional Standards Framework for Teaching and Supporting Student Learning) intended to prepare them for their teaching roles. Many of these programs include a course on learning how to work with post-graduate students. Participants in these programs tend to be junior academics new to teaching and supervision; however, the Quality Assurance Agency in the UK also requires all supervisors (inexperienced and experienced) to regularly participate in training sessions organized by the institutions. These training sessions, typically organized by the unit that administers the degree, tend to emphasize expectations and policies with regard to research supervision, rather than aspects such as supervisory styles or goals of supervision.

In Canada, support for academics in their teaching roles remains less professionalized than in the UK, despite many universities having established centers or initiatives promoting the scholarship of teaching and learning. Most universities offer workshops for beginning supervisors, but while participation is recommended it often is not required by the institution. Nonetheless, twelve years ago, an important document entitled *Guiding Principles for Graduate Student Supervision*, was released by the Canadian Association of Graduate Studies (CAGS, 2008). Although it is unclear to what extent these guidelines have fed into university approved policies on graduate supervision across the country, the authors of the current article have looked at several university websites in Canada and confirmed that, especially at large research-intensive universities that feature a Graduate School, the CAGS document is typically mentioned, and individual departments and faculties are encouraged to adopt the guidelines.

SUMMARY

To conclude this section, doctoral education in Canada and the UK are affected by the same worldwide drivers and trends associated with a competitive global knowledge economy (Andres et al., 2015), and the governments in both countries have recognized the importance of investing in doctoral education. Despite similarities in the two countries in how they invest in doctoral education, there are some distinct differences in how doctoral education is organized. Importantly, while the UK has a national policy on doctoral education, Canada relies on guidelines, published by the Canadian Association of Graduate Studies (2008), that offer institutions recommendations on doctoral studies and supervision. Other differences include the following: a national strategy on doctoral training in the UK (especially through the doctoral training centres (RCUK, 2014) and the UK Vitae Researcher Development Framework (Vitae, 2020); a national framework for quality assurance for research degrees in the UK; differences in the structure and duration of PhD studies in the two countries; and the expectation in the UK that academics participate in professional development in supervision, while participation in professional development in Canada tends to be voluntary for supervisors.

THEORETICAL FRAMEWORK AND RESEARCH QUESTIONS

The theoretical foundation for the current study of differences in understandings of doctoral supervision is work on variation in concepts and conceptions, which has received significant attention in the higher education research literature over the past forty years (Marton, 1986, 1988). Highlighting the significance of researching conceptions, Pratt (1992) suggested that “we form conceptions of virtually every aspect of our perceived world, and ... we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world” (p. 204). Qualitative research studies in higher education focusing on concepts and conceptions assume that phenomena are usually experienced (or understood) in a finite and relatively limited number of qualitatively different ways. Another word for these qualitatively different understandings is ‘concepts’ or sometimes ‘elements’. For example, Marton et al. (1993) identified six qualitatively different understandings or concepts of learning, Pratt (1992) five concepts of teaching, Lee (2008) five concepts of doctoral supervision, and Brew (2001) four concepts of research. While each of the qualitatively different understandings they identified is discrete, an individual’s personal understanding (or personal conceptions) rarely, if ever, is limited to a single concept. To illustrate, the five qualitatively different concepts of teaching Pratt (1992) identified include Transmission, Apprenticeship, Developmental, Nurturing, and Social Reform. Pratt explains that individual lecturers hold views or personal conceptions of teaching that draw on some or all of these five elements, to varying degrees. For example, while one lecturer’s conception of teaching might draw heavily on the nurturing and social reform perspectives, with the developmental, apprenticeship, and transmission perspectives being less dominant, another lecturer’s conception of teaching might be characterized by a strong alliance with the transmission and developmental perspectives, with less of an emphasis on nurturing, apprenticeship, and social reform. The conceptions of a third lecturer will again be different. Importantly, each of the three lecturers’ conceptions can be described in reference to the five concepts. The notion that our personal conceptions of social phenomena are rooted in a limited range of qualitatively different concepts (Marton, 1988) is the theoretical foundation of this current study of supervisors’ understandings of doctoral supervision.

In response to the three underexplored areas outlined under the Problem Statement, we pursued four tightly interwoven research questions to investigate supervisors’ understandings of doctoral supervision. These questions make a distinction between the terms *intentions*, *concepts* and *conceptions* of supervision. In brief, *intentions* of supervision refer to supervisors’ specific reasons for engaging in distinct supervisory activities with a student. *Concepts* of supervision refer to a limited range of qualitatively different ideas of the nature of supervision. *Conceptions* of supervision describe individual supervisors’ personal views by which they approach their supervision practice (not focused on a single activity). These personal conceptions do not fit squarely within a single concept (or pure type) but are multi-dimensional, drawing on many, or all, of the qualitatively different concepts, likely with some of these concepts featuring more dominantly than others.

- RQ1 What do supervisors at Canadian institutions say are the intentions behind what they do in a supervisory context, what is the range and nature of the qualitatively different ways of understanding supervision (i.e., concepts of supervision) that emerge from these intentions, and how do these concepts compare to the ones identified in our previous recent study with thirty supervisors in the UK?
- RQ2 Which concepts of supervision feature more prominently (and less prominently) in supervisors’ intentions and what, if any, similarities and differences can be observed across policy and disciplinary contexts of PhD supervision?
- RQ3 What do the data reveal about personal conceptions of supervision that supervisors hold?
- RQ4 What implications arise from the findings of this study for future research and professional development on graduate supervision?

RESEARCH METHODOLOGY

OBJECTIVES AND EPISTEMOLOGICAL ASSUMPTIONS GUIDING THE RESEARCH

The study was primarily qualitative and descriptive-interpretative and entailed two rounds of interviews with a group of supervisors. Of interest were participants' expressed intentions of "why they do what they do" in a supervisory context (Pearson & Brew, 2002) and their subjective views on the goals of their supervision and the purpose of PhD studies. There was no assumption guiding the study that some intentions or activities would represent an objective measure of quality in supervision while others would not. The aim was to search for concepts of supervision that were grounded in the subjective experiences of participating supervisors (Bogdan & Biklen, 2007; Creswell, 1998). As in other studies of concepts and conceptions in higher education, we sought to investigate similarities and potential variation (Marton, 1988) in the personal views on supervision expressed by supervisors from two different countries and three disciplines; however, in line with the exploratory and primarily qualitative nature of this study, our goal was to describe and not to develop causal explanations or offer generalizable conclusions on observed similarities and variations (Elliott & Timulak, 2005).

PARTICIPANTS

Participants included thirty supervisors from a large research-intensive university in Western Canada. As with the UK study (Kreber & Wealer, 2021), ten participants each were drawn from the field of Biology, History, and Engineering. Since our goal was to explore similarities and differences in the intentions of supervisors from UK and Canadian institutions, it made sense to keep the size of the group the same and also to include supervisors from the same three disciplines. Previous research had highlighted the distinctiveness of disciplinary cultures in these fields (Becher, 1989; Biglan, 1973; Donald, 2002).

All participants were PhD prepared, were full-time academic staff members (faculty), and had supervised at least four PhD students to successful completion. Many had supervised more than ten and some had supervised more than twenty doctoral students. Participants had been identified first by the school's website that offered information on faculty members' supervision. From this we selected potential candidates with supervision experience. This list was discussed with the deans or department chairs to get their sense of whether these were experienced and effective supervisors and whether they would likely be good informants for the study. In only two cases did the chairs recommend someone else we had not previously considered. In all other cases deans and chairs felt that we had good informants on the list and, while there was agreement that there were other experienced and effective supervisors among the faculty, there was no suggestion that these would be more appropriate participants. Our sampling method, therefore, was not random but purposive, and we stopped recruiting once we had achieved the desired sample size. All the identified supervisors that were confirmed with deans and chairs were then contacted by letter (via an email attachment). All agreed to participate by returning a signed consent form.

We had made efforts to recruit an equal number of male and female supervisors. However, only four female supervisors from History and one each from Biology and Engineering fit the criteria for our study. Of interest is the fact that in our UK-based study we also could recruit only six female supervisors. While there may be many reasons for this, and we did not carry out any research into this issue, one possible explanation is that women are still being underrepresented in the higher ranks of the academic profession, despite the proportion of female academics in the academy having risen in both countries (Diezman & Grieshaber, 2019; Higher Education Funding Council for England [HEFCE], 2015; Pope et al., 2020), and higher rank is likely to correlate with opportunities to supervise doctoral students.

