Information Seeking and Sharing Among Doctoral Peers: An Exploratory Case Study in the Context of Skills

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Abstract

Doctoral students provide one another with invaluable support, ranging from academic to psychological, throughout the doctoral journey. These peers are also an important source of information and can be encountered in structured and unstructured environments. Studies on the former show peers providing help with learning and improvement of skills. Yet, the literature on doctoral peers in unstructured environments has mostly been about their support and how they can help one another proceed through doctoral education. Specifically, the information seeking and sharing behaviour of doctoral peers in such environments is unclear. Using twenty in-depth semi-structured interviews with Social Sciences and Humanities Ph.D. students, this study explored this behaviour by investigating the nature of information seeking and sharing among doctoral peers, the factors that might influence choosing peers as a source of information, and their usefulness. Given the importance of possessing certain skills by the time of graduation (e.g., communication, research, teaching, problem-solving), information seeking and sharing in the context of these skills was considered. Bandura's Social Cognitive Theory (SCT) and Wilson's Information Behaviour model were used as guidelines for this study.

The findings revealed that peers provide several non-skill (i.e., academic, administrative, personal, social, tips and tricks) and skill-related information (i.e., communication, critical thinking, leadership, problem-solving, research, teaching, teamwork, technical, time management, and working with others). They are also a useful source of information if there is a need for information, knowledge of which peer to go to, and access to the peer. Further, the findings led to the development of a

conceptual framework that outlines several factors which can impact the choice to go to peers for information. The factors are related to the environment (e.g., access, resource availability) and the person involved (i.e., nature of the relationship, convenience, desire to help, perceived competence, obligation).

By better understanding the information behaviour of doctoral students, institutions can strategically plan and establish environments that can facilitate information seeking and sharing among them. For doctoral students, becoming aware of this behaviour can result in consciously planning for and engaging in interactions with their peers.

Future studies may closely examine and test the developed conceptual framework; but also, further explore the concepts that emerged from this study (e.g., trust, competence, validation, and benchmarking).

Résumé

Les étudiants au doctorat se fournissent mutuellement un soutien inestimable, allant de l'aide académique au soutien psychologique, tout au long de leur parcours doctoral. Ces pairs constituent également une source importante d'information et peuvent serencontré dans des environnements structurés et non-structurés. Les études sur ces premiers montrent que les pairs apportent une aide à l'apprentissage et à l'amélioration des compétences. Cependant, la littérature sur les pairs doctorants dans les environnements non-structurés a principalement porté sur le soutien et sur la manière dont ils peuvent s'aider mutuellement à progresser dans leur parcours doctoral. En particulier, le comportement de recherche et de partage d'information des pairs doctorants dans de tels environnements reste flou. En utilisant vingt entretiens approfondis semi-structurés avec des doctorants en Sciences sociales et humaines, cette étude a exploré ce comportement en examinant la nature de la recherche et du partage d'information entre les pairs doctorants, les facteurs pouvant influencer le choix des pairs comme source d'information, et leur utilité. Étant donné l'importance de posséder certaines compétences au moment de l'obtention du diplôme (par exemple, communication, recherche, enseignement, résolution de problèmes), la recherche et le partage d'information dans le contexte de ces compétences ont été pris en compte. La théorie cognitive sociale de Bandura et le modèle de comportement informationnel de Wilson ont été utilisés comme lignes directrices pour cette étude.

Les résultats ont révélé que les pairs fournissent plusieurs types d'informations non liées aux compétences (par exemple, académiques, administratives, personnelles, sociales, astuces et conseils) et liées aux compétences (par exemple, communication,

pensée critique, leadership, résolution de problèmes, recherche, enseignement, travail d'équipe, compétences techniques, gestion du temps et travail avec les autres). Ils constituent également une source d'information utile s'il y a un besoin d'information, une connaissance de quel pair consulter, et un accès au pair. De plus, les résultats ont conduit au développement d'un cadre conceptuel qui décrit plusieurs facteurs pouvant influencer le choix de consulter les pairs pour obtenir des informations. Les facteurs sont liés à l'environnement (par exemple, accès, disponibilité des ressources) et à la personne impliquée (par exemple, nature de la relation, commodité, désir d'aider, compétence perçue, obligation).

En comprenant mieux le comportement informationnel des étudiants au doctorat, les institutions peuvent planifier stratégiquement et établir des environnements qui facilitent la recherche et le partage d'information parmi eux. Pour les étudiants au doctorat, prendre conscience de ce comportement peut les amener à planifier consciemment et à s'engager dans des interactions avec leurs pairs. Les études futures pourraient examiner de plus près et tester le cadre conceptuel développé; mais également explorer davantage les concepts émergeants de cette étude (par exemple, confiance, compétence, validation, et étalonnage).

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Contribution to Original Knowledge

This dissertation explores information seeking and sharing in the context of skills among Social Sciences and Humanities doctoral peers in unstructured environments. There is a dearth of research in this area and the findings of this study fill this gap by providing an in-depth understanding of it. The current state of seeking and sharing of information among doctoral peers, factors that could have an impact on seeking and sharing, and the perceived usefulness of information are investigated. A major contribution is the development of a conceptual framework that identifies the factors influencing doctoral students' decisions to seek from and share information with their peers. The framework can further deepen the understanding of the information seeking and sharing behaviour of doctoral peers by providing them and other stakeholders (e.g., educational institutions) with an overview of their information behaviour.

Contribution of Authors

Peymon Montazeri, the author, is the sole researcher of this dissertation and was responsible for all the work.

Chapter 1. Introduction

1.1. Background and Statement of Problem

Completing a doctorate degree is not easy and students might face several challenges throughout their journey. These can range from general working conditions and relationship with their supervisor(s) to motivation and acquiring certain expertise (Pyhältö et al., 2012; Sverdlik et al., 2018). The doctoral journey is especially difficult for those in the Social Sciences and Humanities disciplines given that they often have to work in solidarity (Hockey, 1994). The high rate of attrition among this group, around 50%, that has remained consistent for decades demonstrates how difficult obtaining a doctorate can be (Jones, 2013; Lovitts & Nelson, 2000). However, family, friends, and doctoral peers are an integral part of helping students cope with challenges associated with doctoral education (Dickerson et al., 2014). Being in the same situation and confronting similar obstacles, peers are especially an integral part of doctoral education and provide different types of support that help students proceed through their programs. They are shown to provide academic, psychological, social, and career support (Lorenzetti et al., 2019). The support, in turn, can contribute to students' success and higher completion rates (Van Rooij et al., 2021). Peers are also a valuable source of information (George et al., 2006), and with respect to learning and information seeking and sharing, may be found in structured and unstructured environments. Structured environments (sometimes referred to as formal) are often those that are planned, organized, and have an outcome. Examples may include workshops or peer support groups. Unstructured environments (sometimes referred to

as informal), on the other hand, are spontaneous with no prior planning or organization. Such environments can simply be a shared office space.

Studies on structured environments show that the interaction and the information sought and shared in them may help with improvement of skills, such as writing and research (Caux et al., 2017; Garcia-Perez & Ayres, 2012). The need for attainment and/or improvement of skills such as these during graduate studies has been a topic of much debate throughout the years (Rose, 2012), with some claiming that despite the many efforts, students may still not be equipped with certain skills once they graduate (e.g., De Grande et al., 2014; Nair et al., 2009). In unstructured environments, existing studies are mostly concerned with the support peers provide to ease the doctoral experience for one another (e.g., Devenish et al., 2009; Hadjioannou et al., 2007; Jolley et al., 2015); yet the nature of information seeking and sharing in them remains unclear. More specifically, while the important role of peers throughout the doctoral journey is acknowledged and that it might seem evident that information is being exchanged amongst peers in unstructured environments (Flores-Scott & Nerad, 2012), how it is happening and the rationale behind choosing peers as sources of information in such environments remain ambiguous. Yet, knowing these can enlighten students and institutions on the behaviour and be a blueprint for planning efforts to improve the doctoral experience. Consequently, this study explores information seeking and sharing in unstructured environments among doctoral peers in Social Sciences and Humanities, given that they are often in a more difficult position than those in other disciplines (Hockey, 1994).

Various types of information may be sought and shared among peers (e.g., basic, personal, administrative, professional, social). However, to narrow the scope, this study

focuses on information about skills. The rationale behind this focus is the importance of certain skills for post-graduation preparedness (e.g., communication, project management, problem-solving, critical thinking, teaching, teamwork, leadership, and research) and existing research that highlights the persistent lack of these skills in students, despite efforts to improve them in structured environments (Beasy et al., 2022).

To summarize, there is a gap in our understanding of information seeking and sharing among Social Sciences and Humanities doctoral peers in unstructured environments. This research explores this phenomenon through the lens of information about skills.

1.2. Research Questions

The study starts off by considering how information seeking and sharing is currently taking place in unstructured environments. Specifically, it looks at what information (including about skills), if any, is sought from and shared with peers. Second, it studies the factors that might hinder or encourage information seeking and sharing. The rationale for choosing peers over other sources of information is also considered. Finally, the perceived usefulness of information sought from and shared with peers is explored. The goal is to better understand the role of peers as sources of information and to what extent they could complement or replace other sources of information. All of these will investigate information seeking and sharing in the context of skills that are deemed necessary for doctoral students. Each of the research questions address a gap in the literature. For a more thorough discussion, see the Literature Review chapter on page 25. The research questions and what they aim to capture are displayed below.

> ***RQ1)*** *What is the nature of individual information seeking and sharing among doctoral peers?*
>
> Taking an exploratory approach to the problem, the first research question aims to grasp a better understanding of what, if any, information, including those on skills, is sought and/or shared among peers.
>
> ***RQ2)*** *What factors may impact information seeking and sharing among doctoral peers?*
>
> The second research question considers factors that could hinder or promote information seeking and sharing among doctoral peers. Here, if applicable, the

focus is also on the rationale behind choosing peers as opposed to other sources of information.

RQ3) *What is the perceived usefulness of the information sought and shared among doctoral peers?*

The final research question probes the perceived usefulness of information sought from and shared with peers. The goal is to better understand the role of peers as sources of information and to what extent they could complement and/or replace other sources.

1.3. Significance of the Study

There is a dearth of research on information seeking and sharing among doctoral peers in unstructured environments within the context of skills. This study aims to fill this gap by providing an in-depth understanding of it. Specifically, it explores the state of seeking and sharing of information among doctoral peers, the factors that could have an impact on seeking and sharing, and the perceived usefulness of information. A better understanding is essential for doctoral programs as it allows them to facilitate more efficient and effective information seeking and sharing atmospheres among students. For students, understanding their own behaviour allows for conscious planning for and engagement in interactions with peers. Since the study explores information seeking and sharing in the context of skills, if the results of this study show that peers play a role in improving skills, institutions may also wish to consider ways of incorporating peers in their skills curriculum.

1.4. Key Concepts Defined

Several concepts are mentioned throughout this dissertation. Using relevant literature, each of these concepts are defined below to ensure consistent understanding of the presented material. It should be noted that there may be multiple ways of defining each concept; however, the definitions presented are the ones that make the most sense in the context of this dissertation and are adopted.

- **Information:** Message expressed in a medium that has the potential to make difference in what one knows (Case & Given, 2016, p. 57).
- **Information need:** Recognizing that what one knows is inadequate to satisfy a goal one has in mind (Case & Given, 2016, p. 6).
- **Information seeking:** Consciously looking for information to address the information need (Case & Given, 2016, p. 6).
- **Information sharing:** The definition by Sonnenwald that states "provid[ing] information to others, either proactively or upon request, such that the information has an impact on another person's (or persons') image of the world" (2006, p. 1) is adopted for this study. The term is operationalized as a peer providing information to another (one-to-one) to show directionality.
- **Doctoral student:** A student who is working toward completing their doctoral degree.
- **Peers:** "Other people in a similar situation to each other" (Boud & Lee, 2005, p. 9).

- **Doctoral peers:** The peers a doctoral student interacts with who are also in the process of completing their doctoral degrees. A doctoral peer may be in any program or at any university.
- **Skill:** Knowing how to do something (Kogut & Zander, 1992).
- **Institution:** An entity affiliated with the university a doctoral student is attending. Examples might include the university itself, a graduate department, or a student group.
- **Structured environment:** In the context of doctoral students, this refers to an environment where activities are organized, scheduled, often occur in specific locations, and have a clear purpose and outcome. The activities are also often associated with the institution. Examples might include workshops, writing groups, peer mentoring programs, or peer support groups. Structured environment may also be referred to as "formal environment"; however, in this study the former is used.
- **Unstructured environment:** In the context of doctoral students, this refers to an environment where activities are spontaneous, without a set schedule or specific location, and lack a defined purpose or outcome. The activities are also independent of the institution. Examples might include running into a peer outside of the classroom or walking up to a peer when working at a graduate lounge. Unstructured environment may also be referred to as "informal environment"; however, in this study the former is used.

- **Information about skills:** Any information that has the potential to address an information need related to skills. Examples may include information on communication, teaching, or problem-solving skills.
- **Non-skill information:** Any information that has the potential to address an information need, except those related to skills. Examples may include personal, administrative, and social information.

1.5. The Structure of this Dissertation

The next chapter, Literature Review (page 25), expands on the introduction chapter and scrutinizes the relevant literature on peers and their role in doctoral education, structured and unstructured environments, and the information behaviour of doctoral students. Moreover, this chapter covers the model and the theory that were adopted to guide the data collection and analysis of research. It concludes by discussing the skills debate in doctoral education, which also includes the skills that will guide this study to better understand information seeking and sharing.

Chapter 3, Methods (page 53), describes how the study was conducted and the rationale behind choosing a qualitative approach to address the research questions. Further, it addresses the research design, procedures, and the quality of the study. In its discussion of procedures, the chapter explains the participants, how they were recruited, the interview process, data collection, and data analysis.

Chapter 4, Findings (page 89), reports what was found in the interviews and breaks down the themes and categories that emerged from the interviews. This chapter does not make any concluding remarks. Instead, these are reported in chapter 5, Discussion and Limitations (page 196), that covers what the findings mean. Chapter 5 is organized by the three research questions outlined in the Introduction. Limitations (page 213) of the study are discussed in chapter 5.

The final chapter, Conclusion (page 215), concludes this dissertation by reiterating the importance of this study, its contribution, and suggests future work that remains to be done.

Chapter 2. Literature Review

Doctoral students face many challenges throughout their studies such as isolation (Golde, 2005; Janta et al., 2014), financial problems (Moyer et al., 1999), and insufficient help from their supervisors (Ezebilo, 2012). It is suggested that socializing with peers, defined as, "…the process through which an individual learns to adopt the values, skills, attitudes, norms, and knowledge needed for membership in a given society, group, or organization" (Gardner, 2010, p. 63) and being an active member of the community can help with these challenges. Specifically, socializing with peers helps doctoral students fit into the academic environment (Hadjioannou et al., 2007). In fact, peers are an integral part of any learning community and their different benefits are evident in various domains (e.g., medicine (Lincoln & McAllister, 1993), education (Flores-Scott & Nerad, 2012)). This section defines peers, their impact in doctoral education, and the information behaviour among them. It also takes a closer look at doctoral education and the debate surrounding the need for skills among doctoral students. The model and theory used to guide this study is also discussed.

2.1. Peers and Doctoral Education

Peers are "other people in a similar situation to each other" (Boud & Lee, 2005, p. 9). "Situation" is context-dependent and can vary. In the context of education, peers share the same purpose of being student learners, where neither assumes the role of a teacher or an expert and has authority over another (Boud et al., 2014). Peers in doctoral education may be divided by cohort, whether they are international students, part of a research group, or social peers (Lee et al., 2017). However, since creating such boundaries is difficult (e.g., an international student peer may also be part of the same research group), for the purposes of this research and simplicity, a broad definition can be considered. Consequently, in this research, peers in doctoral education are those that the students interact with, who are also in the process of completing their doctoral degrees. With doctoral peers, there is a sense of collegiality given that they are often in the same situation and working toward the same end goal (i.e., achieving a doctorate degree) (Mudaliar, 2022).

Doctoral peers are an integral part of doctoral education. In fact, peers are so crucial that they may help increase motivation and completion rates (Devenish et al., 2009; Lorenzetti et al., 2020). Interaction among peers has several advantages. Specifically, among other things, they provide one another with academic, psychological, social, and career support (Flores-Scott & Nerad, 2012; Lorenzetti et al., 2019; Sherman et al., 2023). Academic support is in the form of helping one another move forward in their programs. It includes providing help on the program itself such as resources, general feedback (Jazvac-Martek et al., 2011), writing (Caux et al., 2017;

Kumar & Aitchison, 2018), and research (Stracke & Kumar, 2014). They can also promote critical thinking (Ferguson, 2009).

Psychological support is in the form of providing emotional help and fostering a feeling that there are others who are also going through a similar situation (i.e., working toward their doctoral studies) This support also constitutes knowing that there are others one can rely on throughout the doctoral journey (Mullen & Tuten, 2010).

Doctoral students also experience social support when engaging with peers. With social support, peers help expand each other's professional network and make one another feel like they belong to a community with a shared purpose (Lorenzetti et al., 2019). Psychological and social support are especially important as they are shown to be imperative in degree completion (Jairam & Kahl Jr, 2012).

Interaction with peers could prepare doctoral students for their future careers. Specifically, peers can help ease the transition from doctoral studies to a career by providing help to improve certain skills. These include time management, leadership, and collaboration (Lorenzetti et al., 2019).

The support from peers is especially important in the early stages and toward the end of doctoral studies (Jolley et al., 2015; Spezi, 2016). When doctoral students enter their programs, they feel overwhelmed by the sheer amount of information encountered and peers help ease this transition (Lovitts, 2001; Spezi, 2016). For example, peers provide information that is not found in other communication channels (e.g., websites, documents, etc.) (Hadjioannou et al., 2007). Toward the end of their programs, doctoral students may be dispersed and feel isolated. It is shown that support from peers in the form of a support group, even virtual, can help them navigate through these difficult times (Jolley et al., 2015).

While it is possible to rely on supervisors and other staff for support, there is a certain level of trust, a desire to help one another succeed, and a shared experience with peers that makes them more suitable for help (Jairam & Kahl Jr, 2012; Lorenzetti et al., 2020). In addition, doctoral students may be wary of sharing their struggles with authority figures, such as their supervisor, for the fear of looking incompetent (Jazvac-Martek et al., 2011).

The benefits offered by peers contribute to a better overall doctoral experience (Mullen & Tuten, 2010; Stracke, 2010) and improve the quality of their work (Boud & Lee, 2005). Peers can be found in structured and unstructured environments; these are discussed in the next section.

2.2. Structured and Unstructured Environments

Interacting with and reaping the benefits of peers may be in structured and unstructured environments. Structured environments take advantage of the benefits of peers by having "organized, formalized activities" (Lincoln & McAllister, 1993, p. 22). In these environments, there is often a purpose and an outcome to the activity. An example might be a thesis writing group in which peers attend to write and receive feedback on their writings (i.e., there is a built-in intent to interact with peers and learn from them). Mullen and Tuten (2010) refer to "structured" as "formal" and in the context of mentoring mention it has two characteristics. First, it is often organized by an institution, and second, it meets on a regular basis. For the purposes of this study, other examples may include classes, workshops, peer support groups, and peer mentoring.

Unlike structured where there is an explicit intent to interact and gain from peers, unstructured environments are those in which peers interact with one another on their own terms. Also referred to as "informal", the interaction in these environments is spontaneous, an institution is not involved in their organization, and there is no predetermined purpose or outcome to the interaction that occurs in them. They can also happen whenever and wherever is convenient for those involved (Burns & Schaefer, 2003; Lincoln & McAllister, 1993; Marsick & Volpe, 1999). With peers, these environments are often self-organized and formed organically. In the context of peer learning, Lincoln and McAllister describe these environments as "conducive to peer learning" (1993, p. 21). It means that learning may not be the purpose in such environments, but they contribute to it; and the implicit interaction happening in such environments is what allows peers to learn from one another. For this study, examples

may include interacting while sharing an office space, running into one another in the hallway, meeting at a local coffee shop, and social media interactions. This study adopts the terms structured and unstructured, as opposed to formal and informal. The characteristics of each environment are displayed in Table 2.1.

Table 2.1

Characteristics of Structured and Unstructured Environments

Structured environment	Unstructured environment
○ Organized ○ Scheduled and usually in a given location ○ Predetermined purpose and outcome ○ Often involves an institution (but not necessarily)	○ Spontaneous ○ When and where convenient ○ No predetermined purpose or outcome ○ Institution is not involved

The academic, psychological, social, and career support provided by peers, mentioned in the previous section, can be felt in both structured and unstructured environments. Studies on structured environments (e.g., peer mentoring, support group, writing groups) and their impact on learning from one another (i.e., academic and career support) are common and show that peers may improve academic and non-

academic skills. For the former, academic writing (Caux et al., 2017; Grossman, 2016; Kumar & Aitchison, 2018; Larcombe et al., 2007) and researching skills (Garcia-Perez & Ayres, 2012; Nind et al., 2020) are shown to improve; whereas in the latter, one study shows that peer organized and led activities (i.e., structured environments) have a role in improvements of communication, critical thinking, self-motivation, organization, and teamwork skills (Stracke & Kumar, 2014).

In unstructured environments, interaction between peers is more personal with less intimidation and presence of a power dynamic (Mullen & Tuten, 2010; Sloan & McPhee, 2013). In these environments, peer groups are often organically formed and are a result of being in close proximity and having common interests and goals with peers (Hadjioannou et al., 2007; Hall & Liva, 2021; Lee et al., 2017). For example, doctoral students are shown to be more comfortable with those they shared personal factors with, such as gender, age, marital, and international student status (Lee et al., 2017). Most of the focus in the literature is on the support that peers can provide in such environments (e.g., Jairam & Kahl Jr, 2012; Jolley et al., 2015). Specifically, peers in such environments provide one another with support throughout the doctoral journey that enhances the experience (e.g., improved learning (Weidman et al., 2001), may encourage completion of their degrees (Gardner, 2010; Jairam & Kahl Jr, 2012; Lovitts & Nelson, 2000), etc.). A combination of structured and unstructured environments, however, is best for learning (Christiansen & Bell, 2010).

The existing literature on unstructured environments recognises the importance of peers, yet it does not explicitly distinguish between peer-to-peer (i.e., individual) and group interactions. For example, social media interactions (i.e., unstructured) are encouraged and shown to help with academic research and periods of “stuckness”

(Bennett & Folley, 2021; Hadjioannou et al., 2007; Sharma et al., 2022), but it is unknown whether this is one-to-one or in groups. Similarly, one study recognizes that individual peers in doctoral studies provide emotional (e.g., empathy, encouragement, and enjoyment) and professional (such as academic assistance) support but goes on to argue the need for more group activities among peers, equating peer interactions in groups with peer-to-peer interactions (i.e., individual) (Jairam & Kahl Jr, 2012).

Overall, the literature on unstructured environments, and with respect to information seeking and sharing, remains ambiguous and requires a close inquiry. For instance, one study recognizes and encourages peer-led groups, regardless of their nature (i.e., structured or unstructured) and argues that they ease the doctoral process (Hadjioannou et al., 2007); yet, it maintains that an authority figure, such as a professor or supervisor, would better contribute to the their success (Hadjioannou et al., 2007; Stracke, 2010). This is despite the fact that having supervision or being in a group is not the same as peer-to-peer interaction. In fact, individual needs may not be addressed in group environments (Grant, 2002) or the supervision may intimidate participation (Jazvac-Martek et al., 2011).

2.3. Information Behaviour of Doctoral Students

Often faced with ambiguity and overwhelmed, doctoral students seek and share information with one another that helps them navigate through their programs (Lovitts & Nelson, 2000). Information behaviour refers to, "those activities a person may engage in when identifying his or her own needs for information, searching for such information in any way, and using or transferring that information" (Wilson, 1999, p. 249). What is important in information behaviour is an information need that arises when one realises a gap in what they know (Choo, 2005; Wilson, 1997). This need may be addressed by information seeking and sharing. With respect to doctoral students, they can access information from several sources such as the library (books journals, etc.), websites (Google, Google Scholar, etc.), friends, family, professors (including supervisor), social media, and peers (Bennett & Folley, 2021; Catalano, 2013; Moore & Singley, 2019; Penner, 2009; Spezi, 2016).