DESIGN AND METHOD

As was the case with the UK-based study (Kreber & Wealer, 2021), the current study was carried out in two phases and comprised two rounds of individual face-to-face interviews with supervisors. Interviews were held in a room chosen by the supervisors at their university (typically their office). Each participant contributed 2 to 3 hours to this research, with most spending 2 to 2.5 hours in phase two. All thirty participants completed the introductory phase, and all agreed to participate in, and completed, the main research phase. Findings from both the introductory and main research phases with supervisors from Canadian institutions were compared to findings from the UK study. Figure 1 presents a graphical illustration of the research design.

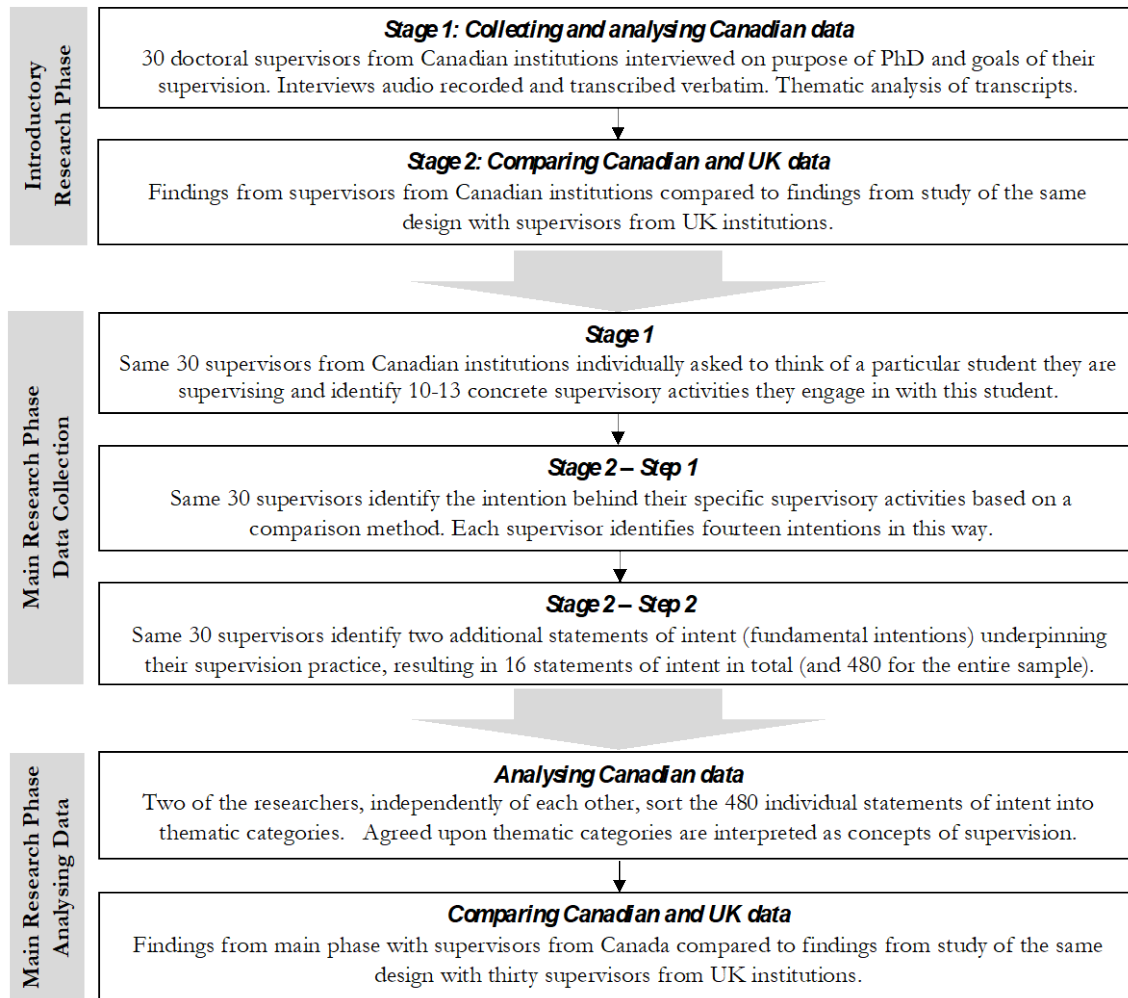


Figure 1. Flowchart outlining the stages in the research process

Introductory research phase

The introductory research phase employed semi-structured interviews whereby supervisors were asked to describe to us their views on the purposes of PhD study in their field and their views on the goals of their supervision (Åkerlind & McAlpine, 2017). All thirty interviews were audio-recorded and transcribed verbatim. Given the large number of transcripts, data were managed through NVivo 10 qualitative data software.

Transcripts were coded inductively, first within each individual interview and then across interviews, and codes were sorted into a smaller and more manageable number themes relating to purposes of PhD studies and goals of supervision (Braun & Clarke, 2006). Once a limited number of themes had

been identified through thematic analysis for purposes of PhD studies and for goals of supervision, we explored whether there was a meaningful relationship between these two groups of themes. Specifically, we explored whether a certain view of purposes of PhD study (each view constitutes a theme) was associated with a certain view (theme) of goals of supervision. Some linkages were identified, which offered first insights into the range of qualitatively different understandings of supervision (i.e., concepts of supervision) supervisors draw on. We then compared the findings from this introductory phase to those from our study with supervisors from UK institutions. As such, the introductory phase addressed both RQ 1 and 2, which were explored in greater depth in the main phase of this study.

Main research phase

The main research phase explored the intentions by which the thirty supervisors engaged in certain activities with their students. The various statements of intent that supervisors articulated were then grouped according to common themes, each theme representing a qualitatively different way of understanding supervision (in other words, each theme represents a concept of supervision). Three points were of particular interest: first, the range (number and nature) of the themes (concepts of supervision) that would emerge from a thematic analysis of the intentions the thirty supervisors identified and how these compared to the purposes of PhD studies and goals of supervision supervisors had described at a more general level in the introductory phase; second, whether supervisors' intentions would distribute evenly across these emerging concepts, and whether differences would be observed between supervisors from the UK and Canada and across different disciplines; and third, whether the data would provide insight into supervisors' conceptions of doctoral supervision.

The main research phase involved intensive dialogue with each supervisor around the activities they employ with a particular student they were supervising, and the intentions underlying each of these activities. This dialogue was facilitated by a carefully designed process we describe more fully below. The data generated in the main phase were not transcripts of the dialogue; rather they were 480 distinct statements of intent that the thirty participants generated during the dialogue (sixteen statements per supervisor). Each statement of intent was recorded in writing during the meeting and was subsequently entered into an Excel file for data management. Below we offer further details on the method and data analysis employed in the main research phase.

Stage 1: Establishing a list of supervisory activities. Each supervisor was asked to think of a student they were working with and create a list of concrete and distinct activities they employed and considered important in providing guidance to this student. Examples of distinct activities are 'commenting on the methodology chapter,' 'discussing related literature,' 'co-authoring a paper,' 'having lunch with the student.' and 'introducing the student to other scientists in her field.' Once the list was created, we asked the supervisors to review it and ensure that it was representative of what they do with the student. Each supervisor created a list of 10 to 13 activities.

Stage 2, Step 1: Identifying statements of intent. Stage 2 of the main research phase was the most important. Here supervisors articulated the specific intentions behind their supervisory activities. To maximise the potential of eliciting responses that would capture the varied intentions behind their supervisory practice, and thus discourage less helpful generic responses such as 'I do this to promote student progress,' we followed the same method we employed in the UK study. This involved asking supervisors to make comparisons based on three of their specified activities at a time. After selecting three activities from their list, the supervisor would articulate the intention that two of these activities had in common and how the intention with the third activity was different. Eight examples of statements of intent the Canadian supervisors generated following this procedure are provided below (all examples are taken from the actual data file):

- With these two activities my intent is *to encourage high quality of performance* (example 1) while with this one my intent is *to promote a sense of duty and responsibility* (example 2).