As already seen in their benefits, peers are an important source of information that can address the information need (Lovitts & Nelson, 2000). This is because being in the same situation and having something in common builds collegiality, which in turn encourages information seeking and sharing (Lee et al., 2017; Mudaliar, 2022).

2.3.1. Information Seeking and Sharing of Doctoral Students

Research on information behaviour of doctoral students with respect to their peers, and specifically peer-to-peer, is scarce and generally centered around the types of information a doctoral student may get from their peers and how they obtain information.

In a qualitative study that examined peer mentoring among doctoral students, Lee et al. (2017) found basic, administrative, professional, social, and personal information were exchanged among the mentors and mentees. The first type of information, basic, consisted of the essential information needed for doctoral students (e.g., housing, health, food). Administrative information, the second type, involved information on procedures, policies, and finances involving the doctoral program and the institution. Third, professional information was any information related to their role as a doctoral student, such as research, teaching, and coursework. Next, small talks and salutations were categorized as social information. Finally, personal information was related to their personal lives, such as family and hobbies, and was mostly shared with close peers.

With regards to how doctoral students obtain information, the literature is mostly focused on how they obtain information to satisfy their research needs (i.e., academic information). There is discrepancy on what doctoral students in different disciplines use to satisfy their information needs. In humanities, for example, students often refer to other people (specifically supervisor(s) and other academics) as a starting point (Moore & Singley, 2019). They provide students with information about resources such as the name of the author(s), title of the publication, name of books or articles, etc.

In other disciplines, such as business, the internet is often used as a starting point, though the choice of the search engine may differ by each field (Bøyum & Aabø, 2015; Catalano, 2013; Spezi, 2016).

For academic information, students refer to their supervisors as the first source of information. For non-academic information such as everyday basic information (housing, food, health) or professional (coursework, and topics related to personal development) (Lee et al., 2017; Morrison, 1993) peers are referred to as the first stop. Although different types of information is shared by peers, the impact is often shown to be on the doctoral students' academic work (i.e., their progress in doctoral education and completion) (Lee et al., 2017). This raises the question of how peers may help in other aspects of the doctoral students' lives. One such aspect is their development as a professional, whereby students must learn skills applicable to both their academic and non-academic careers (Rose, 2012). It is an area, where given the current efforts to teach skills, doctoral students are claimed to be unprepared (Durette et al., 2016). The Skills and Skills Improvement section (page 39) will discuss the skills debate in doctoral education. The next section, however, will look at the question of why peers are chosen as a source of information.

2.3.2. Why Choose Peers as a Source of Information

There is a dearth of research on why doctoral students explicitly choose peers as opposed to other sources of information. However, borrowing from studies on doctoral peer groups and mentoring, solidarity, a lack of power dynamic, and convenience can be recognised as some of the reasons (Hadjioannou et al., 2007; Nokkala et al., 2022).

Solidarity means peers go to one another because they are all in the same position and are often going through the same situation (Hadjioannou et al., 2007). For instance, they could all be teaching, taking classes together, or having similar interests. What is important is understanding what one another is going through.

Lack of a power dynamic means a flat level of hierarchy and could be another reason why peers go to one another for information. Lack of power-dynamic among peers means they can freely express their thoughts and work without feeling judged and small (Nokkala et al., 2022).

Convenience is due to accessibility (e.g., being present in the same room) and saving time. Vancouver and Morrison define accessibility as, "the ease with which one can obtain information from a given source" (1995, p. 277). In general, an accessible source is used first and more often (Agarwal et al., 2011). In the context of students seeking feedback, the more accessible a source (e.g., a peer), the more likely it is for a student to go to it (Vancouver & Morrison, 1995). When it comes to saving time, Hadjioannou et al. (2007) found that peers sought information on the doctoral program, funding, university regulations, as well as general hints from each other that saved them from having to look for this information by themselves (i.e., saved them time). As well, they informed each other of upcoming events, which further contributed to time savings

(2007). Likewise, in the context of looking for academic information, George et al. (2006) found that graduate students went to their peers for speed. Easy access (e.g., close proximity) may also promote learning among students (Hall & Liva, 2021; Lee et al., 2017).

Accessibility of a source (part of convenience mentioned above) is also relevant to other fields, such as nursing and engineering (Marshall et al., 2013; Morrison & Vancouver, 2000). However, when access to information has higher stakes with possible consequences, peers are more careful about their choice of information source. Particularly, more attention is paid to the quality of the source and the type of relation one has with the peer. For instance, Agarwal et al. (2011) discovered that the more important a task, the more important quality of an information source becomes. Several factors may constitute quality, including expertise, novelty, reliability, relevant scope of information, credibility, and trustworthiness (Agarwal et al., 2011; Marshall et al., 2013; Vancouver & Morrison, 1995). Regardless of the factors that define quality, it is important to note the subjectivity of the concept. An example is in healthcare when nurses need patient care information. Because of the importance of this information, it is shown that nurses pay particular attention to the credibility (i.e., a quality factor) of the colleague they go to for information. For them, credibility is demonstrated by length of time in practice, previous experience, and having worked on a specific task. Yet, nurses mentioned instances of going to colleagues that only had experience in a particular task, and disregarded their seniority (Marshall et al., 2013).

Quality of a source is also important to graduate students. For example, in their study of information behaviour of graduate students, George et al. (2006) found that 96% of their participants referred to an academic staff (such as their professors and

committee members) for research information to build foundations of their research, as opposed to other sources of information. For doctoral students, in particular, the importance of a quality source is demonstrated by the fact that they tend to consult with their supervisors when looking for research resources (Delaney & Bates, 2018). It should be noted, however, that in higher stake cases, the nature of the relationship also plays a role in choosing a source. This means that while a source might be higher quality, one might be reluctant to refer to them depending on the nature of their relationship. For example, in order to protect their image, limit the possibility of receiving negative judgement, and minimize the chance of not receiving the information requested, some students might be reluctant to go to an expert for information (i.e., a perceived quality source) (Vancouver & Morrison, 1995).

2.4. Skills and Skills Improvement

Doctoral students are often in a position where they must seek a non-academic career, given a shortage of tenure-track opportunities (Sinche, 2016) in academia and a fifty percent dropout rate (Jones, 2013; Maldonado et al., 2013). In fact, only about 20-30 percent of Ph.D. students are able to secure permanent academic positions (Institute for the Public Life of Arts and Ideas, McGill University, 2013). Seeking positions outside of academia has prompted research on the preparedness of doctoral students and specifically their skills. Skill is a complex topic and several attempts have been made to define it (e.g., Attewell, 1990; Green, 2011; Stanley & Williamson, 2017). At its core and consistent with the knowledge management discipline, however, a skill is concerned with "knowing how to do something" (Kogut & Zander, 1992, p. 386). This is recognized by others who also see its connection to knowledge (e.g., Cryer, 1998; Stanley & Williamson, 2017). For instance, Cryer, from the field of education, defines a skill as "ability to apply knowledge and understanding effectively and consistently" (1998, p. 208). Defining the term is out of the scope of this research and the simple recognition that it is related to knowing how to do something is sufficient and adopted. However, what is important about the concept is that a skill allows the doctoral student to "present himself or herself professionally and to integrate quickly into complex workplace environments" (Rose, 2012, p. 4).

Those looking at skills among graduate students have utilized different terms to refer to the concept. "Graduate attributes" (Crebert et al., 2004; Platow, 2012), "generic skills" (Crebert et al., 2004), "graduate skills" (Nair et al., 2009), "transferable skills" (Alpay & Walsh, 2008; Bennett, 2002; Cryer, 1998; OECD, 2012; Pritchard et al., 2009;

Sinche et al., 2017; Walsh et al., 2010), "competencies" (e.g., Durette et al., 2016; H. Lee et al., 2010; Solem et al., 2013), and "soft skills" (e.g., Andrews & Higson, 2008; Tulgan, 2015) are examples of terms that are used to refer to skills that are acquired throughout doctoral education, which might be applicable to a wide range of disciplines, in and outside of academia (Bromley et al., 2007). For simplicity, though, the term "skill" will be used throughout this dissertation.

The research on skills divides into those that look at what and how such skills may be taught (e.g., Rose, 2012) and whether or not students possess the skills (e.g., Cuthbert & Molla, 2015; Durette et al., 2016).

Determining the skills that are necessary for doctoral students is not the goal of this research. Hence, existing literature was used to identify them. It was found that the debate on skills needed after graduation has centered around over 150 skills as identified by researchers and academic institutions (Examples include research by Alpay & Walsh (2008), Barrie (2006), Blickley et al. (2013), Cryer (1998), De Grande et al. (2014), Durette et al. (2016), Gaudet et al. (2003), H. Lee et al. (2010), OECD (2012), Polziehn (2011), Rose (2012), Sinche (2016), Solem et al. (2008), Vitae, Careers Research and Advisory Centre (CRAC) (2011)). From the 150 skills identified, nine were most frequent and similarly defined across the sources examined. These nine are therefore chosen for this research. Given the affiliation of the researcher and the participants to McGill University, all, but one, are defined based on the Institution's definitions (2018). Since McGill (2018) does not explicitly define problem-solving, Gaudet et al.'s (2003) definition is adopted. The skills (in alphabetical order) and the corresponding definitions are listed in Table 2.2.

Table 2.2

Nine Most Common Ph.D. Skills and the Corresponding Literature Discussing Them

Skill	Definition according to McGill University (2018)	Literature
Communication skills (Oral) / Presenting (as referred to by McGill (2018))	Present ideas persuasively to diverse audiences both visually and orally. Develop skills and confidence in public speaking.	(Blickley et al., 2013; Clanchy & Ballard, 1995; Clement et al., 2010; Crebert et al., 2004; Cryer, 1998; Gaudet et al., 2003; H. Lee et al., 2010; McGill University, 2018; Nair et al., 2009; OECD, 2012; Polziehn, 2011; Quarmby et al., 1999; Sinche, 2016; Solem et al., 2008; The National Postdoctoral Association (NPA), 2010; Wisker et al., 2010)
Communication	Articulate ideas and knowledge effectively in writing for	(Blickley et al., 2013; Clanchy & Ballard,

skills (Written)	specific audiences and purposes. Develop strategies for dealing with 'writer's block.'	1995; Clement et al., 2010; Crebert et al., 2004; Cryer, 1998; Gaudet et al., 2003; H. Lee et al., 2010; McGill University, 2018; Nair et al., 2009; OECD, 2012; Polziehn, 2011; Sinche, 2016; Solem et al., 2008; The National Postdoctoral Association (NPA), 2010; Wisker et al., 2010)
Critical thinking / Analytical & Critical Reasoning (as referred to by McGill (2018))	Analyze and synthesize complex information. Critically evaluate ideas and options. Develop and test hypotheses. Analyze and interpret findings.	(Binkley et al., 2012; Clanchy & Ballard, 1995; Crebert et al., 2004; Cryer, 1998; McGill University, 2018; Nair et al., 2009; Rose, 2012; Solem et al., 2008; Vitae, Careers Research and Advisory Centre (CRAC), 2011)
Leadership	Galvanize the strengths of others to achieve common goals.	(Blickley et al., 2013; Clement et al., 2010;

	Use interpersonal skills to influence, mentor, coach, and develop others. Negotiate and manage conflict.	Gaudet et al., 2003; Lachance & Oxendine, 2015; McGill University, 2018; Nair et al., 2009; Polziehn, 2011; Rose, 2012; The National Postdoctoral Association (NPA), 2010; Vitae, Careers Research and Advisory Centre (CRAC), 2011)
Problem-solving[1]	The ability to consider alternative courses of action and select and implement appropriate solutions.	(Binkley et al., 2012; Clement et al., 2010; Crebert et al., 2004; Gaudet et al., 2003; Lachance & Oxendine, 2015; H. Lee et al., 2010; McGill University, 2018; Nair et al., 2009; OECD, 2012; Polziehn, 2011; Rose, 2012; Sinche, 2016; Solem et al., 2008; Vitae, Careers Research and Advisory Centre (CRAC), 2011)

[1] The definition of Problem-solving was adopted from Gaudet et al. (2003, p. 27) since its exact definition was missing from McGill University (2018).

Project management	Plan projects and tasks, including time, workload, and resources. Develop and prioritize strategic and tactical goals. Persevere and deal with competing pressures.	(Alpay & Walsh, 2008; Blickley et al., 2013; Clement et al., 2010; Cryer, 1998; H. Lee et al., 2010; McGill University, 2018; OECD, 2012; Polziehn, 2011; Rose, 2012; Sinche, 2016; Solem et al., 2008; The National Postdoctoral Association (NPA), 2010; Vitae, Careers Research and Advisory Centre (CRAC), 2011)
Research / Conceptual Knowledge (as referred to by McGill (2018))	Demonstrate knowledge of and/or develop an original contribution to subject area and research methods. Develop a critical understanding of relevant literature. Be familiar with publishing practices and professional development opportunities in your field.	(Gaudet et al., 2003; McGill University, 2018; OECD, 2012; Quarmby et al., 1999; Rose, 2012; Solem et al., 2008; The National Postdoctoral Association (NPA), 2010; Vitae, Careers Research and Advisory Centre (CRAC), 2011; Wisker et al., 2010)

Teaching	Plan and deliver learning experiences using pre-determined learning outcomes. Facilitate discussions, organize interactive sessions, and provide constructive feedback to participants.	(Cryer, 1998; McGill University, 2018; OECD, 2012; Oktay et al., 2013; Rose, 2012; Solem et al., 2008; The National Postdoctoral Association (NPA), 2010; Vitae, Careers Research and Advisory Centre (CRAC), 2011; Wisker et al., 2010)
Teamwork	Develop emotional intelligence, interact well with others, and build collaborative relationships for effective teamwork. Define roles and responsibilities of team members. Give and receive feedback and critical appraisals from team members.	(Alpay & Walsh, 2008; Binkley et al., 2012; Clement et al., 2010; Crebert et al., 2004; Cryer, 1998; Lachance & Oxendine, 2015; McGill University, 2018; Nair et al., 2009; OECD, 2012; Polziehn, 2011; Quarmby et al., 1999; Solem et al., 2008; Vitae, Careers Research and Advisory Centre (CRAC), 2011; Wisker et al., 2010)

The research on whether doctoral students possess these skills is not clear. Some educators claim that several of these skills (e.g., communication, critical thinking, etc.) are implicitly and automatically improved by simply being in the doctoral program (Kayima, 2022), yet; surveys of students show they do not feel prepared for non-academic careers (i.e., lack skills) (Beasy et al., 2022). To help students improve on their skills, workshops (Moslemi et al., 2009), professional courses (Walsh et al., 2010), and working closely with the industry (Solem et al., 2008) have been suggested. It is also suggested that creating opportunities to network with other peers and incorporating it into curriculum may help with skill improvement (Douglas, 2020). However, these methods may be ineffective as doctoral students continue to be inadequately prepared with these skills upon graduation (Beasy et al., 2022; De Grande et al., 2014). Some even go as far as claiming that not enough is being done to combat the issue (Cuthbert & Molla, 2015).

Scholars interested in skills related to doctoral education (i.e., research-related skills) have looked at peers as a potential avenue and seen a positive impact. Specifically, peers may have an impact on helping one another improve their skills. As mentioned in the Structured and Unstructured Environments section (page 29), writing and researching skills are shown to improve in structured environment (Caux et al., 2017; Ferguson, 2009; Garcia-Perez & Ayres, 2012; Grossman, 2016; Kumar & Aitchison, 2018; Larcombe et al., 2007). In addition, for non-research-related skills (i.e., other skills), one study shows that peer organized and led activities (i.e. structured environments) have a role in improvements of communication, critical thinking, self-motivation, organization, and teamwork skills (Stracke & Kumar, 2014). In another study, peers explained exchanging draft work for feedback which, in their opinion,

improved their writing skills (Hadjioannou et al., 2007). In a separate study, Brown also found that being together as doctoral students automatically helps improve teamwork skills (2019).

The findings on the role of peers in improving skills have thus far mostly focused on group activities and neglected the individual needs. Yet, at the individual level, needs may not be addressed in structured environments (Boud & Lee, 2005) and requires a closer examination from the peer-to-peer perspective, which is often the case in unstructured environments.

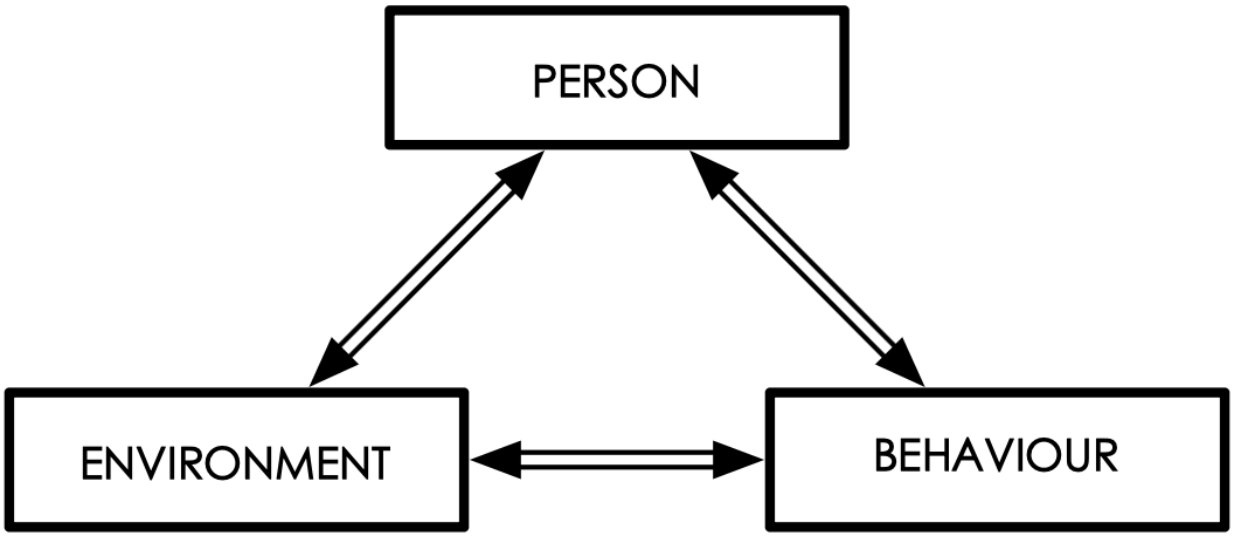
2.5. Guideline for Understanding Doctoral Peers' Information Behaviour

This study is exploratory in nature and aims to understand doctoral peers' information behaviour by allowing the emergence of a pattern from the data, as opposed to using established frameworks to make sense of the phenomenon. Yet, to guide the data collection and analysis, Social Cognitive Theory (SCT) (Bandura, 1986) and the Information Behaviour Model by Wilson (1997) are used. Specifically, they help shape the interview guide and keep the researcher focused during the coding process.

Bandura's SCT (1986) was developed in the field of psychology but is widely used in and applicable to other disciplines. It focuses on the learning process and suggests that learning is a social phenomenon that can occur in two ways; direct experience or observation (Bandura, 1977, 1986). Alongside this learning is the notion that factors related to one's behaviour, environment, and person influence one another (Bandura, 1986). For instance, one might learn how to drive (behaviour) by trying different ways and learning from the consequence(s). The consequence(s), favourable or not, happen(s) in an environment (e.g., a parking lot with several obstacles), which allows for learning. At the same time, personal factors such as believing in one's abilities (i.e., self-efficacy), outcome expectations, beliefs, values, motivation, and past experiences can also influence learning how to drive and the consequence(s) that occur in the environment (Bandura, 1977, 1986). The interplay between the three categories of factors is depicted in Figure 2.1.

Figure 2.1

The Interplay Between Behaviour, Person, and Environment in SCT



Several studies in the field of Information Science have used SCT (See Middleton et al. (2019) for more information). Specifically, its applicability and value to the field are shown in studies such as those on information behaviour (Beile & Boote, 2004; Pálsdóttir, 2008; Wilson, 1984), information literacy (Zhu et al., 2019), and social media use (Li & Lin, 2016). The usefulness of this theory to the field of Information Science is also reiterated by Wilson (1997), who incorporates SCT's concepts (e.g., learning as a social phenomenon and self-efficacy) in his Information Behaviour Model.

Given its applicability to the field, this research recognizes that the three categories of factors depicted in SCT (i.e., person, behaviour, and environment) may be present in the information seeking and sharing among doctoral peers. Its emphasis on the interaction between person, behaviour, and the environment would be a constant reminder to be mindful of these aspects throughout the study. In particular, the theory guides the interviews, data analysis, and general understanding of doctoral peers' information seeking and sharing behaviour. However, it is the belief of the researcher

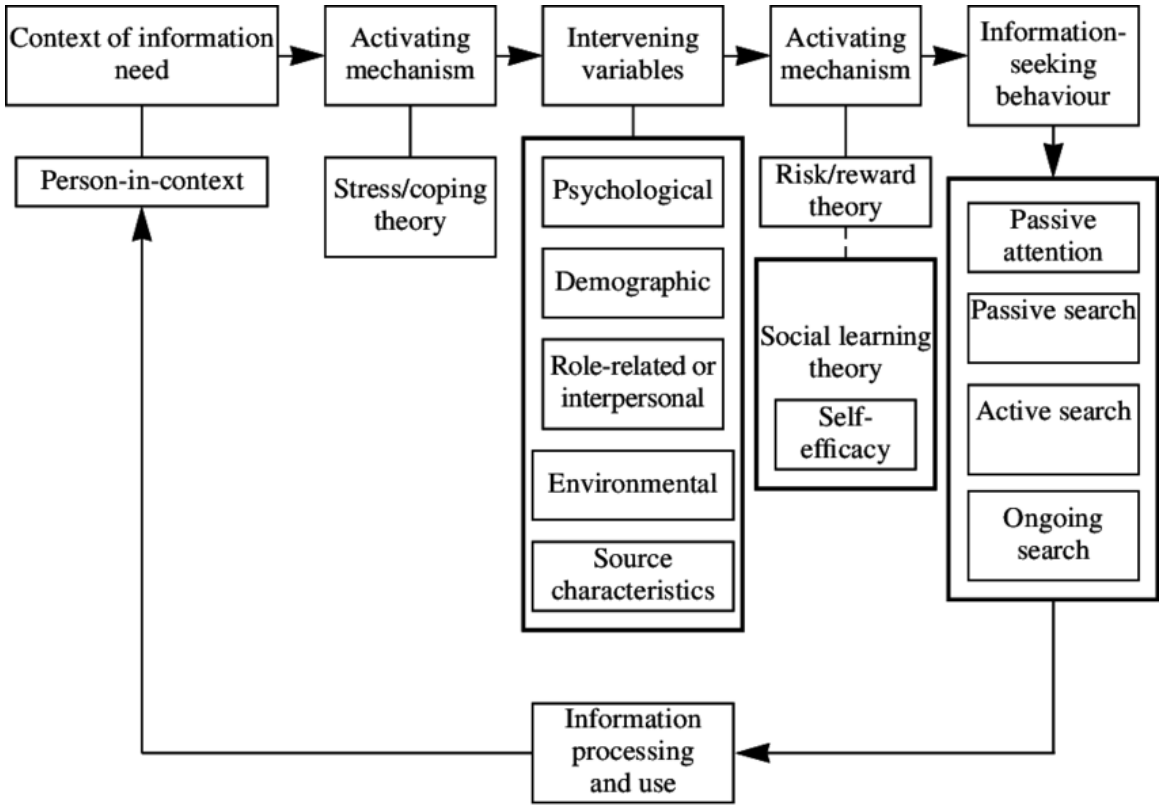
that the broad categories of factors in SCT alone cannot provide enough guidance to understand the information seeking and sharing among doctoral peers. As a result, Information Behaviour Model by Wilson (1997) is also adopted to complement SCT. Wilson's model both implicitly and explicitly integrates SCT. Implicitly, the model aligns with SCT by demonstrating that variables related to a person and their environment intervene in their information behaviour. Explicitly, Wilson incorporates SCT's concept of self-efficacy (i.e., one's belief in their ability to perform a specific behaviour) in his model. He hypothesizes that one may fail to use an information source to address their need if they doubt their ability to utilize or access that source (Wilson, 1997). In essence, Wilson's model, originating from the field of Information Science, focuses on information behaviour and highlights intervening variables that may reflect personal and environmental factors relevant to doctoral students.

Wilson's model (1997) was developed by aggregating literature from different fields such as healthcare, education, psychology, and business. The model explains that an information need gives rise to information seeking behaviour, with multiple variables and mechanisms influencing the outcome. Specifically, Wilson mentions psychological, demographic, interpersonal, environment, and source characteristics as variables that may intervene with the seeking process (Wilson, 1997). The psychological variable refers to the seeker's own internal characteristics (e.g., values, beliefs, learning styles, preferences) (Niedzwiedzka, 2003). Demographic information includes age, sex, education level, social status, etc. (Just, 2008). The interpersonal variable relates to the position of the seeker in the society in comparison to others, for instance their rights and privileges, and how that role influences their seeking behaviour (Mudaliar, 2022). The environment variable includes time, location, and culture (Wilson, 1997). Finally,

Wilson's model (1997) has source characteristics, which includes access, credibility, and channel of communication. Wilson's model (1997) can be found in Figure 2.2.

Figure 2.2

Wilson's Information Behaviour Model (1997, p. 569)



SCT and the Information Behaviour Model can be used to guide this research by providing a blueprint for the interview guide and data analysis. Specifically, the questions in the interview guide pay particular attention to the environment and the person involved in information seeking and sharing (i.e., SCT) and consider the intervening variables from Wilson's model (Wilson, 1997). These variables are shown in

Table 2.3. More details on how SCT and Information Behaviour Model are incorporated in the study can be found in the Methods chapter (page 53), which is discussed next.

Table 2.3

Variables Considered During Data Collection and Analysis

Variable	**Description**
Psychological	Information seeker's internal characteristics (e.g., values, beliefs).
Demographic	Personal characteristics of the information seeker (e.g., age, sex).
Interpersonal	Information seeker's position in the society in comparison to others.
Source characteristics	Characteristics of the information source such as access and credibility.
Environment	where information seeking and sharing takes place.

Chapter 3. Methods

This chapter focuses on the methods used in this study. In its explanation of the methods, it covers the overall design, procedures, and data analysis. Ethical and quality considerations are also included in this chapter.

3.1. Research Questions

The literature on doctoral peers' information seeking and sharing behaviour has mostly looked at structured peer interactions in group settings and used personal experiences to derive the findings. While these personal experiences show that these interactions and the subsequent information sharing and seeking may have a positive impact on doctoral students, there is a lack of research on peer interactions in unstructured environments (see the Literature Review chapter on page 25 for more details). This study focused on this gap by attempting to explore this type of interaction among doctoral students. More specifically, the study addressed three research questions. The questions are below and more details on them can be found in the Research Questions section in the Introduction chapter, on page 18.

RQ1) What is the nature of individual information seeking and sharing among doctoral peers?

RQ2) What factors may impact information seeking and sharing among doctoral peers?

RQ3) What is the perceived usefulness of the information sought and shared among doctoral peers?

3.2. Research Design

The research questions aim to explore and obtain a deeper understanding of information seeking and sharing among doctoral peers. To do so, it is believed that one-on-one conversations with doctoral students would best capture their points of view and experience on the topic. Consequently, in-depth semi-structured interviews (i.e., "intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation" (Boyce & Neale, 2006, p. 3)) were conducted.

Semi-structured in-depth interviews had several advantages for this study (Leonard, 2003). First, given the exploratory nature of this research (i.e., open to responses from participants), interviews allowed for flexibility. This meant making modifications to the interview structure and its questions on the spot. For example, when asking what information in general peers sought from one another (see the Interview Guide section on page 66), several participants talked about skills, requiring the researcher to skip the skill question. In such cases, the researcher continued the conversation and moved on to the next questions.

Second, semi-structured in-depth interviews made it possible for both the researcher and participants to ask for clarification or expand on a topic when ambiguity was encountered. For example, if a topic was introduced by a participant, the researcher was able to ask for more details. This was helpful in cases where the participant and the researcher had different understanding of a topic. This was also useful to participants since they were able to ask for examples or clarifications if questions were unclear.

Third, interviews provided the opportunity for the researcher to confirm concepts as they came up. For instance, during stories by participants, the researcher was able to ask if the story was alluding to a relevant concept.

Fourth, the researcher was able to provide prompts to jog the memory of the participants. Prompts were especially important since the participants needed examples of types of information and skills to help them recall specific instances.

Finally, in-depth semi-structured interviews allowed back and forth interactions between the researcher and each participant. This not only generated new insights but also helped the researcher understand the information seeking and sharing through their lens (Kvale, 2007). In-depth semi-structured interviews were suitable for this study given that they were both recommended (Case, 2012; Wilson, 1981) and used in studies on information seeking and sharing behaviour (e.g., Boud & Lee, 2005; Devenish et al., 2009; Lee et al., 2017).

3.3. Procedures

This section discusses the study population, in terms of the required criteria and who was recruited, how the population was recruited, as well as the interview process and procedure.

3.3.1. Study Population

The purpose of the study was to investigate unstructured peer interaction of doctoral students and the consequent information seeking and sharing. To accurately capture the phenomenon, a population with three main requirements was needed.

First, the population needed to include those who did not rely, implicitly or explicitly, on other students to complete their studies. This automatically ruled out those who belong to research labs, such as students in fields like engineering or life sciences, since being in a lab innately encourages interaction with and/or reliance on one another (Archambault et al., 2006). Hence, for this study, doctoral students in Social Sciences and Humanities disciplines were chosen as they tend to work more in isolation with little requirement of interaction with others (Ali & Kohun, 2006; Janta et al., 2014; Lovitts, 2001; Owler, 2010). This was important as it consequently allows for an unstructured information seeking and sharing environment.

Second, in addition to the field criteria, doctoral students who have been in their program for at least one year were needed and selected so that they would have had opportunities to meet and get to know some of their peers by then.

Finally, a diverse group of doctoral students were needed to reflect the diversity of disciplines and holistically capture information seeking and sharing behaviour among them. McGill University, located in Montreal, Canada, was chosen given that it is a Tier

1 university with diverse students (comprising over 30% international student population), a high number of doctoral students (over 10% of its total population), and a wide range of programs (McGill University, 2022). McGill was also chosen due to its convenience, since it was the university attended by the researcher.

3.3.2. Researcher's position in the study

Being a doctoral student, at the same university, and in one of the two disciplines (i.e., Social Sciences and Humanities) as the participants, gave the researcher the position of an insider. This was an important characteristic of the study and had several implications during the data collection and analysis stages.

Being an insider gave the researcher the advantage of being considered a peer to those being studied. From the perspective of the participants, this resulted in collegiality (see Peers and Doctoral Education, page 26), gave the researcher legitimacy, and expedited rapport building and trust (Chavez, 2008). One of the ways this became evident was when participants said phrases such as, "as you also know" or "it is probably the same in your program", when speaking about their experience with teaching, comprehensive examination, and access to resources from the institution. In addition, being an insider meant that the participants were able to use jargon and mention topics that were innately familiar to the researcher. For instance, several participants referred to the university's learning platform simply by its name, myCourses, and mentioned its features without further elaboration. Yet, having used the platform, the researcher knew what they were referring to.

The researcher was aware and mindful of his position and made sure to only acknowledge, as opposed to discuss, his experience so as not to influence the participants' responses. As an example, when speaking about a lack of access to resources, the researcher would only acknowledge that he also experienced it, as opposed to providing details such as how he sought the needed resources.

The insider position also had implications on data analysis. Specifically, being in a similar position meant that the researcher was able to use his experience to better make sense of the data. It was especially useful when generating codes and themes, since the researcher was able to confirm whether the generated codes and themes were indeed relevant to doctoral students. Regardless, to ensure the results were obtained from the interviews and not solely the worldview of the researcher, mitigating steps were taken, including "check-coding" with an independent researcher. For a more detailed description of this see Quality of the Study (page 86).

3.3.3. Recruitment and Sampling

This study employed a purposive sampling approach, which means intentionally choosing a sample that meets the specific needs of the project (Robson & McCartan, 2017, p. 281). While this approach may be susceptible to bias in selecting participants, which could result in overlooking those who may also be valuable to the study (D. E. Gray, 2013), purposive sampling allows the researcher to choose the exact population needed for the study (i.e., those who have had direct experience with the subject of the study). This results in a rich understanding of the phenomenon of the study (Creswell & Plano Clark, 2018).

In this study, the sample involved doctoral students in Social Sciences and Humanities disciplines at the university attended by the researcher (i.e., McGill University). At McGill University, the setting of the study, most of the Social Sciences and Humanities programs are in the Faculty of Arts. A list of all programs in that Faculty and their corresponding program coordinator's contact information was obtained from McGill University's website. However, upon further investigation it became evident that some of the found programs either did not offer a doctoral degree (e.g., International Development, Public Policy), belonged to more than one faculty (e.g., Psychology, Geography), or were not in the field of Social Sciences and Humanities (e.g., Social Studies of Medicine). These programs were eliminated, and the remaining were contacted via email in late October 2021. The email was sent to the program coordinators and asked them to forward a recruitment message to their doctoral students. The recruitment message indicated the purpose of the study, the criteria for participation, the interview procedure, and the compensation. It can be found in

Appendix A: Recruitment Email, page 246. Given the sampling technique (i.e., purposive), the researcher tried to recruit students from a variety of programs and cohorts. The list of the programs contacted is found in Table 3.1. The programs indicated by asterisk are those that were ultimately included in the study.

Table 3.1

List of the Programs Contacted for Participant Recruitment

Program
Anthropology
Art History and Communication Studies*
East Asian Studies*
Economics*
English
French Language and Literature
History and Classical Studies*
Islamic Studies
Jewish studies*
Languages, Literatures, and Cultures*

Linguistics*

Philosophy*

Political Science*

Religious Studies*

Social Work*

Sociology*

3.3.4. Participants

From the recruitment email sent (see Recruitment and Sampling, page 61), twenty-seven (27) individuals expressed interest in an interview. Six (6) did not reply to the follow-up emails and one (1) did not meet the eligibility criteria. Twenty (20) were ultimately interviewed, at which point data saturation was already achieved. This number is also consistent with what the literature recommends (Kvale, 2007). The demographic information of the participants can be found in Table 3.2.

Table 3.2

Demographic Information of the Participants

Participant ID	Year Started	Age	Gender	Status
P1	2016	Not Provided	Male	International
P2	2019	35-39	Female	Canadian
P3	2019	30-34	Male	International
P4	2020	20-29[2]	Female	Canadian
P5	2018	25-29	Female	International
P6	2019	25-29	Female	International

[2] The participant indicated their age in increments of 10.

P7	2019	25-29	Male	Canadian
P8	2016	30-34	Male	International
P9	2017	35-39	Male	Canadian
P10	2017	25-29	Male	International
P11	2018	25-29	Female	International
P12	2018	30-34	Male	International
P13	2018	30-34	Other	International
P14	2018	25-29	Female	International
P15	2020	25-29	Female	Quebec student
P16	2020	30-34	Female	Canadian
P17	2017	30-34	Male	Quebec student
P18	2020	25-29	Male	International
P19	2019	25-29	Female	Canadian
P20	2020	30-34	Male	Quebec student

3.3.5. Interview

This section explains the interview process.

3.3.5.1. Interview Guide

An interview guide was developed, tested, and modified accordingly before interviews were conducted. It was developed based on the research questions, Bandura's SCT (1986), Wilson's Information Behaviour Model (1997), and a qualitative study that has conducted a similar information seeking and sharing research (Lee et al., 2017). It consisted of only a few main questions with several follow-up and probing questions that helped provide clarification and jog the memory of participants, respectively. The idea was to introduce the question, allow the participant to freely discuss, and use the follow-ups and probes to gain a deeper understanding of what was being discussed. The interview started with questions that required minimal efforts and delved into more demanding ones as it progressed. Asking questions that require minimal effort early in the interview, prior to those related to the research questions (i.e., more demanding questions), helps the participants feel confident in their ability to participate in the study (Bryman et al., 2012).

Examples of questions used in the guide are given in the section below; however, in general, open-ended questions were used. This type of questioning was useful for both the participants and the researcher. It gave the former the freedom to answer as they wished in terms of quality and quantity, while the latter was able to probe the participants when needed. The combination of the two translated into rich and unexpected findings (D. E. Gray, 2013; Neuman, 2014). The interview guide can be found in Appendix B: Interview Guide, page 247.

The guide was divided into several sections that can be summarized into introduction, environment, information seeking behaviour, information sharing behaviour, and demographic information. Each of the sections are described below.

3.3.5.1.1. Introduction

This section reiterated the purpose of the interview and included a list of definitions to prepare the participants for it. The goal was twofold, it set the stage and explained the main concepts to participants as much as possible to limit ambiguity (Bryman et al., 2012; Kvale, 2007). The definitions included the nine skills collated from the literature (see Skills and Skills Improvement on page 39), as well as the concepts being discussed in the interview. The concepts included peer, information, information seeking, and information source. The introduction section of the interview guide is also known as the "briefing" section in the literature (Kvale, 2007, p. 55).

3.3.5.1.2. Environment

The questions in this section were informed by the environment category of factors mentioned in SCT (Bandura, 1986) and Wilson's Information Behaviour Model (1997). Although not directly addressed, by asking about the environment, interpersonal variables from Wilson's model were also addressed as they could highlight the participant's position among their peers. The section also included some demographic questions, given Wilson's emphasis on demographic in one's information behaviour. Questions included the participant's program of study, when they entered their doctoral program, and their status in terms of whether they are international, Canadian, or Quebec student. It also asked the participant to describe their typical day and their setting/environment as a doctoral student. Emphasis was placed on who they are often surrounded with and whether they have an office space in the department that they would utilize for work. These responses were used to tailor later questions. For example, P19 mentioned spending most of their time at the department's graduate lounge/office. The interviewer used this information to modify the question about seeking general information to "…think during those times when you were in your office… What type of things in general do you talk to them about?"

3.3.5.1.3. Information Seeking

The information seeking section of the guide included questions to cover the person and environment categories, as outlined by Bandura's SCT (1986), and was divided into two main parts: 1) questions related to general information seeking behaviour, and 2) questions related to seeking skill-related information behaviour. The questions asked aimed to understand what doctoral students go to peers for and why. The "why" portion was informed by the source characteristics and psychological variables of Wilson's Information Behaviour Model (1997).

The general information seeking behaviour portion asked the participants to identify what they ask from their peers. The question asked, "Since you entered your doctoral program, what type of things in general do you talk to/ask your peers about? Or what do you often go to your peers for?" In this question the word, "*things*" was used instead of "*information*" to make the conversation more natural (i.e., less jargon). When answering this question, the respondents were asked to think of why this information was sought from peers as opposed to other sources, and the outcome of this information. The outcome follow-up was to understand how useful the participants thought the information was (i.e., perceived usefulness (Davis, 1989)).

A list containing the possible types of information sought from peers was included at the end of this section. The list was to be read by the interviewer when participants could no longer think of examples. It was adopted from Lee et al.'s (2017) study of the types of information exchanged among doctoral peers and included basic, administrative, professional, social, and personal information.

The second portion of the information seeking behaviour focused on skill-related information. It asked the participants to think of their interaction with peers and when, in the past, they have gone to each other for specific skills. Hypothetical examples were also used in the question to clarify the question. It read,

> Think of your interaction with peers, sometimes you may refer to them for information that could potentially help you with specific skills. For example, you might have asked for help on your writing, presentation that you're working on, or you were stuck on a problem, and they have helped you sort it out. With specific examples, what such information (e.g., communications, teaching, research) have you sought from your peers?

For each example provided, the guide had several follow up prompts for the researcher, they are listed below, along with the rationale behind each.

a) *Why did you seek this information from your peers?*

   This prompt was to understand why peers, in general, are chosen as a source of information.

b) *Who did you ask (in terms of relationship, e.g., officemate, etc.) and why did you choose this person?*

   This prompt was to understand who and why a specific peer is chosen as a source of information. The participants were reminded that it is not necessary to mention names and that if mentioned, they would be anonymous. It was inspired by the source characteristics and environmental factors of SCT

(1986) and Information Behaviour Model (Wilson, 1997). The factors (e.g., location, time, access, credibility) were not read to participants and were only present to remind the researcher to follow up if these were brought up.

c) *How did you use this information?*

This prompt was to have the participants further elaborate on the information about skills that was sought. Specifically, in terms of how it was used and the outcome. It helped to contextualize their example. For example, P11 mentioned going to another peer for help on a statistics software package but did not elaborate on the result of their interaction. Using this prompt, the researcher found that the information sought was only relevant for a small portion of a later project that was eventually abandoned when P11 faced other roadblocks. Without the prompt, the researcher might have only known about the first part and assumed the project was an eventual success.

d) *How would you describe the usefulness of asking your peers, as opposed to another source, for this information?*

e) *How would you describe the usefulness of the information you sought from your peers?*

These two prompts were similar and ultimately aimed to identify the usefulness of going to peers for information on skills, as opposed to other sources. When answering the researcher also asked about the other sources of information that the participant might have used when seeking the information.

3.3.5.1.4. Information Sharing

This section was identical to the information seeking behaviour section with the only difference being that the questions were flipped. This meant that information "sought from" was replaced with information "shared with". The goal was to further elaborate on what is sought from peers by looking from the angle of the one providing the information, with the hope that novel findings would emerge. It, too, had two main questions. The former was related to information shared in general, with the latter focusing on information shared about skills. The information sharing questions had the same prompts as those in the previous section with the difference that two were omitted. The omitted prompts were related to who else they referred to for information on skills and the usefulness of asking peers as opposed to other sources. The omission was due to the assumption that a low probability of the participants would know the answer.

It was unclear whether the questions in this section would provide information that was not already covered in the previous section; hence, the incorporation of this section in the interview guide was not finalized until it was tested with the first five participants. During these interviews, the section did, in fact, yield novel information, prompting the decision to keep it as part of the interview.

3.3.5.1.5. Demographic Information

Demographic questions were asked at the end of the interview. The rationale behind asking these at the end was that, first, hopefully, a rapport had already been established between the parties involved and made the participant feel more comfortable sharing such information. Second, these questions might have seemed irrelevant to the participant at the beginning of the interview, which could have discouraged engagement (Bryman et al., 2012). Demographic information sought were prior education, work experience, age, and gender. This section covered the demographic factors indicated in Wilson's Information Behaviour Model (1997).

3.3.5.1.6. Pilot and Modifications

Two pilot interviews were conducted at the School of Information Studies at McGill University to test the interview guide. The video conferencing application Zoom was used for the pilot interviews since it was to be used for data collection (see Data Collection Procedure, page 77 for detail on how data was collected). The pilots showed that the interview questions yielded the appropriate answers; however, highlighted the following,

- The introduction of skills and their definition at the beginning of the interview confused the participants as they only focused on those skills when asked about information sought or shared,
- The definitions helped set the stage for the interviews; however, "information seeking" and "information source" did not add value to the participants' prior knowledge.

Consequently, the list of skills was kept from the participants until they no longer could think of any skills or if they asked for a definition. With this change, the word "skill" was no longer defined. The researcher found this to be appropriate since a characteristic of a qualitative research method is to understand the concept from the point of view of the participants (D. E. Gray, 2013). Not having the definition meant that the participants would rely on their own understanding of the term when answering and limits any bias that might be introduced by providing a text-book definition. Additionally, the two definitions of "information seeking" and "information source" definitions were also removed.

A change was made to the interview guide after the first few interviews. Specifically, certain concepts, including trust and comfort, were constantly brought up by the participants. The researcher wished to pursue these concepts further. Therefore, they were later added as a reminder to the question asking about who and why participants refer to for information. It is normal for the interview guide to evolve during data collection given the emergent nature of qualitative research, in which directions may change and focus may shift as the research progresses (Creswell & Creswell, 2018).

3.3.6. Data Collection Procedure

A total of 20 participants were interviewed online over Zoom between November 2021 and February 2022. Zoom was chosen for logistical reasons and the fact that in-person interviews were not allowed due to the COVID19 pandemic[3]. In addition, conducting interviews using Zoom offered several benefits. First, it provided convenience, allowing doctoral students to participate from a location of their choice (e.g., home, office, coffee shop). Second, Zoom enhanced accessibility, enabling the researcher to reach participants who were geographically distant (e.g., in a different city or country). Third, it resulted in cost and time savings. By eliminating the need for physical attendance at a predetermined location, participants saved both the time and expenses associated with commuting. These advantages align with findings from existing literature on conducting studies using Zoom (e.g., Gray et al., 2020; Oliffe et al., 2021).

Regardless, conducting interviews using Zoom presents challenges, such as participants' limited access to the internet and potential privacy issues depending on their chosen location for the interviews (L. M. Gray et al., 2020). However, no such challenges were observed during this study. Step by step data collection procedure, from the initial contact with a participant to transcript verification and exporting to ATLAS.ti, is discussed below.

Each interview took about 60 minutes and was conducted by the researcher (i.e., Peymon Montazeri). The doctoral students expressed their interest in the study via

[3] See the Limitations section (page 213) for more details on the effects of COVID19 on this study.

email. Once an email was received, the researcher thanked the potential participant, verified that they met the needed criteria, and explained the study in more detail. Once verified, the participant was sent a digital copy of the consent form (See Appendix C: Participant Consent Form on page 252) and was provided with a possible interview date. Participants were asked to indicate their consent by replying to the email or sending back the signed digital consent form and confirming the interview date.

The consent form informed the participants of key information about the study (Kvale, 2007). It provided the names and contact information of the key research parties, the title of the project, its purpose, and the data collection procedure. It also ensured them of voluntary participation and confidentiality. In addition, it indicated the compensation amount upon completion. When the signed consent form (or acknowledgement email) and confirmation of the interview time were received, the researcher would create and send a Zoom meeting to the participant.

On the day of the interview, the researcher logged on to Zoom ten minutes prior to the scheduled interview time to test the sound and connection. Once the participant entered, they were greeted and thanked for agreeing to partake in the interview. They were explained the purpose of the study and reminded of the confidentiality of the interview and that no video recording of the interview would be kept. In addition to confidentiality, they were reminded that it is not necessary to mention names throughout the interview and, instead, relations or any other distinguishing elements could be employed. Moreover, the option to turn off their videos was offered, though all the participants chose to keep their videos on. The interviewer also kept his video on throughout the interview. Finally, the permission to start the recording was sought and

the recording started. The interview followed the guide previously outlined and lasted about sixty minutes.

Throughout the interview, field notes were also taken on the laptop of the interviewer (D. E. Gray, 2013). The main questions from the guide were asked and prompts were used to gather a more in-depth response. When more guidance was needed for recall, the researcher asked the participants to recall an incident and asked follow-up questions based on the stated incident. For example, if the participant mentioned they shared an office, the researcher would ask them to think of the last time they were in that office. Or if they mentioned a specific peer whom they sought information from, the researcher would ask them to think of their last encounter with that peer.

At the end of the interview, the recording was stopped, the researcher asked for the participant's email address for compensation and concluded the interview. The email address was typed in the chat function of Zoom and was only used to send the compensation. It was not recorded. Several participants stayed and chatted with the researcher about the project and doctoral studies in general. These conversations were mostly casual; however, a number of interesting concepts were brought up and written down by the researcher for later analysis.

Within minutes of its conclusion, the recording of the interview was available on the computer of the researcher. It contained one audio and one video file. The video file was immediately deleted, and the audio was renamed according to the participant's assigned code (e.g., P1, P2, etc.). It was uploaded to the online platform Otter.ai for transcript generation.

Otter.ai is an online platform that automatically generates transcripts from a given audio. It was chosen for this research due to its low cost and speed, as opposed to using a human transcription service. The generated transcripts, however, are not often accurate and need a human to proofread them.

After each interview transcript was generated, to ensure accuracy, the researcher listened to and edited it directly on the Otter.ai platform. The editing process also involved redacting any identifiable information from the transcript (e.g., names of peers, friends, professors, etc.). The platform allows one to add comments and highlight sections of the text as needed. The researcher used these features to conduct preliminary data analysis.

The verified transcript, including the comments and highlights, was exported as a Microsoft Word document, and imported to ATLAS.ti for in-depth data analysis. After all the transcripts were downloaded, they were deleted from Otter.ai.