- With these two activities my intent is *to teach the student to communicate well* while with this one my intent is *to support the student from an emotional perspective* (example 4).
- With these two activities my intent is *to teach the student how to interpret data* (example 5) while with this one my intent is *to help the student find and develop a career path* (example 6).
- With these two activities my intent is *to encourage time management* (example 7) while with this one my intent is *to help the student learn how to teach* (example 8).

Each supervisor completed seven rounds of comparisons, each time with a different set of activities, thereby generating fourteen separate statements of intent.

Stage 2, Step 2: Identifying fundamental statements of intent. In a concluding but vital part of Stage 2 of the main research phase, supervisors were invited to offer two statements of intent that in their minds summed up their intentions as supervisors more generally. Here they were no longer bound by the concrete supervisory activities they had identified earlier but could state their ‘core’ or ‘fundamental’ intentions independently of these. With these two fundamental statements of intent added, each supervisor contributed a total of sixteen different statements. As the above examples made clear, each statement of intent is a single succinct sentence that specifies an objective.

Analysis of statements of intent. Altogether the group of thirty supervisors from Canadian institutions contributed 480 statements of intent. Each of these were entered into an Excel data file with the participant’s ID number, country, and discipline specified. Two members of the research team, independently of one another, analysed and sorted these 480 statements into thematic categories based on commonality in the objectives they addressed. Emerging thematic categories were interpreted as *concepts* of supervision. The researchers proceeded inductively rather than imposing a priori categories. The following parameters were set (as was the case with the UK study). The number of categories was determined after the researchers had carried out an initial sorting according to emerging themes. The categories or themes they identified were compared. Each researcher had identified six themes. Through discussion a label was developed for each. Then category inclusion criteria and exclusion criteria were provided for each theme, as well as a typical example, an atypical example and ‘close but no’ exemplars (Kreber & Wealer, 2021). Following these guidelines, the researchers again sorted all the 480 statements in the Excel file into the six thematic categories achieving a match above 95% (meaning that the two researchers sorted 456 of the 480 statements of intent into the same categories. Of these, five statements were placed into a category ‘miscellaneous’ as the wording was incoherent (a point we return to in the findings section). The remaining twenty-four statements were discussed among research team members until agreement was reached with respect to the category they fit with. Although the study was principally qualitative, aimed at describing emerging thematic categories or concepts, the design also allowed us to quantify the items in each category and report these as percentages. The data obtained from our previous study with supervisors from the UK were added to the Canadian data set, which allowed for comparisons of the frequency by which certain concepts featured in the intention of supervisors, carried out both by country and discipline.

FINDINGS

INTRODUCTORY PHASE: PURPOSES OF PHD STUDY AND GOALS OF SUPERVISION

As with the UK sample, five themes emerged regarding Canadian participants’ views on the goals of their supervision and three themes emerged regarding their views on the purposes of PhD study in their field. Small differences were observed both across disciplines and when the findings were compared to those obtained in the UK study (Table 1). Although reporting percentages in the context of interviews has obvious limitations, taking account of which themes are addressed more often (and by whom) can still be valuable. Nonetheless, it is important to acknowledge that supervisors stating some goals and purposes more often than others may or may not mean that these were more

saliently on their minds, or more important to them than other goals and purposes; and importantly, whether the observed tendencies are representative of other supervisors in the UK and Canada, or other supervisors in the three disciplines concerned, is a question this study is not able to answer and no such claim is made.

Table 1 also foreshadows how the stated purpose of PhD studies and goals of supervision identified in the introductory phase link up with the concepts of supervision emerging from the main research phase (a point we will revisit later).

Views on the purposes of PhD studies

Most of the purposes of PhD studies mentioned by supervisors in both countries were representative of the view that PhD study prepares for scientific activity, either within the academy or outside (theme 1). More supervisors in the UK than in Canada stated purposes of PhD studies that were aligned with the view that PhD study helps acquire useful skills for non-academic vocational directions (e.g., industry, government, etc.) (theme 2). This view was held strongest with Historians with six Historians in the UK compared to two in Canada addressing this theme. About one quarter of participants in both countries mentioned purposes of PhD studies representative of the view that PhD study allows for the exploration of the unexplored, thereby advancing knowledge in the field that contributes to the world in a beneficial way (theme 3). The three themes closely resemble the purposes of PhD study Lepp et al. (2013) identified in their interview-based study with 26 supervisors from education and science disciplines, indicating that these are commonly held views. Specifically, in Lepp et al.'s study, supervisors had identified the aim of doctoral studies as follows: "as a way of educating future researchers and developing the domain, ... as a way of creating new knowledge ... as PhD student's learning process" (p. 406). Our participants did not explicitly mention student self-development as a purpose of PhD studies, a purpose noted by Åkerlind and McAlpine (2017). However, our participants addressed this point in their goals of supervision (theme 2, see below), suggesting that they saw it as a purpose of PhD studies as well.

Views on goals of supervision and linkages to purposes of PhD studies

Table 1 also shows the conceptual linkages between stated purposes of PhD studies and goals of supervision. The view that PhD study prepares for scientific activity either within the academy or outside (purpose, theme 1), corresponds to four of the five emerging themes regarding goals of supervision: Theme 1, Offering training in specific research skills (the majority of supervisors in both countries mentioned goals aligned with this theme); Theme 2, Providing support, guidance and fostering self-development; Theme 3, Cultivating students for an academic career; and Theme 4, Fostering independent research. It is curious that in both countries very few (only one and two respectively) Historians addressed this last theme. The view that PhD study helps to acquire useful skills for non-academic vocational directions (purpose, theme 2) is conceptually related to a goal of supervision as promoting development opportunities beyond the academic context (for example, stimulating confidence, encouraging critical thinking, developing communicating skills, emphasizing teamwork, supporting trans-disciplinary skills, and providing teaching experiences) (goal, theme 5). One third of UK participants compared to one quarter of Canadian participants expressed goals relating to this theme. Finally, a view that PhD study explores what is yet unexplored and through advances in the field contributes to the world (purpose, theme 3) can be linked to the goal to foster independent research (goal, theme 4).

Table 1. Themes on purpose of PhD studies and on views on goals of supervision emerging of the interviews in the introductory phase with links to concepts of supervision.

Themes on		Concepts of
Views on Purpose of PhD studies	Views on Goals of Supervision	supervision
	Offering training in specific research skills UK=67%; CD=57% (UK H=60%; UK B=60%; UK E=80%) (CD H=70%; CD B=50%; CD E=50%)	<i>Emanipation</i>
	Providing support, guidance and fostering self-development UK=37%; CD=47% (UK H=50%; UK B=40%; UK E=20%) (CD H=50%; CD B=70%; CD E=20%)	<i>Emanipation, Care and, to a degree Functional</i>
Prepares for an academic career or scientific activity outside of academia UK 57%; CD=57% (UK H=60%; UK B=80%; UK E=30%) (CD H=90%; CD B=30%; CD E=50%)	Cultivating students for an academic career UK=40%; CD=44% (UK H=40%; UK B=50%; UK E=30%) (CD H=50%; CD B=40%; CD E=40%)	<i>Emanipation</i>
	Fostering independent research UK=27%; CD=37% (UK H=10%; UK B=30%; UK E=40%) (CD H=20%; CD B=50%; CD E=40%)	<i>Emanipation and Preparing for Career and Life</i>
Helps to acquire useful skills for non-academic vocational directions UK=50%; CD=20% (UK H=60%; UK B=30%; UK E=60%) (CD H=20%; CD B=10%; CD E=40%)	Promoting development opportunities beyond the academic context UK=33%; CD=23% (UK H=30%; UK B=20%; UK E=50%) (CD H=30%; CD B=20%; CD E=20%)	<i>Preparing for Career and Life, Critical thinking, Emanipation, and Care</i>
“Explores the unexplored” and through advances in the field contributes to the world in a beneficial way UK=23%; CD=27% (UK H=20%; UK B=20%; UK E=30%) (CD H=30%; CD B=40%; CD E=10%)	Fostering independent research UK=27%; CD=37% (UK H=10%; UK B=30%; UK E=40%) (CD H=20%; CD B=50%; CD E=40%)	<i>Emanipation and Preparing for Career and Life</i>

Note: B, Biology; E, Engineering; H, History; CD, Canada; UK, United Kingdom.