3.3.7. Data Analysis

Thematic Analysis was used to analyse the transcripts (i.e., the data). Thematic Analysis is "a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set" (Braun & Clarke, 2012, p. 57). For interviews, it involves the researcher reviewing the interview transcripts and identifying the patterns that emerge among them. It is done by going through segments of text, coding what they mean, identifying the commonalities across them, and making sense of them by creating themes. The research question(s) is/are important in this process as it/they limit(s) the researcher to only look at relevant patterns to identify themes (Braun & Clarke, 2012). The importance of research questions on staying focused was recognized early by the researcher. Hence, a printed copy of the research questions was taped to the researcher's computer screen as a reminder throughout the data analysis process.

As mentioned in the previous section, the thematic analysis started during the transcript verification phase. As the researcher was listening to the recordings for accuracy on Otter.ai, notes were also being taken. This process allows the researcher to familiarize themselves with the data prior to the official analysis (Braun & Clarke, 2006). When the interviews were verified, they were exported to the researcher's password-protected laptop and imported into a qualitative data analysis software package.

It was decided to use a qualitative software package, since compared to hand coding, they provide the researcher with speed, efficiency, and searchability (Creswell & Creswell, 2018). Three of the most popular software packages were considered and

tested for data analysis; NVivo, MAXQDA, and ATLAS.ti[4]. After the pilot interviews, the transcripts were imported into each of these software packages and used to test the ease of use and speed. ATLAS.ti was subsequently chosen as it outperformed the other two and was preferred by the researcher.

Once in ATLAS.ti, the researcher started coding by assigning tags to each transcript. The tags were program, year started the program, age range, gender, and status in terms of place of origin (e.g., International, Canadian, Quebec student). This information can be found in the Recruitment and Sampling and Participants sections (pages 61 and 64, respectively). Transcripts were read and using the notes taken during the verification process, text segments were coded. For example, when asked about why the participants referred to their peers for information, several mentioned the notion of "comfort", among others, as a rationale. A code with that title was, therefore, created.

Larger segments of text were often chosen to capture the complete thought of the participant. Guest et al. recommend selecting a larger portion as "the boundaries of a given segment should allow the thematic features of the segment to be clearly discerned when it is lifted from the larger context" (2012, p. 52). At times, this meant also including the question/comment from the interviewer. For example, P10 mentioned "overall talking" and "time" for how they became aware of the expertise of their peers. The text segment containing this response would have been meaningless on its own; however, by selecting the conversation prior to this response, the researcher is able to understand the context. This example is demonstrated below,

[4] https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/, https://www.maxqda.com/, https://atlasti.com/.

Participant 10

… So if I know somebody is, has an experience in a particular area that I'm interested in, and I don't have the experience, I would go to them and ask for directions of how to start learning those.

Interviewer

Right, and, and how do you learn about their expertise? You, you mentioned—

Participant 10

Yeah. So that's just overall talking. Overall, knowing each other for some time.

Overall, over 300 codes were developed during the coding process (see Appendix E: Codebook by Research Question on page 255). Once finished, the researcher pasted all of the codes on a large screen, read each code, merged similar ones, and started searching for themes. Ryan and Bernard argue that themes answer the question, "What is this expression an example of?" (2003, p. 87). In other words, they are what the data represents in a broader sense. The process of generating themes, "involves collapsing or clustering codes that seem to share some unifying feature together, so that they reflect and describe a coherent and meaningful pattern in the data" (Braun & Clarke, 2012, p. 63). When generating themes, the researcher paid particular attention to repetitions, literature, and the research questions (Ryan & Bernard, 2003). These worked concurrently. Repetition occurred when different participants frequently brought up the same topic, while the literature and research questions helped the researcher notice topics that might have been missed otherwise. Most of the data fit into a theme; however, for those that did not fit, a theme called "Miscellaneous" was created (Braun & Clarke, 2006). Moreover, certain data fit into more than one theme. This overlap across

themes helped the researcher obtain a more holistic picture of the information seeking and sharing among doctoral peers (Braun & Clarke, 2012). Slowly, a mind map took shape that represented the codes organized in themes.

3.4. Ethics

Prior to the commencement of each interview, the participant signed or indicated their agreement to an electronic consent form. It can be found in Appendix C: Participant Consent Form (page 252). The form clearly indicated the purpose of the study, the data collection procedure, and the names and contact information of the key research parties (Kvale, 2007). It also ensured of voluntary participation, confidentiality, and anonymity. Anonymity was kept throughout the study by a) asking the participants to refrain from using names in their responses, and b) verifying and removing any identifiable information (e.g., names) from the transcripts. Confidentiality was achieved by using codes (i.e., participant ID) to refer to each participant (e.g., P1, P2, etc.). These codes were not linked to the name of the participant. Additionally, given that the consent forms were in digital format, they were stored in a folder on the researcher's password-protected laptop and the email containing them was deleted from the researcher's email account.

The study was approved by The Research Ethics Board (REB) Office of McGill University in late September 2021 (See Appendix D: Research Ethics Approval, page 254).

3.5. Quality of the Study

The quality of a qualitative study, also referred to as trustworthiness (Lincoln & Guba, 1985), may be judged using the four criteria of credibility, transferability, dependability, and confirmability (Pickard, 2012). Credibility is concerned with how true the findings are with respect to what is being studied (Miles & Huberman, 1994). More specifically, whether the researcher is actually looking at what they intend to study (Bryman et al., 2012; Creswell & Creswell, 2018; Guest et al., 2012). For interviews, it is concerned with the procedure (i.e., the interview guide) and the concept(s) in question (e.g., information seeking, information sharing, etc.) (Bryman et al., 2012; D. E. Gray, 2013; Guest et al., 2012). To ensure of credibility, this study implemented the following (Creswell & Creswell, 2018; Guest et al., 2012),

- **Pilot interviews:** Two pilot interviews were conducted to assess the interview guide and its questions. They highlighted improvements that were addressed before proceeding with the study. See the Pilot and Modifications section, page 75, for more information.
- **External auditor:** The supervisor of the researcher was present at two random interviews to verify the interview, the interviewer, and the interview questions/guide.
- **Constant monitoring:** Throughout the interview process, both data and the interview process (e.g., the guide) were constantly analyzed and adjusted accordingly. For example, when a new topic (e.g., comfort) came up, relevant questions/follow-ups were added to the guide.

- **Verbatim transcripts:** Transcripts were generated with an online platform, Otter.ai, and verified by the researcher for a verbatim account of what the participants said.

Transferability is concerned with the ability to apply the findings to a context other than the one the researcher had intended (Miles & Huberman, 1994; Pickard, 2012). Although the findings were not applied to a different context to test for transferability, the researcher is transparent about the study and the method used to conduct it. Detailed accounts of procedures used for data collection (e.g., interview guide) and analysis (e.g., codes and themes) are thoroughly outlined in this chapter (see Procedures section, page 57) and its related appendices. This provision, in turn, allows those interested to conduct the study. Relatedly, the details provided also address dependability, which is concerned with consistency and more specifically, "whether the process of the study is consistent, reasonably stable over time and across researchers and methods" (Miles & Huberman, 1994, p. 278).

Finally, confirmability considers the role of bias in the study and whether the findings can be drawn back to the raw data (Pickard, 2012). Confirmability was ensured by conducting "check-coding" (Miles & Huberman, 1994). Miles and Huberman (1994) define this as the percentage of code agreements among the researcher and an independent party. For them, an agreement of over 90% is considered reliable. The formula proposed by Miles and Huberman (1994) to calculate reliability is as follows,

$$\frac{\text{the number code of agreements}}{\text{total number of code agreements + code disagreement}}$$

"Check-coding" was conducted with an independent researcher from McGill's School of Information Studies, who had prior experience in qualitative research. The independent researcher was given two random interview transcripts to code using the list of codes emerged from the analysis of the researcher. After the independent researcher coded the interviews, the results were compared, discussed, and a score of 94% was achieved.

The measures above not only demonstrate the quality of the research but also allow others to successfully replicate the study, should there be a need.

Chapter 4. Findings

Given the importance of doctoral peers and the interaction they might have with one another, this study aimed to explore the information seeking and sharing behaviour among them in the context of skill improvement. Specifically, it started by looking at the phenomenon as a whole (RQ1). This meant uncovering whether or not it is happening, and if so, what information is exchanged. Then, it delved into the factors that could hinder or encourage information seeking and sharing among doctoral peers (RQ2). In other words, it aimed to understand what makes peers go to one another for information. Finally, the usefulness of information sought and shared among doctoral peers was studied (RQ3).

Overall, it was found that peers play a crucial role in the lives of one another throughout doctoral education. Several participants went as far as claiming they would have been lost in their doctoral journey without peers. With respect to RQ1, it was found that information seeking and sharing occurs among doctoral peers and several types of information, including on skills, is exchanged. For RQ2, several factors including those related to the environment and the person involved were identified. RQ2 also highlighted the important role of institutions in facilitating information seeking and sharing among doctoral peers. It was also found that for information to be useful several criteria (e.g., need and access) must be met (RQ3).

This chapter will describe the findings of the study in detail. It will first highlight the role of an institution (e.g., the university, department, faculty) in connecting peers to one another (section 4.1 on page 91), then look at why peers might go to one another for information (section 4.2 on page 97). Finally, the chapter will describe the types of

information that peers go to one another for in section 4.3 on page 152 (RQ1 and RQ2). The usefulness of the information exchanged will also be described throughout this chapter (RQ3).

4.1. Role of an Institution in Information Seeking and Sharing

To go to peers for information, it is necessary to know who the peers are. The findings showed that the institution affiliated with the students played a crucial role in informing participants of their peers. Defined as any organization related to the university, such as the university itself, the graduate program, or the graduate students' association, institution was a key factor in getting to know the peers, since they often had initiatives that introduced peers to one another. The participants claimed that it was these initiatives that created the initial bonds and the subsequent information seeking and sharing among them. Several types of initiatives were brought up in the discussion with the participants. They included classes, shared space, referrals, events (including parties), and programs, such as a buddy program.

One of the ways that peers were introduced to one another was by being in the same, often required, classes and/or seminars. During these, which mostly occurred in the first few semesters, doctoral students had the opportunity to interact and work with one another. This led to not only becoming familiar with each other but also learning about one's competence. For example, when asked about how they[5] had met their peers, P12 mentioned it in the context of the seminar they had to take in their first semester,

P12[6]

Yeah, I think at that point, mainly through seminars that we'd taken together. I think both of them were in, I think all three of us were in at least one, possibly

[5] To avoid the risk of making false assumptions, the pronouns they/them will be used to refer to participants.

[6] Participants will be referred to by their code name, P1, P2, P3, etc.

two of the same seminars in our first semester. So, I was aware of what they're working on just because people talk about their research and that kind of context.

In addition to being in the same class, sharing a physical space provided by the department was also mentioned and emphasized as a way to meet and get to know peers. Physical spaces mentioned were one's office, graduate workspace, graduate lounge, or anywhere else that doctoral peers would run into one another. Having access to a shared physical space allowed for reinforcement of already established acquaintances, as well as created new connections. For example, P8 mentioned meeting a peer from a different cohort because of sitting next to her in their office. This peer eventually helped P8 in their comprehensive exam. Similarly, P2 found it easier to connect with their peers when they were working at the graduate lounge provided by the department. Part of what made it easier was the close proximity with others in such spaces. P2 explained,

P2

… I think part of it is proximity…like in my first year, when I didn't have an office yet, I'd be working in the graduate student lounge, and there would be a bunch of other graduate students there. So those are the people that are easy to talk to.

Indeed, being in the same space sparked conversations among students. They were informal, spontaneous, and covered a range of topics including both academic and non-academic information (see Information Exchanged among Peers section on page 152). P8's description of peers in the same office space shows the value of having access to such a place.

P8

> ...we had a pretty good group of us who all shared that same office space, and you could sort of just kind of like ask questions around. Like, if someone didn't know the answer, someone else probably would, or at least could share their experiences on that. So you ask question like, you know, what's this? Like, I've not worked with this professor, what are they like? Or like, the student came up to me and has this problem, how do I... Who do I connect the student with to help figure out their problem, like, resources? Like, you know, the writing center? Or like, how do you navigate OSD? [That] sort of thing.

In programs where access to a personal office was not available, a graduate lounge also played a similar role. For example, P19 explicitly mentioned the lounge as a place to get to know the peers in the same and/or different cohorts.

P19

> So in the department, we do not have any office. But we have a common lounge slash lab, there's a lab which has computers, so we can go there. And that's where I meet the other people from my cohort, as well as people in the Ph.D. program in various years. And so that's where the main interaction would happen between us Ph.D. students. So we'd be discussing our research and coursework or whatever else, you know.

While institution-provided physical space made it easier to get to know peers, peers were also met at non-institution-provided spaces, highlighting the importance of a physical shared space in general. For example, P16 started their doctoral program

during the COVID19 pandemic[7] and did not have access to the campus; yet they lived in community housing in which they shared common spaces with others. It was in one of these common spaces, the kitchen, that they encountered and had discussions with other doctoral students. The nature of their interaction became clear when P16 mentioned they often engaged in information seeking and sharing with two particular peers, at which point the researcher asked why they go to them,

P16

… same location, I think that's a big one, because we've all lived together. So basically, we come in contact with each other because we're in the kitchen together, or whatever, and we talk, naturally our research comes up.

Referrals by those in the department was also mentioned as a way to get to know and engage in information seeking and sharing with peers. Doctoral students interviewed described cases where they had either reached out to an individual in the department or others had reached out to them for help on a particular topic. These were often in cases where the student did not know others in the same situation as them. For example, P15 contacted the head of the department to be put in contact with others who had applied to the same grant as they were applying to. Similarly, when P16 started the doctoral program, they were unaware of what to expect and reached out to their supervisor to get connected with peers who were further ahead in the program.

Overall, the referrals were useful to the participants as they created the initial recognition that they needed at a time when they did not know many people in the

[7] See Limitations section on page 213 for more information on the impact of COVID19 on this study.

university. In fact, referral by the department was so imperative to one participant (P10) that it led to finding their best friend and future roommate.

Institution-related events (e.g., orientation) and programs (e.g., student buddy program) were mentioned as ways of getting to know peers. For example, P18 talked extensively about one of their close friends whom they had met through the student buddy program. The program, offered through the university, pairs students up at the commencement of their studies based on shared characteristics (e.g., same country, same program, etc.). P18's connection with their buddy was sustained and had resulted in a close friendship. They would often interact both inside and outside of the school environment.

The importance of the institution became especially evident by participants in smaller doctoral programs who were not seeking or sharing information with their peers. These participants claimed that the institution did not provide them with an opportunity to get to know one another. The contrast in experience between the participants who had the opportunity to get to know their peers because of an institution-led initiative and those who did not highlights the potential role that they can play in information seeking and sharing behaviour of doctoral peers. The two opposite cases of this phenomenon can be seen in the discussion with P5 and P14.

P5 was in the Philosophy program in which they had to take seminars with their peers in their first year. They talked about how the seminar allowed them to get to know their peers and eventually made friends with whom they would hang out outside of university,

P5

> … So [we] initially met in, in our first, one of pro-sem [*sic*], actually, the one that we all have to take as first years, masters and Ph.D. students. We met in that. But I think we kind of became friends like outside of, outside of uni [*sic*], too, but we mostly, I feel like we're both equally colleagues and friends. If that makes sense. But we're really good friends.

In contrast, P14 was in a small doctoral program with very limited contact with their peers. When asked about why they do not refer to their peers for information, they responded by talking about the lack of opportunity to see their peers and build up a relationship,

P14

> I guess it just doesn't really cross my mind. Partly because I think we just haven't had a chance to really, like, build up those relationships…I think unless people were teaching, I really never ran— I mean, I never ran into anybody. So, it's been like three years since I've actually consistently seen more than, you know, like, two or three people from our department.

The two experiences above further highlight the important role the institution plays in introducing peers to one another and the subsequent information seeking and sharing. The next section will look at the phenomenon of going to peers for information. It will first explore the reason peers go to one another, then discuss the information exchanged among them.

4.2. Going to Peers

Going to peers was a recurring theme in the findings. When asked about their peers, participants often responded in ways that fell into the categories of “why” and “what”. The “why” referred to the question of, “Why do you choose a peer as opposed to other peers and sources?” The “what”, on the other hand, tried to answer the question, “What information do you go to your peers for?” and included different types of information one would go to their peers for. Each of these will be explained in the following section.

It should be noted that going to peers occurred both purposefully and spontaneously. The former was when the participant intentionally went to another peer, whereas the latter was unplanned, such as running into them at the common office space or hallway. Since distinguishing the two was out of the scope of this research, no distinction will be made between them when reporting on the information seeking and sharing behaviour.

4.2.1. Why go to Peers?

Prior to looking at the information exchanged among peers, it was crucial to understand why peers go to one another. The interviews showed that, in general, the choice of a peer comes down to the nature of the relationship, perception that a peer can help, convenience, wanting to help each other, sense of obligation, and lack of options.

4.2.1.1. Nature of Relationship

Throughout the interviews it became evident that the nature of the relationship between the doctoral student and a peer creates a distinction among peers and is a factor in choosing them. One participant (P11) clarified this distinction by categorizing their peers as, a) peers in the same program with whom one is close, b) peers in other programs with whom one is close, c) peers in the same program with whom one is not close (i.e., acquaintance).

In explaining the distinction among different peers, the participants brought up the concepts of "friendship", "closeness", "comfort", and "trust." However, at times it was difficult for the participants to define these concepts. For instance, P13 explained that they had several peers whom they interacted with, but there were three in particular with whom they shared a special bond. When asked why, they responded by mentioning "friendship", "trust", and "closeness",

> **P13**
>
> …there's a couple of other people in the department I would go for drinks with or, you know, just generally hang out with in different capacities, having dinner, this type of stuff. But these, these three would be the people I go to with issues or more serious problems. And they would be the first circle of moral support and general reassurement.
>
> **I**[8]
>
> I see. And why these three specifically?

[8] Interviewer will be referred to as 'I' henceforth.

P13

It sounds like I would need to explain friendship and trust. And that's kind of difficult to pinpoint. But just cause they're close friends, really, I think that's the gist of it... we're just close circle of people. And then we have other, we each have other friends or acquaintances throughout the programs and in master's programs as well. And I'm not even sure that we are each other's closest friends within the department. Like, I'm not sure how the constellation is really shaped, but it's just I know that, for me at least, they are the people I would go to for this type of issues.

4.2.1.1.1. Trust

Seeing the difficulty of the participants in defining “trust”, “friendship”, “comfort”, and “closeness”, and that they often interchangeably used them, this study will choose the word “trust” as an umbrella term to refer to all of these terms, even though it is acknowledged that these concepts may not mean the same thing. In the opinion of the researcher, this is justified given that the participants used the terms interchangeably and often referred to them as complementary (e.g., trust may bring closeness or closeness may bring trust). A general definition will be adopted and used for trust, which entails one’s willingness to take a risk and make themselves vulnerable to another (Mayer et al., 1995). In the case of the participants and their information seeking and sharing, for example, trust may mean taking a risk and sharing more sensitive information with a peer, thus making oneself more vulnerable to the peer.

The participants referred to trust as a function of time, going through the same experience, having a common element, and proven track record. All of this, in turn, impacted the likelihood of going to peers for information.

4.2.1.1.1.1. Time

Time played a factor in developing trust. Specifically, the duration and frequency of contact created bonds that led to trusting peers. For duration, the longer one knew a peer, the more likely it was for them to trust them. For frequency, the more frequent the encounters, the more likely it was for trust to be developed. Both factors shaped the nature of the relationship between peers and had an impact on information seeking and sharing behaviour. P13 described trust as a function of time in the following way,

> **P13**
>
> Well, I think it's, first of all, a question of, interestingly, just the length of time we've known each other because they were some of the first people I'd met in that class and the first people I really started to talk to. I think there's also— beyond the circumstances, we sort of, we got along together quite well quite quickly. After a few months, one of them invited all of us to her chalet. And we spent the whole weekend there. And we had all sorts of bonding experiences like this.

Regardless, the participants did not mention a specific metric for duration or frequency, and it differed for each of them. For example, P5 (started in 2018) trusted their peers by having known them since the beginning of their program, which was several years, while P16 (started in 2020) had developed trust in a matter of months. This contrast is shown below.

> **P5**
>
> …So, I think [trust] is partly a function of time, like how long I've known someone. Like the people I talk to the most I've maybe spoken to for at least since I came to McGill.

P16

> … I trust them both because we have a lot of contact with each other. And we've developed friendships over, like, since September. I see them almost every day, we have chats about everything, not just about my work. They actually really care about me, and I care about them. And, you know, we remember each other's birthdays, and, you know, we go out to celebrate things and victories in like.. or like, you know, talk through challenges. And it's kind of like a support group. And we have a lot of fun together. And I think with the trust issues that… we kind of developed a pretty strong bond in our community house. And we sort of had the attitude of like, anything shared in this community house is kind of like, within the group, but it doesn't get, doesn't really get discussed outside of the group. So, there is like that kind of trust circle there.

It is not known how often P5 interacted with the peers mentioned; however, as seen above, for P16 the frequency of contact was complementary in developing trust. In other words, living in a community house meant frequent encounters with two peers whom they came to trust.

Duration and frequency both played a role in developing trust; yet just because the factors were present, it did not mean that trust was developed. For example, P5 mentioned peers in the same cohort, whom they knew but were not close with. For P5, reciprocity was the distinguishing factor among the two types. They defined reciprocity as feeling like both parties are equally benefiting in the relationship.

P5

[talking about the concept of duration] But that's not all, because I've had loads of people in my cohort who I don't really speak to all that often. I think [trust] is just about a reciprocity. Like I message them, and I ask them questions. They message me, asking me questions. And it's kind of this like, back and forth that I don't feel like I make more effort and get nothing back, if that makes sense. Like it's very much on equals.

The relation between trust and reciprocity was more implicit in other interviews, which is why it was not seen as a factor in developing trust.

4.2.1.1.1.2. Going Through the Same Experience

In addition to time, going through the same, sometimes difficult, situation together impacted the relationship of peers and helped develop trust. P18 referred to this as "natural innateness or a natural closeness." Examples of these situations were many and mostly involved academic situations, such as the comprehensive exam or a course. P17 referred to the same experience as "being in your same boat". For P17, both going through the comprehensive exam experience and taking a difficult course during a challenging time in their life was what brought them close to two of their peers and strengthened their trust. It is also why they still go to them. The two excerpts below demonstrate this, respectively, and recount why P17 thought going through the same situation brought them closer to their peers.

> **P17**
>
> I guess…the things you you've been through. Like, you know, these two guys, I remember we had to do, we had to do this take-home exam that was like, we only had three hours to do it, you know, and we were all freaking out. And I remember, we were all in this basement, in their apartment, you know, with the timer on and trying to go over the questions and freaking out and, you know, wondering if we were gonna [*sic*] pass and you know, we find out we passed later. And I guess it's, it's the, the time but also, you know, I think going through pretty stressful situations together. Kind of builds that, builds that bond also.

> **P17**
>
> When the course started, when the coursework started, and I, I started my, my Ph.D. program, at a point in my life when my daughter was born, actually, the

> September that my Ph.D. program started and I remember, you know, sharing that information with them, and you know, it's stressful, you know, having a kid and doing the program. And, I don't know, I mean, I shared that with them. And I don't know, I kind of felt that because I, and they met my daughter, I felt like I could feel a lot more open with them. And I would say, you know, 'Oh man I'm freaking out over some of these, some of these courses and everything.' And, I guess having gone through that very quickly, you know, having bonded with them pretty quickly…

Similarly, P11 argued that one of the reasons they were close with one of their peers is because they were both present and helped one another during a difficult academic time. Specifically, P11 provided support when the peer failed one of their presentations, while the peer provided P11 with help on a coding project.

At times, the experience was more general and involved the doctoral education journey itself. For example, P13 thought going through the Ph.D. process with their peers is what brought them closer to one another. Likewise, P8 referred to this process as a "developmental process" and argued it as one of the reasons why they were close to three of their peers. P18, mentioned earlier, thought being in the same doctoral program brings a "…natural innateness or a natural closeness. Just…because [they] are in the same situation." P19 referred to their bonding experience as "traumas" and argued that shared traumas brought them together with their peers. P20 found that in addition to going through the same experience, sharing similar cultures also speeds up the time needed to develop trust. P20 explained it as,

P20

… Another thing is like, cultural closeness is like, can sometimes close some of these gaps faster than would otherwise be possible. Like, I feel close to some of the friends in the Netherlands. But only after a long time of having known— only after, like a couple of years by now of having known them. And then some other friends also from the Netherlands, I felt closer to much sooner. Just because I feel like there was more overlap culturally. And so, I, I sort of kind of assumed that they wouldn't do anything harmful. Just because it seemed like not something they would do.

Indeed, having a common element with peers, such as culture, may lead one to go to their peers and helps build trust. Several such elements were brought up throughout the interviews. They will be discussed in the next section.

4.2.1.1.1.3. Common Element

When speaking about the peers doctoral students went to for information, participants talked about those with whom they shared the same age, gender, background, academic and non-academic interests, goals and values, and situation. Being in the same doctoral program or cohort were further mentioned as examples of situations that brought the peers together. The participants acknowledged that these common elements, individually or together, impacted their decision to go to peers and built trust.

4.2.1.1.1.3.1. Age and Gender

A common factor considered when going to peers was age. In general, the closer the age of the peer to the participant, the more likely it was for the latter to refer to the former. P3, in their early 30s, explained this when speaking about a class they had to take which consisted of both master's and doctoral students. It was a demanding class that prompted P3 to seek help from peers. In the pursuit of help, P3 mentioned age was a factor when choosing a peer. Specifically, they compared master's with doctoral students and how, although not always the case, the latter's similar age range meant more experience and qualification to provide help. At the same time, P3 went on to explain that age was just one variable and confirmed the earlier findings that being in the same situation as one another also influenced their decision. Below is the relevant excerpt from the interview.

P3

> ...some of them [master's students] are, like, totally brilliant. But like, maybe they just finished their bachelor's degree, and they're like, 22 or so. And it's like, they're doing a master's because they didn't know what to do next, it seemed like the right thing. And it's like, you know, they're probably not going to be as disciplined about like reading everything, they're not going to be as, like, intrinsically motivated, perhaps, to like cover the material. And also, like, they're just often younger. And most of the Ph.D. students in my group have master's degrees as well. So like, we've just been going through it for a lot longer and have more background knowledge to fall back on. And have a lot of different background knowledge, but, like, years of professional experience too... so there's

just more, like, we're in the same position, we're going through the same kind of thing together, we have the same kind of complaints, we're at similar level as far as like how long we've been working in our discipline. But we're… more or less, on an even footing, it's, like, so comfortable to go to each other.

Age was also mentioned with respect to choosing a peer as opposed to one's supervisor. For example, P16 explained that their peers better understood what they were going through by the fact that they shared the same age range and experienced the same difficulties in the program. With respect to going to peers for information on the doctoral program, as opposed to their supervisor, P16 responded,

P16

So, my supervisor obviously knows the program, but she doesn't know what it's like to be in the program. And also, she's very busy. So, I needed some people outside who are close to my age, and who are, you know, I don't know, like drowning a little, or trying to figure things out. So, that's why I contacted them.

P16 later explained a situation where a peer went to them for information. When asked why, they responded by mentioning age and gender. They said, "Well, we're female. She's a woman, roughly the same age." This response made it sound as though being close with the same gender is a given. Although there was no other finding to support the innate nature of gender, P19, too, observed that their closest peers were all females. They realized this when they were asked why they chose a peer over the other below,

P19

I also, I guess if I'm like thinking through the pattern…I think I usually also ask women.

4.2.1.1.1.3.2. Background

Background (e.g., country, religion, culture) was also brought up by participants. More specifically, the participants felt more comfortable going to peers with whom they shared the same background. This was seen in the case of P18. They had an international student buddy, who was from the same country as them, China. P18 explained how being from the same country had created a special bond among the two and that they were able to have conversations that were exclusive to the two of them, like work opportunities after their degree in China. Similarly, P6, who was also Chinese, mentioned how their international peers, specifically, Chinese peers, better understood them in certain situations and that what they pay attention to may differ from other peers. In fact, P6 used a Chinese social media platform (i.e., WeChat) to keep in touch with their Chinese peers and mentioned how they do not understand the other social media platforms that are often utilized among their other peers (e.g., Facebook, WhatsApp, Instagram). They associated this with what they referred to as a "cultural gap." This point was brought up by P6 when they were talking about going to their Chinese peers, for general information as opposed to other peers or Google. It can be found below,

> **P6**
>
> I also use Google but like, you know, Google is just a machine. Right? So, like, you can see some many comments from others, but you don't know whether they are real comments, right? So, the first [reason] is, like, I trust my peers. So, we are like, kind of friends. So… I think we have similar tastes. So, I think like the things she [a peer] like [*sic*], I will like also… we are both Chinese, so we have similar

tastes, we like Chinese food, right? So, we always share information about some Chinese restaurant [*sic*]. So, like, I don't think the local people will really interest in or like really want to find a mainly good Chinese restaurant [*sic*]. So, it is quite different.

P20, who was Moroccan, felt the same way about a Moroccan peer. At the time of interview, P20 was in a foreign country where they had met a peer with whom they shared the same ethnicity and culture. Though it was hard for P20 to verbalize what this shared background meant, they explained it as having a sense of comfort with that peer. P20's struggle to explain the significance of this shared background was seen when they said,

P20

Um, I felt I, I felt that he was, I felt I could relate to him, I felt he could relate to me. It's— I don't know exactly, I don't know exactly 100% how to explain it, he's, you know, he's, he's Moroccan in a particular way that my family is Moroccan, there's a lot of like code switching that I can very easily sort of, like step into with him that I don't, you know, that just makes things comfortable. Yeah, this is— there's like a lot of cultural, cultural familiarity, I think, that helps me just sort of feel comfortable with him.

Later in the interview, P20 mentioned that sharing the same religion was another factor which made them feel comfortable with the peer and went on to explain this peer as "family."

4.2.1.1.1.3.3. Shared Interests

Having shared interests was further cited as why doctoral students may go to a peer, though this was often accompanied with other reasons. Coupled with being in the same stage of the doctoral program (i.e., going through the same experience), P13 described shared interest as another factor that brought them closer to their close group of peers. P13 did not specify the type of interests they were talking about; however, several examples were given by other participants (e.g., P15, P16, P18). For instance, P16 shared the interest of psychology and faith with their peers, P18 talked about enjoying the same type of TV shows and books with one of their close peers, and P15 shared interest in the department's affairs with some of their peers.

Interests were not necessarily non-academic, and, in fact, academic interests were also brought up by the participants (e.g., P7, P10). This included the same research area or similar academic background. For example, P7 was working on meta-ethics and would refer to a peer that was working on a similar topic. P7 explained that they chose this peer not only because they were familiar with them, but also that the peer was the only one who was working on a similar research topic. They described choosing this peer as,

> **P7**
>
> …I went to J [the peer] because I know him like relatively well as far as my peers go. And also, in terms of other Ph.D. students in the department, he is to, my understanding, the other person whose research is closest to mine. We both work on meta-ethics. There's obviously a huge range and variety of topics people work on at the department, but since we— he works, on the stuff closest to me, and

specifically on the stuff closest to what that paper is, he's the best equipped to give me useful feedback on it.

Similarly, P10 explained “doing similar kinds of research” as a factor that made them feel closer to certain peers. Specifically, they felt closer to those who were in the same subfield.

4.2.1.1.1.3.4. Similar Goals and Values

In addition to interests, similar goals and values were, too, determinants in going to peers. P11 mentioned a peer with whom, despite having a different nationality, they shared the same life goals and values. P11 found this peer close since they were able play a complementary role in helping each other reach their goals while upholding their values. They explained this peer and the role of goals and values as,

> **P11**
>
> … it's just, you know, even though he's from another country altogether, and a different nationality, but culturally, we, it seems like we have the same values and same approach towards things, towards our personal lives and what we want in our personal lives… like having the same target as soon as we graduate, like, getting a job in the private sector say, and like the goals we have, the personal goals about what to do when, by what age, that's similar. So, when I interact with him, it's like, we're thinking to [*sic*] about the same goal. And we're thinking of different ways to get there, because we both are different. But we have the same goals. So, it's just the wavelength matches… I personally think it's majorly because of the values that we have. So, it's just easy to be supportive and easy to understand the other person, even if you're not understanding fully, but at least you can express that you're understanding this.

From the conversation above, it was unclear what P11 meant by "values." The interviewer inquired about its definition and was told that it is one's "emotional reaction to a situation" and "being understanding and supportive of the situation." P11 said, for example, it was sharing the same emotional feeling when their supervisors provided

certain feedback on a draft. P10 shared the same sentiments as P11 in terms of goals and values and mentioned a peer with whom they shared the simple goal of improving their writing skills. This showed that the nature of the goals and values is negligible as long as it is shared with the peer. This was further exemplified with P16 who found "faith" to be a strong factor that brought them close to their peers. They explained the role of faith, goals, and interests as following,

> **P16**
>
> And I think there is the faith component because we, as I said, I do pray with them. And, we do, we discuss theology together, and psychology, and kind of how our faith relates to our research, and our life goals and our love interests, and like, that sort of thing. So, yeah, kinda [*sic*] in contact and similar interests and faith.

4.2.1.1.1.3.5. Same Situation

Sharing the same situation also contributed to peers going to one another. This "situation" varied, had different meanings to each participant, and was both academic and non-academic (e.g., P2, P7, P9, P10, P18). Academically, teaching and being a teaching assistant were common situations that made participants go to peers. P7 relied on their peers when they were teaching conferences and compared it to asking from professors. They mentioned that professors may also provide useful information, but because peers were the ones who taught the conferences and got first-hand experience on how it went, it "seemed like the people to ask." However, P7 mentioned that it was also the availability of their peers in the same physical space that initiated such conversations. P2 had similar feelings as P7 and recalled a time they were in the same physical space (i.e., their graduate student lounge) as their peers and sought their feedback on the grading scheme that they were using. P2 felt that it was easier to talk to peers for such matters as they were all in a similar "stage of [their] careers" and this created a trust that was absent between non-peers. P2 worded it as, "there's something about the stage of career in this sort of equal playing field that creates a greater sense of trust." For P18, the same situation meant peers who were hired as a teaching assistant for the first time. They mentioned how going to peers who were also in their first teaching assistant position made sense as they resonated with one another and were able to solve their issues together.

Sharing the same situation was not necessarily related to academics. Participants talked about previous work experience (e.g., P9), living conditions (e.g., P10), and even being in the same program (e.g., P4, P8, P10, P17).

P9 felt a “solace” with a group of peers from different departments with whom they shared age, previous international work experience, and the fact that they were all relatively new to the city. They explained this as, “so all of us were in our 30s… and we had all been doing other things and like living in other countries and stuff before we came here, and I think we found a lot of kind of solace as a group.” For P10, living in the same apartment and sharing the same financial situation is what brought them close to one of their close peers and explained that they were better able to connect with one another as opposed to their other peers. P10 went on to indicate that being in the same program alone was enough to make them feel close and go to peers. This innate closeness with such peers was captured by P10. Mentioned earlier, P10 had met one of their close peers (who had later become their roommate) through department referral prior to joining the university. P10 explained that even though they had not met when they decided to share an apartment, the fact that they were going to be in the same program meant the peer was different from strangers whom they might have met elsewhere. P10 had a difficult time explaining why it made sense to share an apartment with this peer and said,

P10

> Because we know, because we know that we are, we know that we are joining the same department, right? So, in a way, it's not like— even though he's a stranger, in a way he's not. Because we know for sure that we are both coming to the same department. So, it's kind of more assuring than meeting somebody over, say, Facebook or something, who you know absolutely nothing about.

P4 also believed in the innate nature of the closeness and recalled a remark by one of their colleagues that mentioned them as all being in the same “position.” For P4,

however, being in the same stage of the program also mattered. For example, they distinguished between those further in their doctoral studies versus those who may be at the beginning and how the two differ in their ability to provide help,

P4

> And then also, like, we're all like, we're all trying to do the same things. So, like, even like a doctoral student who's like, very far advanced, right? Like, there's aspects of being at the beginning of your Ph.D., that they've also kind of forgotten. Right? So like, yeah, there's parts that like, really only people that are in the exact same spot as you know about even.

Regardless of the stage, being in the same program of study was also a factor for P8, who was close to three of their peers that were in the same program and shared the same office space. P8 mentioned that the three peers shared the "same wavelength" as them and were better equipped to understand one another. This sentiment was shared by P17 who also thought being in the same situation meant they understood each other,

P17

> The reason why I guess, *I* [emphasis in original] talk to my peers is they're really the only people who, who understood exactly what we were doing, because it, this is someone who's also writing the same exam as me.

In the interviews, it was shown that the timing of the shared situation did not have an impact on whether one went to peers. In other words, knowing that one will be in the same situation as the peer was enough to make them reach out. For example, several participants went to peers who had already gone through the same situation as them (e.g., comprehensive exam (P12, P13, P14), had taught/were teaching assistants

before (P9, P12, P15, P19), applied and received the same funding (P13), applied and received travel accommodations (P10), etc.).

Finally, aside from the ability to understand and help each other, being in the same situation made the participants feel better among themselves. For example, P11 mentioned how knowing other peers were in the same situation as one another helped them throughout the COVID19 pandemic,

P11

I think, regarding the role of peers, so I know why they're important, because during COVID, when we didn't have that sort of an interaction, it was hard, because it's nice knowing where everyone is at. Sometimes you have the same problem with your supervisor, sometimes you just, you're stuck at the same place, you know, not exactly that they're stuck at methodology, but I know they are stuck in research, it's nice knowing that someone is also in the same situation as you. And it's nice knowing what the other person is doing … it's just nice talking to them and having say, a shared experience, knowing that they've had the same experience, that helps a lot. Because at least you know, you're not the only one in it.

4.2.1.1.1.4. Proven Track Record

Trust and the subsequent information seeking and sharing by the participants was also impacted by the proven past record of peers. Specifically, participants talked about going back to the same peers for information, if they had previously provided them with information that was useful. P18, who studied Linguistics, often went to one of their native English-speaking peers for help with domain specific questions. They explained that while others were also native English speakers, they would often go to this specific peer since, in the past, they had received information that they found useful. P18 explained this as,

> **P18**
>
> Oh, actually, um, two of my friends are native speakers. But he's the first one. He's the first one that we get in, get in touch with this on this[*sic*] issues. Like, we were in the same assignment group. So, then I asked some questions like that. So, and then I *continued* [emphasis in original] to ask questions like that after that class. So, it's just like a continuum of this action.

Going back to the same peer seemed logical for P18, who explained that, "once … you get accustomed to something, you don't want to just throw that away. You just keep that." Likewise, P19 had a similar experience but instead of a single peer, they had received useful information from several more advanced peers in the program, which had prompted them to go back. Particularly, when P19 first started, despite checking the department's website and reaching out to the people at the department, they had difficulty finding answers to certain administrative questions. On their first day of class, they sat next to an upper year doctoral student who, "…in five minutes…gave [them]

more information than anyone else had, including admin, including staff, Google, everything, because it wasn't visible. But because she [the peer] had gone through it, she knew what was going on. And so, she was able to answer all of [the] questions that [they] had been trying to answer." P19 explained that this incident made them go back to upper year students whenever similar questions would come up.

Proven past record was not always positive, however, and the opposite was also true. This meant that participants also avoided those who had not provided them with useful help in the past. P1 talked about being referred to a peer by their supervisor when they needed help with the statistical software, SPSS. In this case, the peer was not patient, did not listen to the concerns of P1, and eventually dismissed them. P1 felt discouraged by this and did not return to this peer. P20 further elaborated on this phenomenon when they spoke about reaching out to peers who were doing similar research at a different university. P20 explained their experience as "toxic" and mentioned how their negative experience meant they would not go back to those peers.

4.2.1.1.1.5. Implications of Trust

Trusting peers had several implications for the participants. They mentioned that with close peers they were able to share draft work, brainstorm, and additionally disregard the information received from them. Throughout the interviews it became evident that there is an unspoken distance between doctoral students and their supervisors (e.g., P2, P3, P6, P9, P17, P18, with the exception of P10). P3 called this a "power imbalance." This imbalance created a fear of being wrong and looking incompetent. P2 identified themselves as a "hardcore perfectionist" and used the words "hate" and "feeling small" to refer to when they are wrong. P2 found that with peers, such a problem did not exist. P17 used the example of practicing for presentations to demonstrate the benefit of going to a peer and said,

> **P17**
>
> … I feel more comfortable practicing a presentation that I'm not 100% polished on in front of, in front of people that I already am close with, because you know, even if I'm not 100%, even if the slides, there might be mistakes, it's, you know, knowing that it's your friends, that makes you a little bit more relaxed.

P17 said that it was reciprocal and that peers also gave them draft work. They gave the example of a peer who provided them with a paper that needed more work and said that it was because the peer felt "more comfortable."

P6, too, found it more relaxing to talk to peers, as opposed to their supervisor and said that they were able to remain as themselves. P6 said that it is, "… more relaxing to communicate with [peers]. And you don't like to have too much pressure, you don't like

— you don't need to concern about all whether I should stay in this way or in other way, whether my question is kind of stupid or not." In the words of P18, peers were "safer."

In addition to draft work, the participants felt that they were able to brainstorm with peers. This was not possible, at least in the mind of the participants, when dealing with a superior, as they felt an expectation for a completed draft or "a fully formed idea." P3 described brainstorming as "bouncing ideas off of each other" and spoke of its benefit,

P3

> …With peers, I can, like, I can think out loud, and like, I can make my, I, like, I can figure out what my question is, as I'm speaking, I can, like speak through it and I know that they're not like, going to be annoyed or going to be impatient, or they don't have like, you know, to get through my question in five minutes, so that they can get on to the next student. It's like, you can think out loud, you can like, bounce ideas off of each other. People can give you feedback quickly, you can, you can just like talking, just talking through something can be really helpful.

Sharing drafts and brainstorming with peers meant peers were better prepared for going to their supervisor. P9 reiterated the fear that comes with going to their supervisors and identified peers as a coping mechanism that helped reduce the anxiety and prepared them for going to their supervisors. P8 said such preparation meant a higher chance to be successful with their supervisor. They used the example of when a peer's guidance improved their work to illustrate this,

P8

Yeah, she [the peer] was always very, very useful. Um, you know, and sometimes it wasn't so much a matter of, like, 'Oh, my information was wrong', but that I just wasn't phrasing it the right way. And so, she was great for helping me reframe things to be more successful with my supervisor.

A final implication of trust with peers was that the participants felt they were not bound to the information received and could disregard them. In other words, given a lack of distance between peers and trust, the participants did not have to worry about the potential consequences of ignoring each other. P2 talked about this advantage and said,

P2

I think that also part of the usefulness of going to peers is that I can either take the guidance that they give, or I am able to discount their guidance if I don't feel that it works within the situation that I'm in at that time, or if it works for me.

To summarize, the quote by P5 provides an overview of the nature of the relationship with peers and its implications on information seeking and sharing behaviour,

P5

... When you build up a friendship and you build up trust and you build up like a rapport, you can then go to them [peers] with information.

4.2.2. Perceived Competence to Help

In addition to the nature of their relationship, the perceived competence of a peer to help was also a factor in choosing them. Perception alone was significant enough to motivate approach even if the peer was not actually helpful and the intended outcome was not reached. In other words, competence was relative to one's situation (e.g., information need). P7 explained perceived competence and the concept of relativity with the following quote about peers going to them for funding information,

P7

I don't know if anyone considers me more of an expert than any other graduate student who's applied to these things in the past. But I guess from the perspective of somebody who's never applied to these graduate grants… then yeah, I guess we're more knowledgeable because we have.

When competence was discussed, it was often in terms of domain specific or academic information. Several participants mentioned either going to peers who studied what they needed help with or peers coming to the participants about a topic they had previously studied. For example, when P5 needed help on an essay about a specific scholar, they explained how they went to a peer who was studying that scholar as part of their research. Similarly, P5 referred to another peer for broader questions in their field, Philosophy. They explained it as this peer being "really good at Philosophy" (i.e., perceived competence).

P7, also in Philosophy, said that they often referred to peers for feedback on their papers. For P7, the peer chosen depended on which peer's work was closest to the paper's topic. This was similar to P6, who went to their peers for help with their

comprehensive exam, based on their specialization. In their field, East Asian Studies, the comprehensive exam requires them to choose one major and two minor fields. While P6's expertise (i.e., their research) was in the major field, the minors were not. They mentioned how for their chosen minor fields they would refer to the peers who were specialized in those fields. P9 also chose a peer with expertise in methodology approaches when they were co-authoring a paper with their supervisor. They stated that the peer was approached, "because [they] perceived him as the best person to answer [their] question."

Perceived competence was also mentioned when participants went to their peers who had assumably already gone through (or encountered) what it was that they needed help with. Several examples were brought up by the participants,

- When P6 started their doctoral journey, they went to a senior doctoral peer to ask about managing their coursework and navigating the doctoral program,
- When P12 was virtually working as a teaching assistant for the first time, they asked a peer with prior virtual teaching experience about holding open office hours versus appointment-based,
- When P13 published an article for the first time and needed to sign an agreement, they asked a peer who had already published about licensing information, who explained the process and different options.

Assumption also worked to eliminate peers, regardless of their ability to help. For example, P2 was an out-of-province student who needed help with Quebec's health care system (the province the participant's university was located). They mentioned that in their quest to seek help they would avoid a "friend who's an international student, and just moved here last year, to figure out how to navigate the Quebec medical system.

[They are] going to go to Quebecois person." P20, who was in a country whose first language was not English, mentioned that they would avoid their local peers for feedback on writing given that, "English [was] not their forte."

Assumption was influential enough to eliminate peers even if they shared similar backgrounds with one another. P9 mentioned a peer who shared the same research interests as them but was struggling in their doctoral journey. Given this, P9 had assumed that they would not be a good source of information and therefore avoided going to them for information. P9 explained,

> **P9**
>
> … like I have another friend who's really been struggling in the Ph.D. program and has not passed his proposal yet and we have shared research interests, but I would never ask him for advice, because he, unfortunately, hasn't been able to, like— S [a peer] inspires me in his capacity to research and what he's going to do. And A [another peer] does as well, but this other person who I have common interests with I'm not inspired, in fact, I feel kind of sad for him. And so, this is like pretty mean to say, like, I'm not gonna [*sic*] ask him for advice.

4.2.2.1. Relevant and Perceived Usefulness

The concept of perceived competence of a peer was further expanded by the notions of relevant and perceived usefulness of information to the one seeking it. The former means that the information needs to be useful to the person seeking it and that the same information may not be useful to another individual. In other words, the information should only be good enough in the opinion of the seeker. This highlighted the subjectiveness of the information that was shared or sought. The case of P11 captures this phenomenon. Peers went to P11 for help with their English language; yet P11 was not a native speaker nor had any special training in the language. They mentioned how a "basic word" would impress their peers, give off the notion that they were fluent, and result in them going to P11 for more help. P11 stated it as,

> **P11**
>
> …like— it's funny, you know, they get super impressed with the basic word that I would know, so I just became extremely fluent in English for them, but I'm not that fluent as they would have thought.

Additionally, the information sought or shared need only be perceived as useful for the student to approach peers, and the actual usefulness is irrelevant. For example, P5 went to a peer who helped them when they were writing a philosophy paper for an assignment. While P5 found the information provided by the peer useful and incorporated the information given, one of the professors involved in the assignment gave P5 a failing grade. This demonstrates that actual and perceived usefulness may be incongruent.

4.2.2.2. Becoming Aware of Competence

Related to the perceived competence of peers, participants talked about how they became aware of what their peers could help them with. These included a) seeing their work, b) casual conversations, c) referrals and reputation, and d) help offers.