The findings from the introductory stage offered some initial insights into how PhD studies and supervision were conceptualized among supervisors, addressing Åkerlind and McAlpine's (2017) observation that the linkages between how the purposes of PhD studies and the goals of supervision are understood by supervisors required further exploration. Overall, Canadian and UK supervisors held remarkably similar views, and observed differences were either minor or seemed inconclusive. For example, more supervisors in the UK felt that the purpose of PhD studies was to acquire useful skills for non-academic vocational directions (theme 2), and this was the case in all three disciplines. However, it was perplexing that these differences were less strong when the related goal of supervision was considered (see theme 5, goals). The main research phase allowed for a more systematic exploration of concepts of supervision, as well as similarities and differences among the groups.

MAIN RESEARCH PHASE: CONCEPTS OF SUPERVISION

Table 2. 480 Statements of Intent (SoI) from Canadian supervisors analysed thematically, resulting in six 'concepts' of supervision. Numbers and percentages indicate the number of SoI that were generated for each category or 'concept'. For illustrative purposes, three examples of SoI are included for each 'concept'.

Concepts of supervision	Examples of SoI generated by individual supervisors in Biology (n=10), History (n=10) and Engineering (n=10)	SoI n (%)
Enculturation	B9, CD, m SoI 7. Introduce student to the practices and processes of the research community Eng 1, CD, m SoI 11. Help student think like and behave like a (n engineering) scientist H5, CD, f SoI 5. Broaden the student's interactions with other members of the professional community (through activities distinctive of that community)	162 (33.8)
Functional	B2, CD, m SoI 5. Ensure progress toward meeting academic requirements of degree Eng 5, CD, m SoI 10. Help students complete thesis on schedule H9, CD, m SoI . Prepare students for examination process	132 (27.5)
Emancipation	B9, CD, m SoI 6. Develop and appreciate autonomy Eng9, CD, m SoI 6. Foster personal improvement H1, CD, m SoI 13. Encourage student independence	55 (11.5)
Preparing for Career and Life	B7, CD, m SoI 12. Make suggestions about proper career choice Eng 7, CD, m SoI 11. Motivate lifelong work habits/standards H7, CD, f SoI 13. Discuss and consider the range of employment options for PhD candidates/graduates	49 (10.2)
Care/Quality of relationship	B5, UK, m SoI 2. Help student to feel good about him or herself Eng 2, UK, m SoI 6. Making the PhD enjoyable Eng 3, UK, m SoI 14. Maintain a good social relationship with the student	41 (8.5)
Critical Thinking	B10, CD, m SoI 5. Develop critical thinking skills Eng9, CD, m SoI 7. Foster critical thinking H1, CD, m SoI 10. Develop intellectual skills	36 (7.5)
Miscellaneous		5 (1.0)
Total N of SoI		480 (100)

Note: B, Biology; Eng, Engineering; H, History; m, male; f, female; CD, Canada, UK, United Kingdom; SoI, Statements of Intent.

Intentions behind what Canadian supervisors do and different concepts of supervision

The analysis of the 480 separate statements of intent revealed six thematic categories that were interpreted as concepts of supervision: (1) ‘Functional’ -- *Completing program & supervision requirements*; (2) ‘Enculturation’ -- *Socializing into the knowledge community*; (3) ‘Critical Thinking’ -- *Encouraging students’ critical thinking on their work*; (4) ‘Emancipation’ -- *Promoting growth and self-reflection*; (5) ‘Building a quality relationship’-- *providing care*; and (6) ‘Preparing for Career and Life’. Table 2 shows that more than 60% of the statements of intent contributed by Canadian supervisors referred to the two emerging concepts ‘Enculturation’ (33.8%) and ‘Functional’ (27.5%). The remaining statements of intent were distributed across the other four concepts of supervision, with percentages ranging from 7.5% on ‘Critical Thinking’ to 11.5% on ‘Emancipation’. Five statements (all so-called fundamental intents) could not be placed as they were not coherently worded (added to miscellaneous category).

Similarities and differences in the concepts of supervision identified by Canadian and UK supervisors and the extent to which intentions align with concepts

We compared the Canadian findings to the ones we had obtained in the UK study. The UK study had identified the same six ‘concepts of supervision’ based on a similar inductive thematic analysis of 480 statements of intent generated by UK supervisors (Kreber & Wealer, 2021). As previously noted, the first five concepts were compatible with the five-dimensional framework of concepts of supervision Lee (2008, 2018) had identified, which inspired us to adopt these labels. Our own findings suggested a sixth concept, ‘Preparation for Career and Life’, which was confirmed by the Canadian data.

Figure 2 shows the frequency of statements of intent across the six concepts of supervision when the data sets from Canada and the UK were combined, and then differentiated by country. It is striking how similar the distribution is across the six categories, with ‘Enculturation’ and ‘Functional’ being dominant with both groups. The only slight variation is on the concept ‘Critical Thinking’. Of the 480 statements of intent contributed by each group, notably more statements of intent from supervisors in the UK (14%) were aligned with the concept of ‘Critical Thinking’ than was the case with Canadian supervisors (8%). However, perhaps more significant is the finding that neither group contributed many statements of intent aligned with that concept.

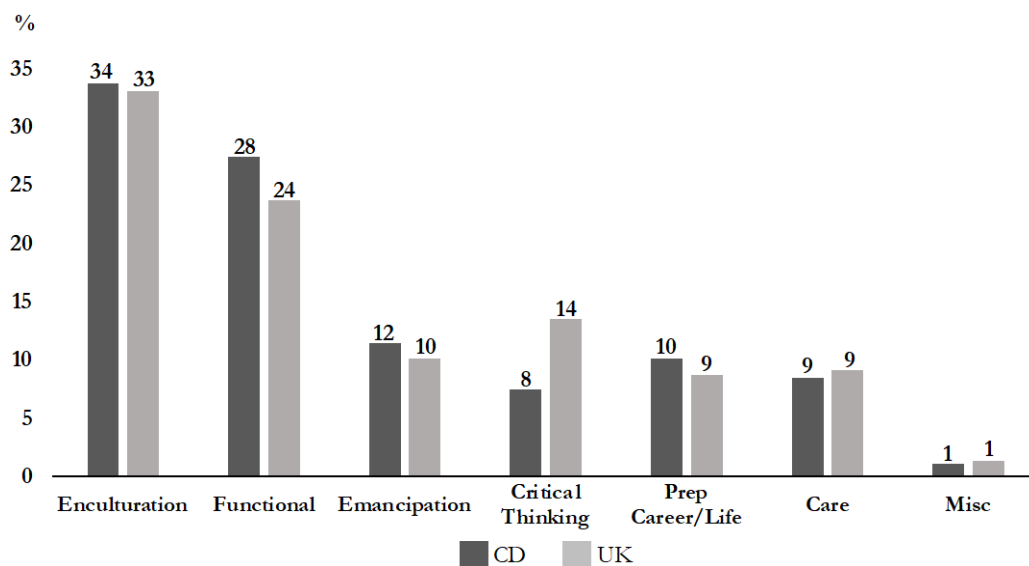


Figure 2. Frequencies in percentages of Statements of Intent across the six Concepts of Supervision, Comparison by Country (percentages based on a total of 480 statements for each group)

We also took a closer look at the core or fundamental statements of intent. The Canadian and UK group each contributed sixty fundamental statements of intent (two per supervisor), for a total of 120 for the combined data set. What we can observe if we compare the fundamental statements of intent by country (Figure 3) is that in both Canada and the UK the ‘Functional’ perspective now features less prominently (compared to Figure 2 which shows the distribution for all the statements of intent (N=960) differentiated by country); indeed, most fundamental statements of intent are now associated with the concepts ‘Enculturation’ and ‘Emancipation’ and only 10 and 13% respectively are associated with ‘Functional’. When articulating their fundamental or core statements of intent supervisors did not have to link these to their specific activities. The data suggest that supervisors’ general intentions emphasize ‘Enculturation’ followed by ‘Emancipation’, while the specific activities they employ when working with students are more strongly guided by the ‘Functional’ concept.