A common way of learning about the competence of a peer was by seeing their work. This was often in formal and/or informal settings. Formal setting usually meant during classes or seminars, where peers interacted with one another; while informal was in a place such as the student lounge. An example of a formal setting was P17's experience in their group projects. P17 indicated that they did not explicitly tell their peers that they were competent, but during coursework, peers had found out that they were proficient at a statistical software called Stata. They explained that peers had realized their expertise when they saw their ease in answering the assignment questions. P17 explained it as,

> **P17**
>
> Yeah, I don't, I don't think I ever, like explicitly bragged and said, I'm good. I think it was more actually, when, when we were doing, there were some during the coursework time, when we, when we were still in the coursework phase of the program, there were some assignments that we had to do that involved using Stata, or just to involve, you know, using any statistical package that we wanted… So I think that, I think the times when they saw, you know, that I was, I was having more ease, doing some questions and when, when our, when our answers differed, or they were having problems like, at answering the question, because they didn't know how to code, I think it kind of became apparent that I was more, that I was more fluent in that coding language.

Realizing the competence of a peer also occurred outside of a formal setting, in places such as the student lounge or office space. For example, without having any prior knowledge in the software, P11 had to use MATLAB for one of their projects. They explained their frustration and that, by chance, they started talking to a peer in their student lounge and learned about their competence in the software.

Indeed, having everyday conversations, referred to as "casual conversations", was also brought up by other participants as a way of learning one's competence (e.g., P3, P8, P10, P11, P12, P19). Like P11, P19 found that being in the same office space encouraged getting to know their peers and their abilities. Casual conversations occurred outside of the shared space, as well. P3 mentioned talking about their ability to conduct text analysis in a programming language called R with another peer. This peer later went to P3 for feedback on a study that involved such analysis. Likewise, P8's cohort had become aware of their competence in oral communication skills and "writing for the ear versus writing for the eye" by being in the same informal study group. P10, too, learned of their peers' competence during their casual conversations. P10 had met several peers when they first started their doctoral program, through the courses they had to take. Eventually these peers held conversations outside of the class about each other's research and interests, which led to learning more about one another. When asked whether they learned about their peers' competence in the courses they had to take, P10 clarified that their competence was not discussed in the courses, but the courses were what brought them together and led to knowing each other better. P12 used the term "serendipity" to talk about how they learned about their peers' competence, "we had the kind of serendipitous aspect of just being in the same room and having a casual conversation opportunity to ask that."

Peers also learned about one another's competence and the ability to help through referrals and their reputation (e.g., P4, P8, P11). P4 and P11 had others refer peers to them. P4 had a peer refer them to another peer. They described a time when a peer sent another peer to them to learn about Hinduism, since they knew it was topic P4 was familiar with. P11, on the other hand, had a professor refer a peer to them. P11 was perceived as having the ability to help with the English language. One of their professors has recognized this and referred a struggling peer to P11 for help in the language.

P8 mentioned a peer, whom they had come to know by sitting next to in their office. By being next to one another, P8 had learned about what this peer had gone through and what they could help them with. However, according to P8, they had also learned about this peer through referrals and their reputation in the department. Hence, for P8 it was a combination of having heard about the peer *and* seeing their competence firsthand. This was explained by P8,

P8

Yeah. So, one is the reputation she had amongst other students. They could say, 'Oh, this, you know, this person's great. And they do great stuff.' And like, you know, I've been [in contact with] like other people who had been in a class with her… or, it's like, 'Hey, I had a similar problem too and I went to her for help. And she was really helpful for me.' So like, recommendations from other people. And then also like, interacting with her, and like, partly seeing how like she would interact with her students, or then, like, just sitting next to her and like, you get some feedback on some small things, and that worked out really well. And then you trust her with larger things. So, and then getting to just see like her work on its own too she just did really good work.

A final way that peers found out about each other's competence was by explicitly offering it. This offering signaled one's competence and there were several examples such as mock presentations or paper draft exchanges. P5 explained how initially offering to help led to peers returning to them,

P5

Well, initially, I suppose I probably offered… if we were in the same class together, you could say, "Hey, if you want to swap papers, I can read your paper, you can read mine, or I can just read yours, whatever you want." Because I find it really helpful and useful and fun. So probably, it's probably that we shared— so the thing I think people in general, probably that we shared a class and then we therefore, we made that kind of connection that we can share work with each other. So, it was probably me offering rather than them just knowing that I like doing that.

4.2.3. Convenience with Peers

In addition to the nature of the relationship and perceived competence, the convenience with going to peers was also mentioned as why peers may refer to one another for information. The participants mentioned ease of access, saving time, and pre-existing relationship with peers as convenience factors. These factors will be discussed separately to highlight their individual importance; however, it should be noted that they sometimes complemented or led to each other. For example, one may go to a peer who is physically near them because it is both easy to reach them and saves them time.

4.2.3.1. Ease of Access

Ease of access was regarded as the effort needed to reach peers. It was both in terms of physical and virtual proximity of peers with one another. For the participants, the former was often being in the same physical space and meant being able to reach a peer on demand. In general, peers were seen as more accessible and this had an impact on their decision to go to one another for information. P6 explained the concept of ease of access by comparing going to their supervisor versus peers. They argued that the latter is more convenient since with the former they would need to make an appointment. P2 recognized ease of access when they spoke about their time at their graduate lounge. Prior to obtaining access to an office, they often used the student lounge to conduct their grading for the course they were a teaching assistant. The lounge was populated with peers and at times, they would refer to those around them to ensure they were objectively grading papers. When asked why they went to peers for this information, they indicated proximity as one of the reasons and that it made it "easy" to talk to peers,

> **P2**
>
> I think part of it is proximity… like in my first year… I didn't have an office yet, I'd be working in the Graduate Student Lounge, and there would be a bunch of other graduate students there. So those are the people that are easy to talk to.

Having started their program prior to COVID19, P7 had seen the impact of sharing the same physical space and agreed with P2's remarks. They identified that being in the same physical space encouraged conversations with their peers because, "they just happened to be here." They compared their pre-COVID19 experience to when the interview was being conducted and claimed that not sharing a space with their

peers, had “put a damper on…interactions.” Indeed, P11 realized the benefit of being close to peers during the COVID19 pandemic. They described a situation when they were facing an obstacle with regards to a coding problem. They had tried online resources, but having had no success, they needed guidance from a peer. P11 eventually sought and found a peer who was able to help them over the videoconferencing application Zoom; but they mentioned that this situation would’ve been resolved almost instantaneously had they been in a shared space with their peers.

Close proximity allowed for spontaneous interactions which led to useful information to parties involved (e.g., P2, P4, P11, P12, P14). For instance, P12 referred to peers who happened to be in the same physical space when they needed advice on a topic. Specifically, they mentioned an example in which they had to prepare a last-minute lecture on a topic outside of their research area. P12 knew two of their same cohort peers were working on the topic and because they happened to be in the same room, they sought their advice. It is unclear from the discussion with P12 whether they would have approached these peers had they not been in the same room, but according to them, they “were just kind of chatting about what we each were working on” when they brought up the lecture and sought their advice.

P14 had several similar encounters with a peer whom they shared an office with. One of these encounters resulted in the peer providing more context into what to expect in P14’s upcoming comprehensive exam. When referred to this as information seeking, P14 corrected interviewer by saying that the conversation “came up naturally” as opposed to them seeking the information and further explained the event,

P14

I guess it probably just came up naturally, I don't know that I actually, like, sought them out to ask with this information. But I probably mentioned like I'm studying for these exams. And then, you know, kind of asked, when you took them, what was it like? You know, what, what kind of— what was the process like? How did you prepare for it? How much time did you have? Like, where did you write the exam?

P14's remark further demonstrates how being in close contact with peers results in spontaneous conversations. While in the case of P14 the information provided ended up not being relevant given COVID19 and the change in the format of the exam, P14 recognized the value of their interaction regardless, as it gave them a "feel" of the exam.

At times, close proximity went beyond information seeking and sharing. P11 explained that being in the same room allowed them to form and join a study group. They explained how "socializing" in their student lounge prior to a common homework brought them together and led to creation of a study group,

P11

…how we found the same study group was because we were sitting in that econ lounge, and we were just socializing, and we had like a homework coming up. And then we just formed the group thinking that, you know, since we're literally working on the same thing, at the same time, let's discuss about it later on when we go home. And that's how this group began.

When talking about ease of access, participants often talked about institution-affiliated spaces, such as an office or a graduate lounge. Yet, the impact of ease of access for participants was also evident in other spaces. For example, P10 shared an apartment

with one of their peers and mentioned how they would often go to that peer for information simply because they lived together and that going to such a person "makes more sense."

Living in the same space also meant holding conversations that did not necessarily fall into information seeking or sharing (e.g., P12, P13, P18, P19). This was also evident in institution-affiliated spaces and participants referred to it as "casual conversations" (a concept that was mentioned in the Becoming Aware of Competence section, page 130). For P18 being in the same space and having casual conversations meant having the opportunity to learn about their peers and their background,

P18

Um, I think it's about like, we spend sometimes just us we, just we two, in the office, then I'm curious about what, what kind of things Texas has. And she just introduced me a lot about how dancers in Texas look like and yeah, then I would ask, do you have siblings and what kind of life they have. So that will be a natural discussion about life experience, when we want to start the conversation about your country in your hometown, in your, yeah, your parents something like that.

Close proximity had advantages when it came to information seeking and sharing but even if information was not exchanged, according to P13, being in the same space, alone, provided "collegiality."

4.2.3.2. Saving Time

In addition to proximity, the concept of speed was another convenience factor with peers (e.g., P5, P8, P11, P15, P19). Specifically, participants talked about saving time by going to peers. P5 referred to their peers as "timesaving people and supportive" and went on to explain a situation in which they wished to upload a file to an internal website but lacked the knowledge and documentation. Instead of spending time searching for how to perform the task, they went to a peer who happened to be in the same study space and found what they were looking for. P5 justified going to peers by saying, "it's definitely quicker to ask someone who knows the material rather than like trawling through various documents." P5's earlier case of going to a peer for an essay on a specific scholar demonstrated going to a peer for competence; yet P5 said that it also saved them time,

> **P5**
>
> It would definitely save time than like reading through [an author's name] himself, who can be a bit obscure, and also secondary literature when I can just talk to [the peer] about different problems that are in the field, and then he can suggest sources to me that I can then read.

P19's earlier example of being next to a more senior peer indirectly demonstrated speed (see Proven Track Record section, page 121). To recall, P19 was searching for administrative information that was not addressed by the department or available online. Upon sitting next to an upper year student on their first day of class, they were able to have the answer to all their questions within minutes.

Time saving occurred in different platforms and was not limited to in-person interactions. P15 talked about a Facebook group they have in which peers can pose

questions. P15 emphasized its speed for administrative information by saying, “it's like an easy way to get an answer quickly. And, like, there is someone that will answer eventually.”

4.2.3.3. Pre-Existing Relationship

Pre-existing relationships was the last convenience factor that was brought up by participants. Related to the notions of trust and comfort talked about earlier, the interviewees stated that they tended to go to those they already knew when they needed help (e.g., P4, P9, P13, P15). While not always the case, most of the participants had a handful of close peers, whom they referred to as friends, that they would refer to for the same type of situation (e.g., same information). This became evident throughout the interviews by participants in two ways, by explicitly mentioning it or seeing that the participants kept referring to the same peers. For example, P13 talked about being in a group chat with their close peers and using the chat platform to seek and/or share information. When asked why they went to these peers for information, in general, they talked about the notion of pre-existing relationship between them,

> **P13**
>
> Well…they're all close friends. And we have our own, like, you know, friendships outside of this. And for instance, we would be, I would go sometimes for coffee with one of them, or have a beer with another, like this is we would all have our individual relationships together.

Similarly, P9 had a handful of peers/friends they went to for various types of academic and program information. They said, "…I have particularly S [a peer] who I talk with a lot and then like, kind of three or four others on a regular basis, it's kind of talking through some of these things."

Ultimately, regardless of the information, going to those they already knew simply made sense to the participants. P13 talked about the trust among themselves and explained the nature of the relationship with their circle of friends as,

P13

> You know, it's just like, those were people I had a great affinity with. And we've spent a lot of time working with each other, helping each other out, talking, spending evenings, nights drinking wine and talking about things, we just we grew, we grew close to one another. And for three out of four, also, we came to Quebec not knowing anyone. So I guess, you know, we were the first people who were there… in terms of friendship.

P13's sentiments about their peers were shared across the participants and led to realizing that doctoral peers want to help one another succeed. This will be discussed in the next section.

4.2.4. Desire to Help Each Other

Throughout the interviews, participants talked about their desire to help their peers (e.g., P2, P4, P11, P17, P16, P10, P13, P17). This help came in any form possible, as long as it aided in their success. Some of the examples already discussed demonstrate this (e.g., English language help by P4 and P11); however, the overall desire to help may be summarized in P17's sentiments. P17 was close to a number of their peers who helped them get through the doctoral program and summed up their desire to help these peers as, "I really wish them all the best in their endeavors." Although not as pronounced, the same was observed in other participants. Many of them talked about helping peers in the academic context, including with comprehensive exams, presentations, and papers. For instance, despite having had mobility issues, P16 recalled offering a student help when they were going through their comprehensive exam. They not only helped with the exam, but they also ensured to check up on the peer on their status throughout the process. P16 remembered the incident as,

> **P16**
>
> Um, yeah, so I mentioned before that this student, my cohort group, [name of the peer], who's a little bit behind me, I had just told her, like, if you need any help with comps, I'm happy to, like talk you through it. And she was kind of a little bit of a nervous wreck, which I understand. It's fairly rigorous. And so, she reached out… So, I think we just sent like, very brief messages once every three months or something just like, say Hi or whatever. But um, she reached out when she was getting close and saying, like, "I'm really stressed, can we talk?" And I said,

"Yeah". So we met for coffee. So, she came to me because I had mobility issues. And so, I walked her through the whole process, what I'd learned and all the tips.

P10 and their peers provided each other with help prior to presentations. Prior to presentations, the peer would perform a mock presentation in front of others for better preparation. P10 explained how the presentations would normally happen in person but given COVID19, they had shifted to online. The shift to online highlighted the dedication of peers to each other's success, regardless of how cumbersome setting up a presentation might be.

Aside from practice on presentations, general academic help was also brought up in the interviews. For example, P3 had a classmate who was struggling in statistical programming language R. Wanting their peer to do well on her dissertation proposal, P3 noticed a lack of data visualization in the proposal and approached them with an offer to help create visuals.

In a similar fashion, P2 knew about a citation management software called Zotero and explained how they would introduce it to their peers at every opportunity possible. They justified it as teaching their peers, "ways to work smart, not hard."

In addition to academic help, participants talked about sharing opportunities with one another (e.g., P5, P7, P9, P17). For example, P5 was subscribed to a philosophy mailing list and would often receive emails they would share with their peers. They mentioned peers do the same. Using the mailing list, P5 had forwarded various post-doc opportunities in Germany to a peer who was considering pursuing that path. They also used it to forward funding opportunities to another peer.

Similarly, P9 was more involved in their field, sociology, than some of their peers and followed different associations and sociologists. They both received emails from and

followed them on social media. When opportunities came up, P9 would send them to their peers. In a specific example, a sociologist asked their followers on social media to refer others to them to form an informal community on same sex marriage. P9 noticed this and replied by tagging one of their peers. The peer joined the community and later thanked P9 for the relevant opportunity. This anecdote is found below.

P9

So, I do spend a lot of time on Twitter [social media platform]. And I also, I think, and maybe a little bit more plugged into like the, like the Sociologist associations and stuff, like I get lots of emails about like different events that are happening and stuff like this. So for example, on Twitter a while ago, where I follow like a lot of people in sociology, I saw some American sociologist tweeted, like, 'I'm starting a network of people who study same sex marriage internationally. And I'm looking for collaborators.' And my friend W who started her Ph.D. at the same time as me, her research focuses on same sex marriage, and I was just like, "This would be something that W [a peer] could do." And so I like tagged— I replied to the tweet, and I tagged W and then I sent it to her. And she has thanked me like five times, because she's like, "[Participant's name], I'm on this new email list. It's totally related to my research, I just had a Zoom call with all of these people who are studying what I'm studying. And it is like, super wonderful." And she seems to be very grateful for this.

Other examples included help with research and its dissemination (e.g., P7), funding (e.g., P7), work opportunities (e.g., P15, P17), health and well-being (e.g., P9, P15, P20), and even reminders not to miss important dates (e.g., P15).

Helping one another occurred regardless of the ability of the peers. Thus, peers tried to help even if they were not qualified. P8 helped their friend with a presentation they had and recalled,

P8

> And so like, just giving tips to my buddy, who was prepping his, you know… his content was outside my comfort, like outside my real zone of specialty, but I knew it enough to give some content feedback, but also enough to say, like, "I don't know what you're talking about here can you expand a little bit?" Or like, "tell us what you actually mean here." Or then also, like, "let's practice Zooming together, and I want you to practice like, where are you going to have your text? How are you going to have your zoom set up? Let's check your lighting. Are you going to read from your phone or from a tablet or from the same screen? How do you screen share on Zoom?" Like, you know, just good best practices for digital presentations.

The examples given thus far implied the existence of a prior friendship when helping peers. However, wanting to help one another did not necessarily occur among close peers. The participants helped peers regardless of their closeness (e.g., P1, P15, P17). In fact, when talking about information seeking and sharing with their peers, P15 explicitly admitted their dislike for two of the peers they exchanged information with. While the information exchanged with these peers was different than with friend peers, the passage below demonstrates the desire of P15 to help in any way they could.

P15

> [so, I'm someone] pretty social so I will try to engage with, with everyone… but everyone is not at the same level, right? Like, for instance, there's a guy I really

> don't go along with, but we still talk about area exam issues. So, like we, we don't have the same fields. But we talk about the differences in our reading list and what do we think is expected and like what are our reading strategies. There's a girl who's my same year and she complains quite a lot. I also don't like her too much but I take the time to listen to her. She mostly talks because she's not a great listener. But she complains about her TA-ship [teaching assistantship], she complains about her international student fees, she complains about how she's not going along [sic] with profs, and how she thinks she deserves better grades or I don't know what. So like, I try to give her advice, but like to be honest, I don't go along with her [*sic*].

What can be observed is that, overall, the peers provided any help they could in order to contribute to the success of one another. P8 summarized this phenomenon while speaking about helping their peers with their presentations by stating that they are, “invested to… making sure each other do well.”

4.2.5. Obligation and Giving Back

Related to wanting to help one another, at times participants felt an obligation to engage in information sharing (e.g., P16, P17, P19). It was not clear if all their engagement was due to obligation; however, some participants talked about helping their peers because another peer had previously done the same for them. For example, P16 attended a virtual presentation about funding by one of the more senior peers when they first entered their program. They later got in touch with the presenter who further helped them with funding questions. They appreciated this and seeing how useful it was, they gave back to the new students by participating as one of the presenters in the same presentation in the following year. They explained this as,

> **P16**
>
> Okay, yeah. And I did the same thing. Like I had noticed that what [the peer] had done for us during the presentation for the first years on Zoom was helpful. And I was asked this year to do that presentation. And so, I was happy to do that. So, we're trying to like, you know, trying to pay it forward, or like, you know, help.

In another case, P16 provided a peer with tips and tricks on their comprehensive exam. They attributed their desire to help to the help they had received from another peer previously by saying, “that was kind of like me trying to do what another student had done for me.”

At the time of the interview, P19 was in the third year of their doctoral program and had since become very involved in the department and the university. They helped organize events, initiate conversations with new students, and answer any questions that peers had. Helping in this way was their way of giving back to the community and a

direct result of the help they had received at the commencement of their program. P19 described their rationale behind helping their peers as,

P19

... I think it really, it comes down to how the upper years treated me, and how they were so helpful towards me that I almost, like, myself, like, I go out of my way to, like, reach out to some of the newer kids and ask them, how are they feeling.

P17's situation was similar. As discussed in the previous sections, during the initial stages of their doctoral program, P17 relied heavily on their peers. The peers helped P17 with course work (e.g., math) and the comprehensive exam that they had to complete during a difficult stage of their life. The impact of such help had a lasting gratefulness effect on P17. Although they were happy and wanted to do so, P17 felt a sense of obligation to repay the kindness of the peers helping them whenever they sought help. P17 demonstrated this sense of obligation by talking about providing their peers with software and coding help,

P17

You know, I think, this is I think important, I mean, it's for me at least how I think, I think there's a bit of, even though it's never said, there's kind of some reciprocal stuff going back and forth because they helped me a lot more than I helped them in the beginning for the coursework, you know, I was definitely I'd say that the academically weaker than the two of them, especially in terms of math and everything they really helped me. Um, so I guess I kind of feel there's like a, even though they'll, they've never said this, I kind of feel a bit of obligation, you know, they helped me really much during my first two years, and I kind of

sense a bit of duty to like, whenever, whenever they have a question to, to really give them back some information, so, especially for Stata, because, you know, that's kind of the number one, some people use R, but in our cohort it's mostly Stata. Like, a lot of times if they have like coding, let's say they're running a code and they get an error, right away, you know, like, maybe once every two weeks, I'll get an email from them, they'll show me like the error message and say, “hey, you know, any comments? What's going on?” Um, so yeah, at this point, I'd say they're the ones asking me more than, than I was asking them for advice. I was kind of, I was asking them more for advice at the beginning of the program. And now it's them who are asking me, especially for like software stuff.

4.2.6. Lack of Options

Going to peers thus far assumes that going to peers is by choice. While true, interviews highlighted that at times, peers, or at least certain peers, were sought because of lack of other options. The lack of options had two causes. The first was the lack of resources (e.g., support and information) from the department or university, which led the participants to their peers (e.g., P2, P4, P5, P9, P20). This is related to the role of an institution mentioned in the Role of an Institution in Information Seeking and Sharing section on page 91. For instance, P9 went to their peers for teaching because the person who was perhaps most qualified to help them, their supervisor, was not willing to help. Similarly, P5 went to peers for help when they were to teach a course as the resources (e.g., previous years' syllabi) were not available from the department.

The second cause was due to the limited number of peers who could provide the information needed (e.g., P3, P6, P9, P11, P13, P14, P17, P20). For example, P3 and P20 went to their peers for help with their comprehensive exam given their specialized topic and the limited number of peers who had the capability to help. P14, too, admitted the lack of peers by saying, "our department is really small, it's only like, four or five people, so yeah. So, I mean, there's not a lot of choices."

Thus far, it is shown that the institution could foster information seeking and sharing and several factors (i.e., the nature of the relationship, perceived competence, convenience, the desire to help, sense of obligation, and lack of options) may influence one's decision to engage in information seeking and sharing with their peers. Given these, the next section will focus on the type of information exchanged among peers and demonstrate their importance.

4.3. Information Exchanged among Peers

Throughout the interviews, participants indicated they go to one another for support, benchmarking, validation of actions, and information. Support was often shown by helping one another in any way they could to get through the doctoral program. This ranged from moral support during difficult times like when completing their comprehensive exam to intermittent check-ins on each other (for instance during the COVID19 physical distancing measures).

Benchmarking and validation were demonstrated by peers going to another to ensure they were being consistent with the rest of their peers. For example, participants went to teaching assistant peers to compare their grading criteria or to see how they were teaching a certain concept. Similarly, validation was demonstrated by peers comparing their actions with that of their peers to ensure they were similar. For instance, they went to one another to confirm their reaction to a certain situation was how others would have also reacted. Support, benchmarking, and validation are concepts that are out of the scope of this research. Therefore, they will not be discussed further. Information, on the other hand, was the focus of this study and it will be explored.

Every peer had a different function when it came to information. What one sought from or shared with a peer depended on several factors that are mentioned in the Going to Peers section page 97. For example, it was more likely for personal information to be discussed with close peers than peers with whom one barely interacted. The distinction among and the categorization of peers differed for each participant and was implicit in most of the interviews. An exception was P11, who distinguished among their

peers by categorizing them into those in the same field but a different subfield, those in different fields, and others. P11 described these categories and the information discussed with each when they were talking about the study group that they had formed by being in the same physical space (i.e., economics graduate lounge), as discussed in Convenience with Peers section on page 134. P11 said,

P11

So, we were technically four in this group, one is quite busy in their own personal lives, so can't talk to them… so the A person with whom I discuss research, they're the easiest to talk to about research, because we're literally like, we're in the same field, but within, with different subfields. So the concept of say, Macroeconomics is still the same. So the intuition I'm trying to build on things would be easily grasped by the other person, and say, the person B, who was in the group, but they're in different field altogether, I have no idea about their field, so I can't even input anything. So with them, I could probably just talk about what's going on at research. But I would never get into the details of this is the methodology I'm going to use, I'd probably just tell them about I'm using this data, but nothing more than that to get into data. And the other category I mentioned is that those are other people in the cohort, whom we'd be seeing first year, but we didn't form a group, we didn't have any outside interaction, like no messages exchanged, no calls exchanged, no hanging out together after classes. So there will be just people that we've been acquainted with. So when you meet them, we just greet each other and just talk about general stuff, you know, something that could be common to us like the program and funding and literally just the program.

Regardless of the distinction among each peer, the information exchanged may be divided into information about skills and information about everything else. The reason why the latter is broadly defined is that this study was more concerned with the former. Still, while it is acknowledged that there may be other ways to categorize this information, the skill and non-skill (i.e., other) information distinction is used as it is consistent with the aim of this study.

Throughout the interviews, participants talked about both seeking and sharing of information; but it should be noted that, in general, their role changed from seeker to sharer as they progressed through their studies. This shift in information behaviour was, according to P14, because they had already come across everything they needed and were no longer in the need to seek. P14 explained it as,

P14

> But I mean, again, like probably when I started this program, four years ago, maybe I was doing more of that [information seeking]. But now, I mean, there's not really that much new, as relates to McGill, I mean, it's pretty much like I've done it for four years. So, I'm not sure what you know, I don't know, like, I don't need to ask too many questions at this point.

This change in the role was significant as it, in the opinion of the researcher, provided a more holistic understanding of information behaviour. In the following section, information about skills will be discussed, followed by other information shared with and/or sought by peers.

4.3.1. Information about Skills

Participants often went to their peers, and vice versa, for help that had the potential to improve skills. For the purposes of this study, this was referred to as information about skills. The most prominent skills mentioned were communication and teaching. Research, software-specific, interpersonal and conflict resolution, and critical thinking were also brought up. These skills are already defined in the literature and mentioned in the Skills and Skills Improvement section (page 39) of the Literature Review chapter and no attempt was made to redefine them. Hence, whenever the meaning of a skill is not mentioned, the definition from the Literature Review chapter should be assumed. Each of these will be discussed in more detail below.

4.3.1.1. Communication

Almost all the participants interviewed talked about going to their peers, or their peers coming to them, for communication skills. It was often in the form of providing drafts of their work and seeking feedback from one another. Giving draft work to peers and seeking feedback before sharing it with its final audience was beneficial to the participants because it helped them improve their work and gain confidence in it.

The drafts were written work or presentation (oral communication). The former involved comments on substance/content, grammar, and/or ensuring the material is written to be understood by its target audience, while the latter feedback was on presenting itself and/or its content. Each type will be discussed separately, below.

It should be noted that during the interviews, at times, it was difficult to know whether the intention of the participant was to improve communication skill or obtain information on the content itself. For example, when participants talked about peers asking for help on a paper, it was unknown whether the help was to improve the grammar or the content. Attempts will be made to distinguish between the two, but when not possible, it should be assumed that the help was a combination of both. This section is separated by writing and presenting skills.

4.3.1.1.1. Writing

When it came to writing skill, information provided was on the content (e.g., P7, P10, P12, P18), grammar (e.g., P1, P2, P4, P5, P7, P13, P15, P18, P19) and/or compatibility with the intended audience (e.g., P8, P9). P7 had taken part in several school-related activities and as a result was often able to share, as opposed to seek, information. However, they had been encouraged by their supervisor and peers to share their academic work with others more broadly. This led them to engage in exchanging draft papers with their peers. Specifically, they sought peers who were familiar with the topic to provide feedback on the content of their papers. P7 recognized the value of exchanging papers with their peers and found their help useful; however, they mentioned that they tended to receive confirmatory, as opposed to critical, feedback. In their opinion, confirmation that an already indicated section of a paper needed revision was not as valuable as the peer identifying new areas for improvement.

P12, too, received help in content that was useful in advancing their work. P12 mentioned a paper that started as a project for a seminar but with several revisions and feedback from two peers eventually became a publication. P12 said that the help from peers, "was something that got [them] unstuck for sure on that project." In other words, peer feedback on the content of the paper was instrumental in the success.

P18, who was studying linguistics, exchanged paragraphs and short papers for feedback on both the content and the grammar of their writing. They explained that they went to one of their peers for both, because they had the domain knowledge to help P18 and was a native English speaker.

Indeed, aside from help with the content of the drafts, English grammar help was also sought from and/or shared with peers. For example, P7 mentioned peers coming to them for help with English grammar. Interestingly, P7 mentioned that they provided such help regardless of the peers' fields of study. This shows that information on grammar could still be shared with or sought from those unfamiliar with the subject. P4, elaborated on this and said that they provide editing feedback regardless of the content because they were competent in proofreading.

Help on the grammar was not limited to academic drafts, though, and peers sought/received grammar information on non-academic drafts, as well. In such cases, expertise in the field was less relevant. This was brought up in the case of important emails, for which peers went to one another for feedback. Having had experience in proofreading at their previous work, P5 gave an example of helping a peer with an email draft to a publisher's editor. The help was reciprocal. P5 found it particularly useful as emails are at a risk of being misread and feedback from others (e.g., peers) can mitigate the risk.

P2 had several years of corporate experience and used their expertise to help peers with "professional communications" questions. They used the example of a peer with a conflict to demonstrate this. In the example, a peer had chosen and signed the paperwork with a second supervisor after the first had ignored them. Yet, the first had gotten back to them some time after, which left the peer in an uncertain situation. P2 and another colleague assisted in writing a professional email to the first supervisor and explaining why the peer was choosing not to go with them. Similar cases were brought up by P15 and P19 who sought help for English text from their peers when it was important, such as an important email, to ensure they are free of errors.

It was further observed that feedback was also sought from those who were not necessarily equipped to help with content or grammar. This was perhaps due to the reasons mentioned in the Why go to Peers? section on page 98 (i.e., convenience, lack of options, etc.). For example, P13 and a peer were both non-native English speakers but helped one another draft English emails,

P13

> I helped her, cause English is not our first language, neither hers, nor mine. And so I helped her draft an email as well, making sure that it was strong enough, but professional enough still, that it would get the right answer without antagonizing her interlocutor. So that's the kind of help also we've given each other sometimes.

In the cases above, information was directly provided by the peer. However, indirect help with the English language also occurred. Accordingly, when peers were not able to help, they referred each other to other resources. This was seen in the case of P6, who went to peers for writing help and was referred to the university's writing centre. P6 found this referral particularly valuable since it also included tips on how to book an appointment when it was difficult to find one.

In addition to content and grammar, help was further sought to ensure a draft was suitable for its intended audience. This was evident in the case of P9 when they were writing a technical paper for distribution to the public and wanted to ensure its suitability for lay audience. The feedback received from the peers was incorporated in the paper and resulted in a publication. They explained the process and the usefulness of peers as,

P9

… sometimes, when I'm writing, I am using terminology or language that's not so accessible to people who don't have the same work experience. And she [a peer] studies similar topics, but I think has a really good eye for like, what is clearly communicated and what isn't. So, I basically ask her, can you read this whole paper and give me your comments on how it can be improved, and she did. At the same time… I have a friend who's in law school, I asked to do the exact same thing. So, it was two of them, one a law student. And then like [peer's name], who's also a Ph.D. student in my department. And they gave me really helpful comments. And I like incorporated some changes. And I like clarified a bunch of my language, and then I sent it off. And then it got published a little bit later.

4.3.1.1.2. Presenting

Information sought and shared with respect to communication skills also included presentations (i.e., oral communication). In such cases, peers went to one another for help with content and/or the act of presenting itself. For example, P8 was known for being proficient in presenting and explained how peers in their cohort came to them for improving their presentation skills and said,

> **P8**
>
> …most of my stuff was really more about like presentation skills, like, okay, like, how do you project? What, how to put pauses in? Sometimes it was more technical things like how do you like, how do you do this in PowerPoint? Or like, what are some, like, how do you have a better PowerPoint versus a worse PowerPoint?

Likewise, a few participants talked about doing mock presentations to prepare each other for presentations (e.g., P10, P11, P13, P17). These happened both in person and virtually. P10 said that before a presentation, few peers would get together and practice. In the opinion of P10, practice was useful as it helped with time management, content of the presentation, and familiarized the presenter with the type of questions that they might be asked during the presentation. For P17, a mock presentation in front of peers provided an opportunity to get feedback on the content of the slides and how it was being delivered.

Going to more than one peer with various backgrounds was particularly useful as it allowed the seeker to ensure the presentation was suitable for a wide range of audience. P13 recalled a time when a peer went to them and others for feedback on their

doctoral proposal presentation. P13 thought it made sense since, in their department, they had to present their doctoral proposal to a committee that consisted of an audience with limited domain knowledge. Obtaining multiple perspectives was important in ensuring the presentations were clear.

Overall, the participants found that involving peers in their written and presentation work enhanced them and gave them more confidence. This was particularly helpful in works that were prepared for an authority figure, such as one's supervisor(s), because of the fear that may exist in dealing with them (see Implications of Trust section, page 123). P9 summed up the impact of sharing drafts with peers by saying, "it reduces my anxiety about having to deal with my supervisors."

4.3.1.2. Teaching/Teaching Assistantship

Another predominant information sought and shared among doctoral peers was related to teaching. Depending on their role as a lecturer or teaching assistant (TA), participants went to their peers for topics such as what to expect, how to teach, what material to cover, logistics (e.g., office hours), how to deal with students, and teaching tools.

For those new in their role as a lecturer or teaching assistant, peers provided them with information on the role, which helped them prepare accordingly. For example, P9 lacked prior teaching experience and did not know what to expect. When given a course to teach for the first time, P9 reached out to two peers to learn how to teach and evaluate (e.g., develop syllabus, evaluation methods, etc.), use teaching tools, deal with students, and manage teaching assistants. P9 recalled having to look in their extended network of peers as none of their close peers had such experience. By going to peers, they were able to get a holistic understanding of how others taught and prepared for their lessons. P9 described that as a result of going to peers, "[they] felt a lot more confident about how [they were] going to be able to deliver the course." P9 found peers to be a more relevant population for seeking teaching information than their supervisors, since they shared the same values and were often in the same position as one another. As discussed before, being in the same position meant going through similar experiences which results in a sense of comfort (see Going Through the Same Experience section on page 105). In the case of P9, another peer was also teaching for the first time in the same term. P9 explained how because of being in a similar situation, they would keep each other updated and work through their challenges.

Like P9, prior to teaching their own course, P7 went to peers to get teaching ideas. P7 thought the course went well and gave back to peers by sharing what they had learned and the material covered in the course with those who had not taught before. The course was intensive and online, so they also shared information on its logistics, such as how to teach online and organize the lessons.

Those with prior teaching experience also went to peers, but the information sought was different. For example, P3 had experience in teaching before entering their doctoral program, but it was important for them to have a contextualized understanding of it. Therefore, they still went to their peers when they were to begin their teaching assistantship position. They explained that they went to their peers who had that position before to understand what to expect and how to manage their time. Moreover, those with prior experience went to peers to compare their teaching methods with one another. In fact, having had previous conference lecturing experience, P7 changed their lecture style from lecture-based to discussion-based approach based on the advice received and comparison they did with their peers.

Participants went to peers for teaching assistantship related information, as well. The information sought and shared were similar to that of teaching, with the addition of information on relationship management with the instructor. Having had experience in working alongside instructors, P13 recalled guiding a newly hired peer on how to manage their relationship with the professor of the class they were to be a teaching assistant for. In addition, they provided them with tips and tricks that were not covered in seminars and workshops that are available to teaching assistants.

Participants also compared their work as a teaching assistant to that of other teaching assistant peers and obtained new perspectives. For example, P12 and another

peer were teaching assistants for the same class and consulted one another on topics such as communication with students and grading. In addition, being an online course, P12 went to this peer to find the most effective way of holding online office hours. Having tried both open office hours and appointment-based, the peer advised of the efficiency of the latter. P12 found their encounter with the peer useful as the information received allowed them to save time.

Dealing with students as a teaching assistant was also brought up when peers sought information or simply discussed a situation with another peer. For example, P16 had issues with students not respecting deadlines, which did not align with their values. P16 discussed this with a more experienced peer to understand the normalcy of not respecting deadlines. P7 engaged in similar discussions with their peers, especially when students were being aggressive. They often occurred when grading students and involved sharing their experiences with one another. P7 explained it as,

> **P7**
>
> … so like, we'll commiserate by talking, like, sharing experiences with students who have given us a hard time or you know, sometimes also positive experiences, where, you know, we met with a student, they seem to have learned something that was nice.

At times, the information sought and shared was related to the teaching tools. P8 did this with the learning platform, myCourses, and the communication software, Zoom, despite admitting that they were not good with technology but knew more than their peers. P10 also relied on others to stay up to date with the teaching tools and explained their reliance on their peers as,

P10

So, for example, if there is like, you know, myCourses is always changing the structure kind of, and recently, I'm just, I cannot keep track of how many changes are there. So, most of the time, it's like, maybe I don't know how to make this visible to the students how to do this, how to do that. So, I would talk to my friends who have done the job, and try to see if they know what option to use in, on my courses for this to work, something like that.

Finally, when speaking about information on teaching and teaching assistantship, the concept of spontaneity was hinted at. This meant that the information seeking and sharing occurred by chance. Specifically, several of the participants conducted their teaching duties in a shared space and went to the peers around them for information (see Ease of Access, page 135, for more detail on this phenomenon). After teaching their first class, P7 went to their graduate study room and encountered peers with whom they talked about their experience with students and sought help on how to deal with difficult individuals. Equally, when P16 was having problems with students not respecting deadlines, they shared this with a peer who happened to be in the kitchen of their community housing complex.

4.3.1.3. Research

Peers were also useful in providing information on how to conduct research. Specifically, doctoral students interviewed described going to their peers for information that they found useful in conducting their studies (e.g., P1, P3, P7, P9, P14, P18). The information sought revolved around the different aspects of research like conducting literature review, research design, methods, publishing, and data analysis.

P3 and P14 both shared research information with their peers. The former had a peer who asked them for feedback on their chosen research design; while the latter shared information on planning dissertation and finding resources to help a peer move forward in their doctoral journey.

As with seeking research information, P1 was in the process of writing a "scoping review" paper. Having had no prior experience in writing such papers, they indicated exchanging several drafts with a peer who was competent and was able to provide them with information. Likewise, having recently started their doctoral program, P18 was just at the beginning of their research design and needed to explore different research approaches and methods. They explained consulting their peers on this topic. While the response received from the peers did not convince them to choose an option, it answered their questions and broadened their understanding of different options.

P7's peers also talked about research information. The conversations around this type of information happened in a course that was organized by the department, called Pro Seminar. The course aimed at answering questions and having discussions about research in general. P7 mentioned that while the conversations in that course were often more formal, these conversations continued outside the class and in more casual ways. Among the topics discussed, P7 talked about publishing articles with their peers, who

provided P7 with a different perspective on publishing. More precisely, P7 used to find a call-for-paper and write based on the requirements. This was limiting P7 since they had less control on what they were writing. The peers informed P7 of a reversed approach where they would write an article regardless of the requirements and find a place to publish after. P7 referred to the method they used as "chasing… instead of just writing" and found the proposed method more efficient and was working toward adopting it.

Conversations on research information were further expanded to analysis of the research data. For example, P9 had a peer who was better at different statistical analyses. They talked about having to rely on this peer for analysis of their research data and identifying a suitable statistical analytics approach.

Information on data analysis included both methodological approaches, like P9, and/or information on how to use a specific software. Because some of the latter help was in the context of coursework (e.g., P15), it was hard to assume it was related to research. Hence, they were placed in a different category of skill information referred to as Software Specific/Technical and discussed below.

4.3.1.4. Software Specific/Technical

Software specific help, also referred to as "technical" by P10, included information sought from or shared with peers that helped them learn more and potentially improve their skill on a given software. The software depended on what the participant, or peer, was working on but included statistical (e.g., P1, P3, P10, P15, P17), learning platforms, and document management.

Based on their preference and field, participants were using multiple statistical software applications on which they sought or shared information. For instance, P1 did not have a background in quantitative studies and needed peers to help them show how to deal with data. In addition, they were curious about various software available to them for quantitative analysis (i.e., according to P1, Stata, R, and Python). For this information they had conversations with peers, which they described as "really, really, helpful." P10 did the same but referred to software information (i.e., R, Stata, and Python) as "technical stuff."

P3 and P17 were on the sharing side of statistical software information. P3 was proficient in statistical software R and helped solve their peers' problems. Likewise, given their expertise and the fact that most of the peers in their cohort were using it, P17 shared information on the statistical software package Stata.

The university at which the study was conducted uses a learning platform called myCourses, which contains the courses the students are taking and allows them access to their content. Teaching assistants and instructors use it to interact with students; however, myCourses is complex, according to P10 "always changing," and difficult to keep track of. Hence, another software specific information sought and shared by peers was related to myCourses and its features.

P8 was on the sharing side of software specific information. They admitted that while not an expert in technology, they knew more than their peers. Coupled with their willingness to help others and desire for exploration, they provided peers with information on how to record lectures and upload them to the myCourses platform.

Finally, participants also expressed going to their peers for information on software that enhanced their doctoral experience (e.g., P10, P17). One such example was document management software LaTeX. LaTeX is similar to Microsoft Word and used to create documents. Yet, it is more technical, and participants indicated they went to peers for help. For example, even though P17 knew how to use LaTeX and was helping their peers with the software, peers eventually moved on to and referred them to another platform called "Overleaf", which still used LaTeX but had an easier user interface. P17 eventually made the switch to the new platform, at which point their role changed from an information sharer to a seeker. They explained how they went to their peers for help on different document templates. P2's case mentioned in the Desire to Help Each Other section (page 143) about introducing the software Zotero to their peers demonstrates another case where information about a specific software was shared among peers.

4.3.1.5. Working With Others[9]

Throughout the interviews, various cases were mentioned in which interaction and exchange of information with peers helped in working with others. This was mostly in the context of working with supervisor(s), students, and peers. It happened explicitly or implicitly. The former was when the participant directly sought or shared information about a situation, while the latter involved reflection and learning from first-hand experience.

Participants often went to their peers in situations that involved working with their supervisor(s). Peers were able to provide information on how to address a variety of situations such as co-authorship (e.g., P9, P17) and workload (e.g., P20, P6). In addition, peers were also useful in informing those less familiar with norms and the rights of doctoral students. For instance, an international peer was uncertain whether it was acceptable to send reminder emails to their supervisor, how, and if they could voice their concerns. They went to P17 for information on these topics.

The perceived usefulness of peers for information on working with supervisor(s) was highlighted in the cases of P17 and P20. P17 had a peer who was unsure on how to ask their supervisor for co-authorship on a project they were working on together. P17 told the peer to pitch a mutually beneficial solution and in return ask for co-authorship. The peer used this information and was able to receive the co-authorship they had

[9] Terms such as "conflict", "conflict resolution", "interpersonal conflict", and "interpersonal stuff" were used by the participants to refer to the type of information discussed in this section. However, they all translated into improved working with others, which is why "working with others" is used to refer to the phenomenon.

wished for, demonstrating the direct impact of P17 in the outcome of the event. Similarly, P20 recalled a difficult period in their doctoral program when they felt overworked by their supervisor. They had to read one book per week to discuss with their supervisor, partake in their required courses, write grant applications, and participate in conferences. Not knowing what to do, they went to their peers and discussed the situation. The peers advised P20 to express their feelings to their supervisor and ask for less frequent meetings and lower number of readings, which the supervisor eventually agreed to. P20 described that peers showed them it is possible to reach out to their supervisor, express their feelings, and "stand up for [themselves] with [their] supervisor." P20 had assumed this was "impossible" and was grateful for the advice and the encouragement they received from their peers. They referred to it as a "lifesaver", which allowed them to get through this difficult time in the program.

Information was further sought from peers when participants had difficulties with students. Several cases were already mentioned in the Teaching/Teaching Assistantship section on page 163 (e.g., P7, P16). However, it is worth repeating that, in general, participants talked to their peers to get their perspective on challenging cases, compare their experiences, or simply talk about an experience. P7 had several difficult interactions with students and went to their peers for information on how to address them. P7 categorized these as informal and referred to them as "blowing off steam." For instance, they had discussions with peers on how to address a long email from an undergraduate student, who questioned their ability as an instructor; or how to deal with aggressive students in their classes. P7 went to their peers because of their various experiences in working with students and appreciated the information received. The

information received, according to them, was useful and relieved pressure from them, despite being inconsistent with their values.

Directly working with peers (e.g., being in the same group project) was also a way of helping participants learn about working with others. This was implicit and involved participants pondering on an experience and learning from it. For P18, this experience and learning came from being part of a group project, where the peers had conflicting views and were unwilling to cooperate. The project was eventually completed but P18 mentioned that along the way they learned the importance of task delegation and compromise when working with others. Reflection on a situation meant peers were also able to help with critical thinking. It will be discussed next.

4.3.1.6. Critical Thinking

The interviews highlighted that peers may be able to provide information that help one another with critical thinking. For participants, critical thinking meant reflection and gaining various perspectives on different situations. This opened their eyes to diverse ways of thinking and provided different angles. For academic work, it also helped improve their work.

For instance, P5 volunteered to read their peers' essays and provide feedback. Reading others' work allowed P5 to learn about different areas of philosophy and methodologies, which they could later apply to their own research. P5 described the usefulness of such information as showing them alternatives that might not have come to their mind otherwise. P2 explained talking to peers and the subsequent critical thinking as,

> **P2**
>
> If I wasn't talking to my colleagues, then I would not be exploring things like constructions of race and gender in the ancient world, I would just be reading my texts thinking about philosophy and the things that like, stuff that has, that I had been taught by professors rather than here's another resource of someone who has all of these other, who learned from a bunch of different professors and can bring those ideas to me, and I can bring my ideas to them.

The sentiment shared by P2 was further reflected in P9's experience, whereby they had written a technical paper and by sharing it with peers, they were able to realize that it was too complex to be understood by their target audience. P9 mentioned that without peers, they would not have realized its complexity.

Non-academic information seeking and sharing also helped with critical thinking. Being an international student who was unfamiliar with the western norms, P18 said that by asking about others and their culture, they were able to make sense of why peers engaged in certain behaviours. For instance, P18 came from a culture where challenging the status quo was not a norm. However, by speaking with their peers, they realized the importance of having a discussion with others and being open to alternative options.

The skills mentioned thus far were explicitly brought up by participants; yet, implicitly a number of other skills were also identified throughout the interviews. These are discussed next.

4.3.1.7. Other Skills

While interviewing doctoral candidates for this study several skills were implicitly mentioned. This meant that while the participants did not have explicitly mentioned the skill, it was brought up when speaking about other skills. They included problem-solving, time management, leadership, and teamwork.

4.3.1.7.1. Problem-solving

Problem-solving occurred when peers faced difficult situations for which they went to each other for possible resolutions. Even though the participants did not explicitly mention the skill, the outcome was consistent with that of problem-solving. P7 and P8, for instance, went to their peers when they were facing difficulties with students in their roles as teaching assistants. While this helped them work better with others (see Working With Others section on page 171), it also showed them alternative courses of action, such as the possible ways of behaving toward students (e.g., P7).

Similar problem-solving occurred when peers went to one another for communication skills, like sending emails, and working with others. Accordingly, P13 experienced a frustrating situation that required sending an email to an administrator at the university. P13 recalled going to a peer who showed them alternative ways of writing that email. Likewise, P17 helped peers interact with their supervisors, such as how to send emails or address conflicts.

When seeking and sharing information on software-specific skills, problem-solving was also evident. For example, P10 went to their peers when they were facing problems with programming languages R and Python. The peers not only improved their skills in the software, but also showed them alternate ways of addressing programming challenges.

Overall, P2 found that it was particularly useful to go to doctoral peers for problem-solving as they were all in the same situation and were better able to resonate with one another. This is not surprising since, as already mentioned earlier in the Trust

section (page 101), going through the same experience and having a common element with another student builds trust.