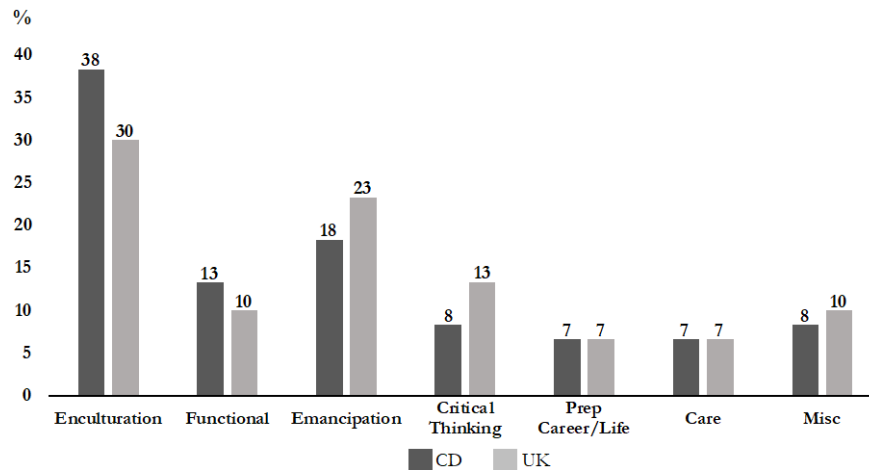


Figure 3. Frequencies in percentages of Fundamental Statements of Intent across the six Concepts, Comparison by Country (percentages based on a total of 60 Fundamental Statements of Intent in each group)

Observed similarities and differences in supervisors’ intentions by disciplines

We also analysed the statements of intent for potential disciplinary differences. Here we first considered the combined data set from the two countries and then differentiated it by discipline (N=320 in each disciplinary group). Figure 4 shows that ‘Enculturation’ and ‘Functional’ were the concepts of supervision most frequently addressed in supervisors’ intentions in all three disciplines. A few minor differences stood out: Engineering supervisors’ statements of intent addressed ‘Enculturation’ and ‘Critical Thinking’ slightly less often, and ‘Preparation for Career and Life’ and ‘Care’ slightly more often, than was the case with the other two disciplines. While the fewest statements of intent contributed by the twenty supervisors from Engineering were aligned with the concept ‘Critical Thinking’, the fewest statements of intent contributed by the twenty Historians and twenty Biologists in this study were aligned with ‘Care’, which for Historian was tied with ‘Preparation for Career and Life’.

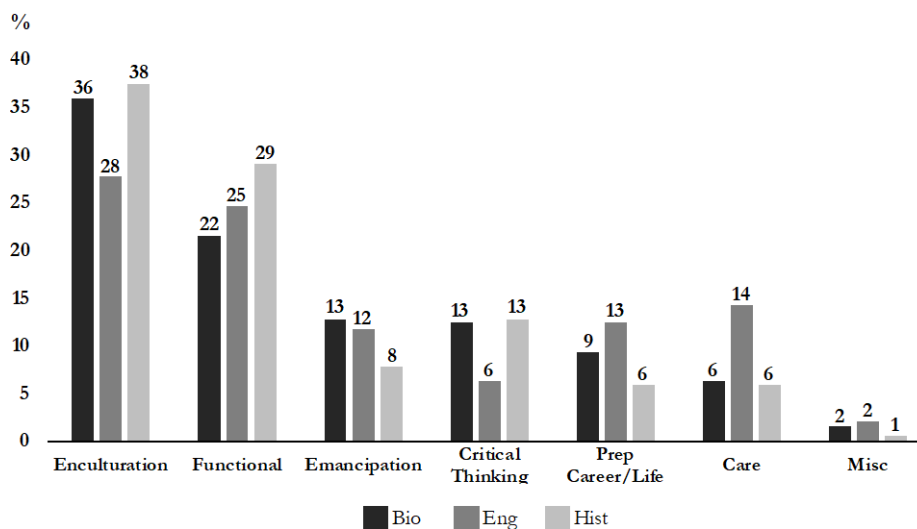


Figure 4. Frequencies in percentages of Statements of Intent across the six Concepts of Supervision, Comparison by Discipline (percentages based on a total of 320 statements for each group)

A more nuanced picture emerged when the combined data set was differentiated not only by discipline but also country (N=160 in each group). Of interest are especially Biologists and Engineers (see Figure 5). Compared to their UK peers, Biologists in Canada contributed twice as many statements of intent aligned with the concept ‘Functional’ (46 statements=29%, compared to 23 statements=14%), and fewer than half as many aligned with the concept ‘Critical Thinking’ (12=8% compared, to 28=18%). Indeed, for the UK supervisors from Biology participating in this study ‘Critical Thinking’ was the second most frequently addressed concept in the intentions underlying their activities, while for Canadian supervisors participating in this study it was ‘Functional’. A small difference between Canadian and UK supervisors from ‘Engineering’ can be observed on the concept ‘Enculturation’. UK supervisors contributed more statements of intent aligned with this concept than did their Canadian peers (53 =33% compared to 36=23%). Overall, we notice that across disciplines and countries, the majority of statements of intent underlying supervisors’ activities were aligned with the concepts ‘Enculturation’ and ‘Functional’, the exception being UK Biologists, whose second most frequently addressed concept was not ‘Functional’ but ‘Critical Thinking’.

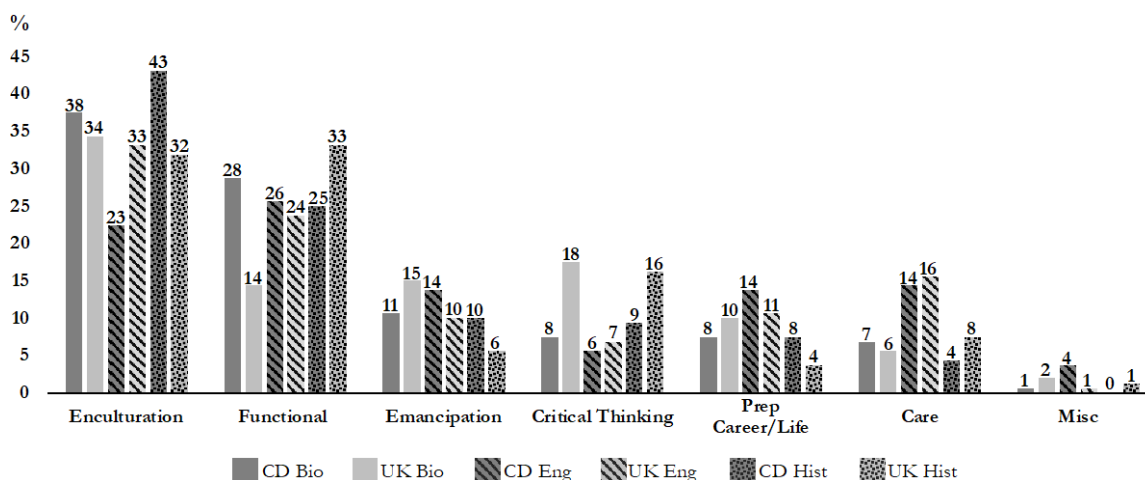


Figure 5. Frequencies in percentages of Statements of Intent across the six Concepts, Comparison by Discipline and Country (percentages based on a total of 160 statements in each group)

Again, we took a closer look at the core or fundamental statements of intent. Table 3 differentiates the data by country and discipline. The main observation is that, with the exception of Canadian Historians, ‘Enculturation’ and ‘Emancipation’ again are the most frequently addressed concepts in all groups. The third most frequently addressed concept in the UK group of supervisors across all disciplines was ‘Critical Thinking’, largely due to Biologists who addressed this concept more often than others in their fundamental statements of intent (indeed for UK engineers it was the least frequently addressed concept), while for the Canadian group it was ‘Functional’, largely due to Historians addressing this more often than others. In both groups, very few fundamental statements of intent (6.7%) were aligned with ‘Preparation for Career/life’ and ‘Care/Building Relationship’. Eleven of the 120 fundamental statements of intent could not be grouped as some supervisors had trouble articulating a second intention, instead either repeating the first one or providing ambiguous statements that could not be categorized.

Table 3. Frequencies of Fundamental Statements of Intent across Countries and Disciplines

	CD				UK			
	Bio	Eng	Hist	Total N (%)	Bio	Eng	Hist	Total N (%)
	n	n	n		n	n	n	
Enculturation	9	3	11	23 (38.3)	5	7	6	18 (30.0)
Emancipation	4	5	2	11 (18.3)	5	6	3	14 (23.3)
Functional	2	2	4	8 (13.3)	1	2	3	6 (10.0)
Critical Thinking	2	1	2	5 (8.3)	4	1	3	8 (13.3)
Prep Career/Life	1	3	0	4 (6.7)	1	2	1	4 (6.7)
Care	2	1	1	4 (6.7)	0	2	2	4 (6.7)
Miscellaneous	0	5	0	5 (8.3)	4	0	2	6 (10.0)
Total	20	20	20	60 (100)	20	20	20	60 (100)

Note: Bio, Biology; Eng, Engineering; Hist, History; CD, Canada; UK, United Kingdom.

Personal conceptions of supervision

To gain insight into individual supervisors’ personal conceptions, we looked at the sixteen intentions they had identified and allocated these to the qualitatively different concepts of supervision that had emerged from the analysis of the entire data set. Figure 6 presents, as examples, the personal conceptions of supervision of four supervisors from the same discipline (Engineering), two from the UK and two from Canada. Each conception is represented by a score on each of the six concepts, or alternatively by six (or fewer) bars of the same shade. UK Eng 10 holds a personal conception of supervision that is characterized largely by ‘Preparation for Career and Life’ (with five of his sixteen statements of intent aligning with this concept and fewer intentions associated across the remaining five concepts).

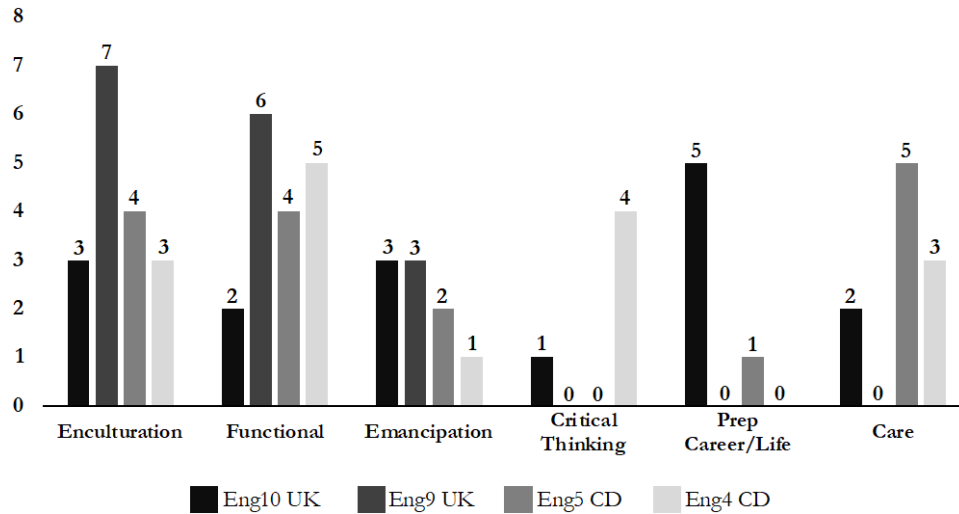


Figure 6. Examples of Conceptions of Supervision: Comparison of four Supervisors from Engineering, two from UK and two from CD (Number of Statements of Intent out of a total of 16)

By contrast, the personal conception of supervision of UK Eng 9 is much more strongly associated with ‘Enculturation’ and ‘Functional’ (with seven and six out of his sixteen statements of intent aligning with these two concepts). Both conceptions are different from that of Canadian Eng 5, whose conception centers on ‘Care/Building Relationship’ (with five of the sixteen statements of intent aligning with that concept). The conception of Canadian Eng 4 is again different. Variation can be observed not just with regard to dominant and less dominant concepts in these supervisors’ conceptions, but also with respect to the number of concepts they address. The conception of supervision of UK Eng 10 can be described in terms of all six concepts of supervision, whereas the conceptions held by both CD Eng 5 and CD Eng 4 draw only on five, and the conception of UK Eng 9 only on three. The important insight to be gleaned from these four examples is that personal conceptions of supervision practice may vary substantially among supervisors, both within a single discipline and even within a single discipline and country.

DISCUSSION

We begin with the limitations of this study and then discuss the findings in relation to the four research questions.

LIMITATIONS OF THE STUDY

Three limitations seem relevant. The study explored intentions of supervision, not actual supervision practices. Statements of intent were articulated for activities supervisors told us they engage in. Whether they really engage in these activities we did not examine, and thus it remains unknown whether the intentions (and conceptions) they articulated in this study constitute an espoused theory of supervision or serve as their actual theory in use (Argyris et al., 1985).

Moreover, while the study reveals different possibilities of how doctoral supervision may be understood by supervisors, and we are in a position to make connections between these ways of understanding supervision and actual supervisory activities (as one was derived from the other), the study cannot shed light on the relationships between intentions of supervision, supervision practices that students experience as helpful, and positive student outcomes, such as success in their thesis work, timely degree completion, preparedness for work, and personal well-being.

Finally, how participants were recruited places limitations on the study. The sample was not random and while random sampling is often not possible let alone desirable in qualitative interview research

relying on strong informants, it is possible that different intentions and, by extension, concepts of supervision would have surfaced with a different sampling procedure. It cannot be ruled out that the deans and chairs that assisted in the recruitment process might have been biased towards particular supervisors in that they perhaps favoured certain supervision practices they might have observed with these colleagues over others. Moreover, a larger number of female supervisors could have been identified by reaching out to more institutions. With the present data set, including only very few female supervisors, an analysis by gender was not possible although it might have provided interesting insights into the understanding of doctoral supervision (a point briefly revisited later in this discussion).

RESEARCH QUESTION 1

RQ1 What do supervisors at Canadian institutions say are the intentions behind what they do in a supervisory context, what is the range and nature of the qualitatively different ways of understanding supervision (i.e., concepts of supervision) that emerge from these intentions, and how do these concepts compare to the ones identified in our previous recent study with thirty supervisors in the UK?

Supervisors from Canadian institutions articulated 480 concrete statements of intent which could be thematically grouped into six qualitatively different ways of understanding research supervision. These same six ways of understanding doctoral supervision, or, alternatively, concepts of doctoral supervision, were identified in the earlier study with the UK sample (Kreber & Wealer, 2021). Given that these six concepts appeared with both the Canadian and the UK sample and five of these same concepts appeared also in Lee's (2008, 2018) work, we propose that there is a strong probability that these identified concepts play a significant role in how supervisors think about their supervisory practice.

RESEARCH QUESTION 2

RQ2 Which concepts of supervision feature more prominently (and less prominently) in supervisors' intentions and what, if any, similarities and differences can be observed across policy and disciplinary contexts of PhD supervision?

The combined data set included 960 statements of intent, 480 each generated by the UK and Canadian sample. For both samples, these statements of intent were distributed unevenly across the six concepts. The concepts featuring most prominently in supervisors' intentions were 'Enculturation' and 'Functional'; the remaining four concepts featured considerably less prominently (Figure 2). The picture changed when only the fundamental or core statements of intent were considered. When supervisors had the opportunity to articulate their intentions independently of their activities, the 'Functional' perspective was less strong and both 'Enculturation' and 'Emancipation' (Figure 4) moved into the foreground, both representing traditional academic values. The observation that only a few statements aligned with the concept of 'Preparation for Career and Life', while many aligned with 'Enculturation', suggests that supervisors tend to view supervision as guidance for a research career in the academy.

These same observations are supported by the findings from the introductory phase. The goals of supervision that had surfaced through thematic analysis of interview data in the introductory phase aligned closely with the six concepts that emerged in the main phase, further supporting the conclusion that these concepts are present in supervisors' thinking about their supervision practice. 'Enculturation' was addressed frequently in both research phases. The only concept of the six that was less prominent and more difficult to place in the introductory phase was 'Functional', although weak linkages exist to Theme 2: Providing support, guidance and fostering self-development (Table 1). This again suggests that when supervisors talk about their goals more generally, they espouse the concepts 'Enculturation' and 'Emancipation' more so than 'Functional'.

Overall, comparisons by country and discipline revealed greater commonality than variation. The unique contexts of doctoral education in the UK and Canada did not seem to play much of a role in how supervisors participating in this study viewed supervision. Given the shorter timeframe for PhD studies in the UK, we had expected that more supervisors from UK institutions than from Canadian institutions would generate statements of intent associated with the concept 'Functional'; however, this was not the case. Earlier in this article we also cited policy papers and academic literature from both countries that highlighted the need for doctoral education to provide career development opportunities for students that prepare them for work outside of the academy. It was interesting, therefore, that across all participants the concept of 'Preparation for Career and Life' did not feature strongly in supervisors' statements of intent. Moreover, given that, as was mentioned earlier, national discussions on the need for changes in the career preparation of doctoral students started in the UK earlier than in Canada and the UK has a well-established national strategy on doctoral education that includes development of so-called 'transferable skills', we had assumed that 'Preparation for Career and Life' might feature more strongly in the intentions of supervisors from UK institution; however, this assumption was not supported (Figure 3). In the introductory phase, slightly more supervisors from UK institutions, across all three disciplines, mentioned 'skills development for careers outside the academy' and 'providing development opportunities beyond the academic context' as a purpose of doctoral education (Table 1, theme 2) and a goal of their supervision (theme 5) (see Table 1). However, overall, only a few supervisors addressed these themes.

In terms of disciplinary differences in statements of intent, the greatest difference was observed between UK and Canadian Biologists on the concepts 'Critical Thinking' and 'Functional' and between UK and Canadian Engineers on the concept 'Enculturation' (Figure 5). Given that the Canadian supervisors came from the same institution, while in the UK supervisors came from three different universities, a future study could explore whether institutional or departmental culture plays a role in supervisors' intentions.

The disciplinary differences presented in Figure 5 invite several questions for further research. Researchers might explore, for example, whether supervisors in Engineering, and other applied/professional academic fields (such as nursing, architecture, or social work) understand, and possibly practice, supervision with a greater emphasis on the concept of 'Care/Building Relationship' than supervisors in non-professional academic fields, whether Historians tend to place less emphasis on 'Preparation for Career and Life' than colleagues in other academic fields, and whether Biologists and Historians tend to place greater emphasis on promoting 'Critical Thinking' than supervisors in Engineering and other applied/professional academic fields. The observation that 'Preparation for Career and Life' was addressed the least often in the intentions of Historians is noteworthy. McAlpine and Austin (2018) recently presented a complex picture suggesting that PhD students in the humanities perceive that they receive little career preparation yet consider the skills they acquire as part of their studies to be relevant in work situations. The authors argued that there is a need to look more carefully at "what skills the humanities PhD is developing—and how these can be explicitly articulated as a form of career support" (p.15). In view of the findings from our study, as well as research by Kyvik and Olsen (2012), who showed that the skills doctoral students acquire as a result of their thesis work are perceived by students to be useful for career in and outside the academy, it would also seem meaningful to ask supervisors in the humanities how they believe they offer career support, as this was not as apparent in their statements of intention.

RESEARCH QUESTION 3

RQ3 What do the data reveal about personal conceptions of supervision that supervisors hold?

An important albeit not unexpected finding was that the personal conceptions supervisors hold about their doctoral supervision practice may vary greatly, even within the same disciplinary and national context of doctoral education. Combined with the finding that there were more commonalities than differences across countries and disciplines, this idiosyncratic nature of conceptions of

supervision suggests that conceptions may not be principally a function of how supervisors experience their discipline and the broader context of doctoral education in their country. Indeed, there may be several other factors that could play a role in how supervisors view the practice of supervision. Among the factors often suggested in the literature are supervisors' conceptions of research (Bøgelund, 2015; Brew, 2001; Kiley & Mullins, 2005; Lee, 2008) and their own experience of being supervised (Lee, 2008). However, further work on these relationships is warranted. Moreover, we suggest that it could be that supervisors' subjective experience of their institutional context is a factor in how they understand supervision and we recommend that future research look into this more closely. As well, while our data did not allow for an analysis by gender, given the low representation of women in the group, it would be interesting to explore the role of gender in supervision (Hindes & Andrews, 2011), especially if such research could include an analysis of female supervisors' experience of workload and the roles and expectations placed on them within the academy.

RESEARCH QUESTION 4

RQ4 What implications arise from the findings of this study for future research and professional development on graduate supervision?

Suggestions for research based directly on the specific findings of the present study were addressed already in the previous sections. Here we would like to take the discussion further and outline, firstly, some new directions for research on conceptions of doctoral supervision and, secondly, the practical value of the study reported.

New directions for research on conceptions of supervision

Developing a conceptions of graduate supervision inventory. New research could build on the statements of intent identified in this study and look into developing a Conceptions of Graduate Supervision Inventory, employing appropriate validity and reliability measures and confirmatory factor analysis (Rattray & Jones, 2007). Such an inventory would not only facilitate the fast identification of individual supervisors' personal conceptions of supervision, but also enable research with larger samples investigating relationships between supervisors' conceptions of supervision and a wide range of other potentially relevant variables such as supervisors' level of supervision experience, discipline, institutional context, views on PhD studies, subjective experience of the university reward system with regard to supervision, gender, conceptions of teaching, conceptions of research, and many others. Findings from such correlational studies could contribute to our knowledge of the potential reasons for variation in understandings of supervision.

Focusing on changes in conceptions. The Canadian study, as well as the UK study we built on (Kreber & Wealer, 2021), was carried out with experienced supervisors only. Future research should include a group of beginning supervisors to explore whether their intentions and, by extension, their conceptions might differ from those of their more experienced peers. It is possible that supervisors with more experience, especially if that experience is combined with learning about supervision that involves critical reflection on assumptions, would hold more developed, complex, integrated or sophisticated conceptions (or meaning perspectives) on supervision that are flexible and adaptive (Kelly, 1955; Mezirow, 1991); these in turn might enable them to choose activities that are best suited for the different students they are working with. As others also observed, ideally, supervisors would be able to draw on all the concepts of supervision in their practice, choosing from a range of approaches to accommodate the needs of diverse students (Lee, 2008, 2020; McCallin & Nayar 2012).

The recommended Conceptions of Graduate Supervision Inventory furthermore would be a useful tool for exploring whether supervisors' conceptions change over time (as observed by changes in scores on the Inventory) and, possibly, depending on the student they have in mind when rating the questionnaire items. It would also be interesting to ask supervisors to complete the inventory at the beginning of a professional development initiative on supervision and again a few months after.

Researchers could also look at the number of concepts that are present in supervisors' personal conceptions and at the relationships between concepts (in other words, researchers could explore the cognitive structure of supervisors' conceptions) and whether these may change over time. One concrete and meaningful alternative way to research this without reliance on a Conceptions of Graduate Supervision Inventory would be the application of numerical repertory grids (Kelly, 1955) which have been employed widely in education including the study of research supervision (Zuber-Skerritt, 1992). In such a study, supervisory activities might serve as the 'elements' (Kelly, 1955) of the domain being interpreted (the domain in this case being 'research supervision'), and supervisors could be asked to develop two-dimensional statements (or 'bipolar constructs', Kelly, 1955) by which they conceptualize these. A rating scale (for instance from 1 to 5, with 1 and 5 representing the two poles) would then be applied to each construct. Subsequently, each 'element' would be rated on each 'construct', and constructs later subjected to hierarchical cluster analysis (Jankowicz & Thomas, 1982). Comparing the number of clusters emerging in the grids of inexperienced and experienced supervisors and identifying the concepts they represent would allow for insight into supervisors' structure of construing doctoral supervision and, importantly, the developmental nature of conceptions of supervision.

Exploring relationships between conceptions, practices, and student success. While above suggestions contribute enhanced understanding of the nature of conceptions of supervision, we think that, ultimately, it would be even more meaningful for researchers to explore how conceptions of supervision are linked to supervisory practices, and how students' experiences of these supervisory practices are associated with positive student outcomes. In the UK and Canadian studies reported here, supervisors were asked to think of a particular student and indicate the intentions behind the activities they employed with this one student. A future study could follow our described method but ask supervisors to identify two of their students and then explore whether supervisors' intentions change with the students they are working with. Additionally, it would be especially helpful if prospective research would focus on supervisor-student pairs to better understand how supervisors' activities and conceptions of supervision are linked to how their students experience the supervisory process and how students' perceptions of supervision are linked to a positive doctoral experience and successful degree completion.

The previously recommended development of a Conceptions of Graduate Supervision Inventory could be helpful here also. If two versions of such an inventory were designed, one for supervisors to complete and one for students to complete (the latter version seeking students' views on how they interpret their supervisor's intentions and actions), this could reveal potential differences in supervisors' intentions and students' experience.

In summary, the study reported in this article offers many new directions for research on understandings of doctoral supervision. The concrete practical value the study's findings hold, especially for supervisors and institutions, is the issue we shall turn to next.

THE PRACTICAL VALUE OF THIS STUDY OF INTENTIONS, CONCEPTS, AND CONCEPTIONS OF SUPERVISION

Mainhard et al. (2009) remind us that "the supervisory style that is apt for a particular student could be at odds with the preferred style of the supervisor, or the style he or she is competent to provide" (p.360). It is important, therefore, that supervisors become aware of both the assumptions or intentions guiding their supervision activities and alternative approaches to supervision best suited to meet students' needs. In this section we discuss how such dual awareness could be promoted through a professional development workshop that draws on the findings and methods employed in our study.

Setting the scene for discussing conceptions of supervision with supervisors

Given that all workshop participants are academics with at least some experience of supervision (even if the experience is simply that of having been supervised as part of their own PhD journey), we recommend opening the workshop with a discussion of how and why effective supervision is serious professional work and the varied demands it places on supervisors. To stimulate engagement, we would share the key insights from Halse and Malfroy's (2010) important research, namely that supervision practice requires contextual expertise, *techne*, habits of mind, scholarly expertise and the ability to build learning alliances with students. Opening the session with Halse and Malfroy's sophisticated theorization of supervision as a practice based in interpersonal capabilities and intellectual virtues achieves three objectives: (1) it validates participants' own identity as scholars; (2) it suggests to them early on that the expertise they bring to the development workshop is recognized and valued; and (3), it introduces the link between professional practice and reflection (Schön, 1991), thereby setting the scene for engagement with our own study on supervisors' concepts and conceptions.

As a next step it makes sense to invite workshop participants to discuss with colleagues the different activities they employ as supervisors, why they employ these, and what goals they pursue in their supervision. A particularly promising way to encourage reflection is to incorporate the Critical Incident Technique (CIT) (Brookfield, 1995) and have participants analyse their incidents in groups. Questions typically used in CIT could be adapted as follows (adapted from Brookfield, 1995, p. 115):

- What particular experience of supervising a student (or having been supervised) stands out for you when you felt that things were really going especially well?
- What particular experience of supervising a student (or having been supervised) stands out for you when you felt that things were not going well at all?
- What action did you or another supervisor (or the student) take in this supervision context that you found especially effective, helpful, or eye-opening?
- What action did you or another supervisor (or the student) take in this supervision context that you found especially puzzling, unhelpful or even confusing?
- Thinking back over the past three supervision meetings you had, what about any of these meetings surprised you the most? (This could be something about your own reactions to what went on, or something that someone did, or anything else that occurs to you.)

Workshop participants could write down their responses, discuss them in groups, and in small teams identify the assumptions underlying their responses, as well as the intentions and goals of supervision that emerge from it. Engaging participants in these conversations within and across groups is going to reveal the diversity in student needs and supervisory styles and their own preferences will likely become apparent.

Showing the relevance of research on concepts and conceptions of supervision

Once participants have come to appreciate, through various experience-based reflective strategies, that supervisory activities are based on goals that are often implicit rather than explicit and that there is variation in these activities and goals among group members, they are more likely to appreciate hearing about studies that explored concepts and conceptions of supervision more systematically.

In line with Emilsson and Johnsson's (2007) observation that learning about supervision is facilitated through improved theoretical understanding plus active participation in the practice itself, the next workshop phase would introduce supervisors to the concepts that emerged from our study. Concrete examples of statements of intent that define each concept would be provided. Participants then would work in groups to either revisit the activities they employ (or generate new ones) when working with students and identify their specific intentions with these, following the comparative method we employed in the study ("what intention do two of the three activities have in common and how is your intention with the third activity different?"). Subsequently, participants would allocate their statements of intent to the six concepts, thereby identifying their own conceptions of supervision.

Following this, the disciplinary tendencies that were observed in the study could be shared to facilitate further discussion. Guiding questions would include: “What is your reaction to these observed tendencies? Can similar tendencies be observed in your group? What other reasons might there be for differences in conceptions?” If the professional development event included supervisors from different disciplines, institutions, and policy contexts, this would likely enrich the discussion.

The opportunity to share and talk about conceptions of supervision with colleagues from cognate or very different disciplines, and possibly different institutions and policy contexts, can raise awareness of varied ways of understanding and enacting the supervisor role. As we mentioned in the section on further research, becoming aware of, and critically reflecting on, different ways of understanding the supervisor role might lead to more developed, complex, and integrated conceptions (Kelly, 1955; Mezirow, 1991); these integrated conceptions of supervision, in turn, would allow supervisors to select practices that are well aligned with the needs of diverse students (Lee, 2008, 2020; McCallin & Nayar, 2012).

To achieve this, the next phase of the workshop, importantly, would need to include opportunity for participants to identify areas of further development based on the profile of their own conceptions of supervision. This might involve discussing, based on brief case studies depicting students with very different needs, how each of the six concepts and the corresponding supervisory activities is valuable in a supervision context. The discussion would then shift to the development work required of each individual supervisor to work effectively with students who would not do well under a style of supervision that might come natural to the supervisor but is at odds with the students’ needs (Mainhard et al., 2009). Supervisors would learn that while there is no ‘one-size-fits-all’ approach to supervision, there is also no ‘one-size-fits-all’ approach to professional development on supervision. Given their unique intentions, goals, and conceptions leading to a preferred style of supervision that may not be suitable for all students, they each have idiosyncratic development needs.

CONCLUSION

Six qualitatively different concepts of supervision emerged from the study with supervisors from Canadian institutions, confirming the findings from an earlier study of the same design we carried out with supervisors in the UK (Kreber & Wealer, 2021). For the UK and the Canadian sample statements of intent were aligned predominantly with the concepts ‘Enculturation’ and ‘Functional’, with the other four concepts playing a far less dominant role. Of interest was the finding that when only the fundamental or core statements of intent were considered, the ‘Functional’ perspective lost its prominent status and was trumped by ‘Emancipation’, and ‘Preparation for Career and Life’ moved even further into the background. We argued that when invited to express their fundamental intentions (which in this study refer to intentions that were focused not on specific supervisory activities but describe supervisors’ main goals when working with students), supervisors tend to espouse objectives that emphasize core academic values, rather than those associated with helping to get the thesis done, let alone preparing students for careers outside the academy. The comparative design employed pointed to more commonalities than variations across the two policy contexts and three disciplines we considered; nonetheless, a few differences were noted. Importantly, identifying statements of intent and sorting them into qualitatively different concepts of supervision allowed us insight into supervisors’ personal conceptions of supervision and recognize their idiosyncratic nature.

In our discussion of research questions two and three, we offered several recommendations for how further inquiries could build directly on our findings, and the discussion of research question four featured also a number of new directions for research on conceptions of supervision. We outlined several reasons for why the development of a Conceptions of Graduate Supervision Inventory (something we are working on at present) was a particularly promising new direction. Next to the reasons already mentioned we add that such an inventory could also serve as a helpful tool when seeking to establish the impact on conceptions of supervision of targeted professional development opportunities.

As countries around the world have been seeking to boost their economic, social, and cultural development through advances in research and innovation, higher education scholars have highlighted the importance of good doctoral supervision, especially the linkages between quality of supervision and positive students outcomes (e.g., Amundson & McAlpine, 2009; Cullen et al., 1994; Galt, 2013; Ivis & Rowley, 2005; McCallan & Nayar, 2012; Mainhard et al., 2009). While there is no ‘one-size-fits-all’ in effective supervision practice, we argued that effective supervisors are reflective practitioners (Schön, 1991), aware of the assumptions underpinning their supervision activities as well as alternative conceptions and approaches to supervision that may be better suited to meet students’ needs. To demonstrate the value of research findings in the development of supervisors into reflective practitioners, we concluded our discussion, perhaps unorthodoxly, with an outline of how the findings from our study could be usefully employed in a professional development workshop on graduate supervision. We are persuaded by the argument that concrete illustrations of the practical value of higher education research can enhance learning about supervision (Emilsson & Johnsson, 2007). Additionally, we suggest that such illustrations contribute to the legitimacy and credibility of our higher education research community within the wider academy, and ultimately lead to more scholarly, research-informed professional development for faculty. We invite readers of this journal to join us in considering how the research we do can be of concrete practical value and call for the strong pursuit of actionable and engaged scholarship on doctoral studies and supervision.

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Similarities and Differences Between CA and UK Supervisors



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