4.3.1.7.2. Time Management

Among the different types of information sought and shared among doctoral peers, tips and tricks of graduate school were often brought up. While this will be discussed in the Tips and Tricks section (page 194), a number of these contributed to improved time management among peers. For example, in their role as a teaching assistant in an online course, P12 had to hold office hours. P12 approached an experienced peer on the matter and was informed that it would be more efficient to hold appointment-based office hours, as opposed to open office hours. The peer further introduced an appointment scheduling platform, Calendly, to aid with scheduling. P12 explained the situation and its usefulness as "… a little more front-loaded work that saved me more work in the long run."

Tips and tricks on studying smarter also contributed to better time management. For example, P20's comprehensive exam consisted of three separate sections, each on a different topic. While they had the option to do them at different times, P20 was not aware and was pursuing them at the same time, which required them to read hundreds of books. A peer suggested taking each exam at a different time in order to successfully study for each. Another example was P19 who had to read a short book with very long footnotes for a book review but was restricted in time. A peer suggested P19 skips the footnotes after the first few chapters as there was most likely a recurring theme among them that had already been signified in the first chapters. The peer was right and P19 found the advice not only contributed to better time management, but also reassured them of their capabilities. P19 put it as, "… it kind of gave me a little bit more leeway of

my time and time management. And also, again, just like stress about what I'm doing of reminding me like, 'No, you do know what you're doing.'"

4.3.1.7.3. Leadership

Leadership skill was briefly mentioned by one participant (P6) who had been elected as the president of their student association. Having had no prior experience, P6 referred to the peer who previously held that position. The peer provided more information on the role, its responsibilities, and tips on how to succeed. For example, how to write reports and present at departmental meetings. P6 found that the information shared by the peer relieved their anxiety and built their confidence.

4.3.1.7.4. Teamwork

While explicit information on teamwork was not sought from or shared with peers, a participant who had the opportunity to work in teams expressed that it allowed for a better understanding of group dynamics and how to overcome conflict. As mentioned in the Working With Others section (page 171), P18 said that by working in a team, they learned about the value of compromise and task delegation.

Overall, the interviews showed that peers *can* provide information that helps with skills; yet lack of opportunity to seek/share the information and lack of awareness may be impeding factors. In other words, certain skills were not improved because the participants simply did not encounter a situation in which they were able to seek/share information or simply they did not know who to go to.

4.3.2. Other Information

Aside from information on skills, doctoral peers heavily relied on one another for several other types of information. P13 said they go to one another for various information,

> ...because we were, a lot of time, not sure about expectations from the department or not sure about the concrete way that things would unfold. And so, we were each other's guides, as much as we could.

P4 agreed with this lack of information from the department/university and said when it comes to information in general, “it's a lot of us telling each other [information].”

The non-skill information found during the interviews were consistent with the categorization introduced by Lee et al. (2017) and included academic (referred to as “professional” by Lee et al. (2017)), administrative, personal, and social information. In addition, peers also provided each other with tips and tricks that helped them throughout their study.

4.3.2.1. Academic Information

Academic information consisted of any information exchanged among peers that helped them in their studies. It was the most common type of information sought from and shared with peers. In fact, it was hard for the participants to imagine non-academic information scenarios and it was often after they were prompted that non-academic information was mentioned (see the Methods chapter, page 53, for more information on how the study was conducted). Information seeking and sharing occurred both in person and by other mediums such as phone, Zoom, Facebook Messenger, WhatsApp, online group(s), etc. When speaking with the participants they did not indicate when each was utilized; however, several (e.g., P10, P13, P15, P16, P17, P19, P20) confirmed the existence of the various mediums.

P10 described seeking academic information from peers by simply saying that, "… if I know somebody has an experience in a particular area that I'm interested in, and I don't have the experience, I would go to them and ask for directions." Indeed, a common case of seeking and sharing of academic information was when the topic was unfamiliar to the participant. P2 referred to unfamiliar information as "topics that I'm not super knowledgeable about' or 'topics that are not my specialty." P2 clarified this by indicating that their speciality was the topic of 'ancient world', whereas one of their peers worked on "indigenous history and colonization". Consequently, P2 went to this peer when they needed information on the latter topic. The information included resource recommendations (e.g., article(s), author(s), etc.), as well as feedback. P12 elaborated on this when they said,

P12

when I'm working on a project, especially— or preparing a lecture or something, especially when I'm kind of researching terrain that's new for me but I'm aware that peers may have read stuff that will be useful, I ask for their kind of opinions about books and recommendations for things to read.

Being on the sharing side, P10 confirmed that peers go to them for information on empirical economics, their field of study, such as dealing with data and proof-reading.

Similar academic information seeking and sharing occurred even when the information was familiar to the peers. For instance, during a project, P18, who was in the field of linguistics and studied speech perception, went to a peer in a different but close subfield to obtain new perspectives and feedback on what they had written. Relatedly, participants engaged in "paper swapping", which involved exchanging papers or paragraphs with one another with the intention of receiving constructive feedback on the topic. P10 explained,

P10

I had friends, people in my peers who would come to me if they were stuck in the writing, maybe they sent me, you know, maybe they wrote like a section and they're not sure how to— whether the writing is right, or whether the writing looks— it conveys the information they wanted it to convey. And then they would send me that and asked me if I can give it a read. Actually… I used to do that more in the third year when we were just, we were just doing the first time research. I would, after I write a draft, I would give it to another person and ask them to read it. And, I would read their draft in return and we [usually read each

other's] drafts and kind of do all kinds of, you know… like highlight portions that is [*sic*] not clear to us.

Academic information was also exchanged in cases where the participant was taking a course with material that was unfamiliar to them. This was mostly in the first few semesters of the doctoral program. For instance, P15 had to take two mandatory statistics courses in their first year and remembered going to their peers in that class for help with clarification on the concepts and assignments. Similarly, in their quantitative research methods course, P3 and peers shared useful resources and completed problem sets together. In some cases, peers outside of the course were also sought. P2, in history, had to take a Latin course to help them better perform their research. They went to a classicist peer who had a more extensive knowledge of Latin when they had questions.

Given that a comprehensive exam is an integral part of the doctoral studies, participants further engaged in information seeking and sharing during their exam(s). For instance, in P13's department, their comprehensive exam consisted of four topics, not all of which were familiar to the students taking the exam. P13 mentioned that to make studying possible for all the topics, they referred to peers who were more knowledgeable in each topic. They utilized the online storage website Dropbox to share information such as notes, articles, chapters, and relevant authors with one another.

Another subtle, but effective, case of information seeking and sharing occurred when peers brainstormed and had discussions with one another. This was also referred to as "bouncing ideas" off one another (e.g., P3 and P9) or "food for thought" (e.g., P11). For example, P15 had to write about "nationalism and generation" but was unable to find any useful information. They ended up brainstorming with a peer, who later sent them relevant articles. They did similar brainstorming when they were stuck on a

problem during a statistics course they had to take. Brainstorming further helped participants in the process of defining their research topic and/or conducting a study (e.g., P9, P11, P14). P9 found the process very useful and said, “sometimes it's nice just to have someone else to like, bounce ideas off of.” P9 recalled having a phone conversation with a peer about which methodological approach to use,

P9

> As I was working on this paper, which was a more quantitative statistical analysis, [a peer] is better than I am at thinking of different methodological approaches to statistical analysis. And so, he and I had this long phone conversation, all about, like different approaches that I could take to analyzing the data, using basically different statistical techniques.

P5 went through a similar experience and directly associated a peer’s brainstorming session to the success of a paper they had to write on a philosopher. P5 was unsure about which aspect of the philosopher to focus on and went to a peer with whom they brainstormed on a topic. They explained, “I wasn't sure what to do my [the philosopher’s name] essay on. So, I went to him [a peer] and just we brainstormed together what topics I could do kind of easily, or like, you know, that would ideally suit me that I find interesting.” They found a topic and the peer also provided several sources, using which P5 wrote an outline and submitted the essay.

Finally, in some cases, participants initiated academic information sharing without peers asking for the information. This was mentioned in the Desire to Help Each Other section on page 143, which highlighted that peers want each other to succeed. Accordingly, participants shared resources with peers as they came across what they thought were relevant to another’s work (e.g., article(s), author(s), etc.). However,

academic information sharing in these cases went beyond sharing of resources and included items such as funding, teaching, conference recommendations, jobs, call for article submissions, and other opportunities. P5 summarized the phenomenon as,

P5

> And there's sometimes like opportunities about postdocs or like other conferences and stuff. And I'll always like send it to the relevant people, like people who are doing similar topics or graduating or like email or forward the email on to them. And, people do similar things for me as well like saying, "oh, there's this scholarship, you should think about" or, you know, so it's like, it's very supportive, basically.

Those who were on the receiving side appreciated such gestures from their peers. P9 recalled forwarding an opportunity they saw on the social media platform Twitter about a sociologist wanting to create a network of researchers who studied same sex marriage to a peer. Later, that peer got in touch with P9 and told them they joined the network and were thankful for being informed of the opportunity.

Academic information was a common type of information exchanged among doctoral peers and it was crucial in academically helping them; however, at times, peers went to one another for information that simply helped them move forward in their doctoral journey. This may be referred to as administrative information and is discussed below.

4.3.2.2. Administrative Information

Administrative information included any information that helped peers move forward in their doctoral journey and included what Lee et al. referred to as, "procedural or financial aspects of the doctoral work" (2017, p. 120). While this information varied from one participant to another, P2 called it "things like the 'know' curriculum, stuff they don't teach you, but they just expect you to know." P12 expanded on the definition and referred to administrative as information that helped in "understanding how things worked in the department… [for example] which requirements on the, sort of, timeline were, you know, enforced and which ones were more kind of suggestions."

The type of administrative information sought and shared included what and how to successfully complete the doctoral journey (e.g., P2, P7). It involved, but was not limited to, program requirements and the next steps (e.g., P2, P5, P8, P7, P9, P13, P14, P16, P18), which course(s) to take (e.g., P6, P18), opinion on which courses to teach/work as a teaching assistant (e.g., P19), and which professors to work with (e.g., P13, P19). This was useful to seek from peers since, a) participants found that their department did not provide detailed information on their journey, and b) peers had actually gone through the process and possessed firsthand experience. P2 highlighted these two findings when speaking about their proposal stage,

> **P2**
>
> In the history department, we're not really given a lot of guidance, or at least my cohort wasn't given a lot of guidance on like, what exactly this entailed, and how to, how to be a Ph.D. student… So, my best resource for writing the proposal and what it looked like, has been other successful candidates in the department.

Information on how to navigate the university and the department was also exchanged among doctoral students. This included such information as who to contact and what to do if they experienced issues, different resources and policies at the university (e.g., P3, P5, P7, P8, P14, P15, P17), funding (e.g., P13, P14), health and dental insurance, and other paperwork (e.g., P8).

When talking about administrative information and the department, the concepts of “gossip”, “insider drama”, and “ranting” were brought up by several participants (e.g., P3, P4, P6, P7, P11, P12, P15, P16, P19). P6 called gossip a requirement and a way to relax; however, since these concepts were out of the scope of this study and were not pursued; the impact or the rationale behind them is unclear.

Overall, administrative information proved to be an important type of information and by sharing it with one another, peers played a crucial role in the success of each other. P2 summarized this importance by saying,

P2

I would have been lost in the program without having relationships with people with peers and colleagues who have gone through these before. I wouldn't know what I was doing.

4.3.2.3. Personal Information

In addition to academic and administrative, personal information was also sought and shared among peers. This included, but was not limited to, talking to get to know one another (e.g., P18), their general interests (e.g., P2, P5, P12), family (e.g., P10, P16), travel (e.g., P10), finances (P16), health information (e.g., P6, P9, P10, P13), housing (e.g., P6, P8, P12, P19), daily events/news (e.g., P1, P19), and overall keeping each other updated (e.g., P2, P11, P12). Keeping each other updated went beyond what peers were working on academically and included other aspects of their personal lives. For instance, P6 had a peer who talked about their move to a new house and the challenges they faced during the move or P13's peer talked to them about their upcoming wedding. Engagement in such personal information was related to the nature of their relationship but in general the closer peers were to one another, the more likely it was for peers to exchange personal information (See Nature of Relationship, page 99, for more information). P11 captured what personal information means in the following quote,

> **P11**
>
> Like I have other peers who have become friends. And with them, I don't discuss research at all, because they're not even remotely from the same field. So, we're technically just discussing what's going on in our relationships, what we're doing at home, which shows you're watching and you know, recreational stuff. And yeah, that's about it. Just discussing literally what happened yesterday with them, because yeah… It can be a daily update.

Similarly, P16 described personal information as "all sorts of things" and said, for example,

P16

… we talk about our family. And so, I ask them about, you know, the differences in cultures, one's American, one's Chinese Canadian. And so, we sort of talked about how each other's families were really different. We also talk about dating, kind of… one's married, one's getting married, and then I'm dating. So that's helpful to talk about. We've talked about travel. We've talked about finances, and nutrition and like, ethics as well.

In addition, the role of peers and keeping each other updated was especially emphasized during the COVID19 pandemic given the isolation that was felt among peers (see the Limitations section on page 213 for more information on COVID19 and its impact on this study). P11 further explained,

P11

I think, regarding the role of peers, so I know why they're important, because during COVID, when we didn't have that sort of an interaction, it was hard, because it's nice knowing where everyone is at.

COVID19 pandemic also showed that personal information seeking and sharing took different forms and was not limited to meeting them in person or explicitly asking. For example, the platform Zoom was an effective means to stay up to date with peers. Another notable example was P5, who stayed up to date with their peers by asking to read their papers and give feedback, as opposed to asking what they were working on.

4.3.2.4. Social Information

The participants talked to their peers about information that aided their social life, as well. This was mostly in the form of small talk and included activity recommendations (e.g., P7), restaurant/food recommendations (e.g., P4, P6, P7, P8, P16, P18), movies to watch (e.g., P5, P10), and how to adapt to a new city/environment (e.g., P1, P4, P6, P7, P9, P12, P13, P15, P16, P17, P18, P19, P20). What P7 said captures what social information meant to the participants,

> **P7**
>
> Like we've talked about things like, what kind of restaurants near McGill [the university] are worth looking at or what kind of amenities or like events in Montreal [city] might be worth going to, like museums or festivals or different things going on. Like, we'll either talk about them when they're happening, or maybe people recommend things once in a while. Or, you know, people just recommend like the odd movie or a TV show or something. We have conversations like that.

In other words, social information was merely regular, everyday conversations. In fact, for P14, such information was so routine that they referred to it as “chatting.” Relatedly, everyday conversations sometimes led to tips and tricks that participants found useful.

4.3.2.5. Tips and Tricks

A final category of information sought from and/or shared with peers was tips and tricks. These were generally information that was aimed at making the doctoral journey easier for peers and overlapped with other types of information mentioned earlier. Such information often came from experience. P13 said that they are "small things that you know, when you've done it a couple times, you have a few tricks that, you know, others might find it helpful." Likewise, P14 mentioned them as "things that you wouldn't necessarily know and aren't going to be really like printed anywhere."

The goal of tips and tricks were often to help peers cope and successfully navigate graduate school. Examples included information on resources (e.g., P6's peers introduced them to the writing and the health centre), which classes to choose for teaching assistant or which professors to work with (e.g., P16, P19), how to manage relationship with supervisor (e.g., P13, P17), how to teach (e.g., P13, P19), how to efficiently do readings (e.g., P2, P16, P19, P20), and software recommendations (e.g., P17).

The non-skill information exchanged among peers was crucial in the opinion of the participants. In a meeting that P19 had with their peers, they recognized the importance and reliance of one another for such information. P19 recounted,

> **P19**
>
> … I was in a meeting like a week or so ago. And we were talking about how, you know, in our department, we really rely on each other as peers to get information. And one of the girls was in that meeting, and she said that I had to find out from S [another peer] on Facebook, like how this happened.

To conclude this chapter, all the participants indicated that they go to peers for information and several explicitly indicated that peers had a significant impact in their doctoral journey (e.g., P1, P2, P7, P12, P13, P14, P15, P17, P19). In fact, after the interview ended, P13 took the time to tell the researcher, "I don't think I could've made it without my peers." The next chapter will discuss the findings.

Chapter 5. Discussion and Limitations

The purpose of this study was to better understand the information seeking and sharing among doctoral peers in the context of improving their skills. To do so, it explored the nature of information seeking and sharing behaviour among them (RQ1), factors impacting it (RQ2), and the usefulness of the information (RQ3). Bandura's SCT (1986) and Wilson's Information Behaviour Model (1997) were used to guide the research. It was found that, first, doctoral students' information seeking and sharing behaviour is consistent with elements indicated in SCT and Information Behaviour Model, and second, that overall doctoral peers play a crucial role in each other's lives and helping one another getting through doctoral education. This section is organized by research questions that were set out to be answered. The limitations of the study are also addressed.

5.1. RQ1) What is the Nature of Individual Information Seeking and Sharing?

What becomes prominent from the findings of this study is that both information seeking and information sharing do occur among doctoral peers. The behaviour, however, shifts from seeking to sharing as students progress through their programs. Consistent with the literature (e.g., Lovitts & Nelson, 2000; Spezi, 2016), when doctoral students start their programs, they are often faced with ambiguity, which necessitates an information need. Those interviewed explained that the information they need is often missing from official communication channels (e.g., websites) or is not useful in addressing their need. In addition, some reported not knowing who to go to for certain information. Consequently, and as seen in the literature (e.g., Hadjioannou et al., 2007; Lovitts & Nelson, 2000), students turn to their peers for help. As students progress through their programs, their needs get fulfilled, and they switch from seekers to sharers of information and provide the same support to more junior doctoral students. Relatedly, and as supported by previous research (e.g., Bennett & Folley, 2021; Moore & Singley, 2019), the findings highlight the caring nature of doctoral peers and their willingness to provide information to help one another move forward and succeed in their Ph.D. in any way they could.

When it comes to the information sought and shared, both non-skill and skill-related information is exchanged. The former roughly follows what Lee et al. (2017) found in their qualitative study of doctoral students in a Library and Information Science doctoral program (i.e., basic, administrative, professional, social, and personal); with the exception that in this study basic and social information were found to be the same and professional information was referred to as academic information. A notable

finding missing from Lee et al.'s study (2017), though, is a category here referred to as "tips and tricks." Specifically, the findings of this study showed that doctoral peers use their experience to provide information that can make the doctoral journey of their junior peers easier. Since tips and tricks are dependent on one's personal experience and background, they may be more relevant to knowledge than information (Choo, 2005; Dalkir, 2017). Yet, the distinction between the two and details are beyond the scope of this study.

Sharing of tips and tricks was related to another set of findings that highlighted the desire of doctoral peers to ensure each other's success and their sense of obligation and giving back to their peers. The consistency of Lee et al.'s categorization of types of information exchanged among peers (2017) with this study may show the applicability of this study's findings to other Social Sciences and Humanities programs outside of the setting of this study (i.e., McGill University). In other words, doctoral peers outside of McGill University may also seek and share academic, administrative, personal, social information, as well as tips and tricks.

In terms of the information about skills, nine graduate skills were already identified prior to the commencement of this study. These skills are written and oral communication, project management, problem-solving, critical thinking, teaching, teamwork, leadership, and research (see the Literature Review chapter, page 25, for more detail). While all of these were mentioned in one way or another by the interviewees, several were more prominent. Specifically, it was found that peers exchanged information that helped them with skills such as writing, presenting, teaching, research, critical thinking, technical, and working with others. The last two skills were not part of the nine previously identified; yet, they were reiterated by most, if

not all, of the participants. The need to improve all these skills had come up during doctoral studies, which is why doctoral students went to their peers. Writing skill was especially dominant in the interviews since students engaged in exchanging draft papers and provided feedback to one another. This is not surprising given that several studies on structured environments (e.g., peer writing groups) have confirmed the impact peers may have on improving writing skills (Caux et al., 2017; Ferguson, 2009; Grossman, 2016; Kumar & Aitchison, 2018; Larcombe et al., 2007). Nonetheless, it was interesting to observe the same impact in unstructured environments.

The limited information seeking and sharing of other skills (i.e., problem-solving, time management[10], leadership, and teamwork) does not mean that peers are not useful in providing information to improve those skills. It merely means that there was a lack of need and/or opportunity to exchange such information. Indeed, it is possible that if a need for any of these skills comes up and a doctoral peer finds a peer could provide them with such skill information, they would successfully engage in and reap the benefits of information seeking and sharing.

The information sought and shared by peers is displayed in Table 5.1. Certain factors, though, may impact information seeking and sharing. This was the second research question addressed by this study and is discussed next.

[10] A subset of project management in the nine skills identified. Project management was not explicitly mentioned by those interviewed.

Table 5.1

Information Exchanged Among Doctoral Peers, Sorted Alphabetically

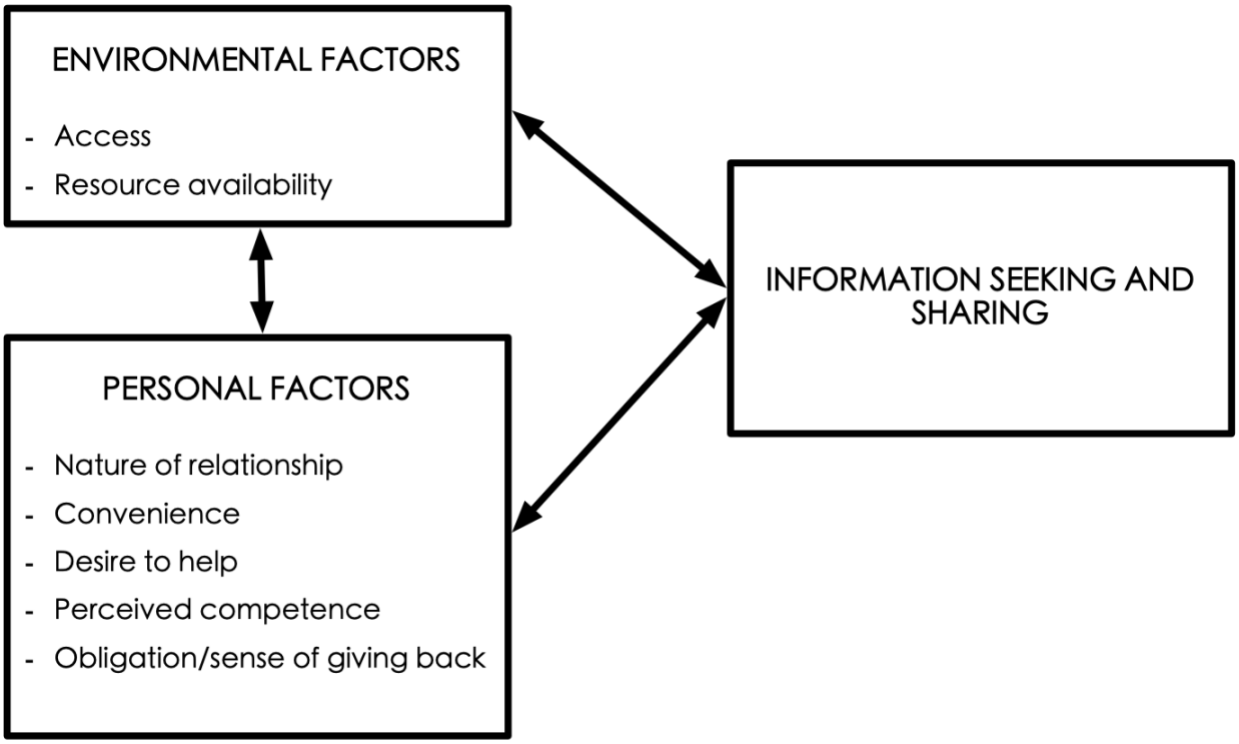
Non-skill information	Information about skills
○ Academic	○ Communication (writing and presenting)
○ Administrative	○ Critical thinking
○ Personal	○ Leadership
○ Social	○ Problem-solving
○ Tips and tricks	○ Research
	○ Teaching/teaching assistantship
	○ Teamwork
	○ Technical/software specific
	○ Time management
	○ Working with others

5.2. RQ2) What Factors may Impact Information Seeking and Sharing?

Doctoral students need information to progress through their programs. One of their sources of information is peers, from whom they seek and share with various types of information (see previous section). However, several factors may impact their decision to go to peers. These factors are displayed in Figure 5.1.

Figure 5.1

Factors Influencing the Choice to go to Peers for Information Seeking and Sharing



These factors and the categories they fall under are similar to that of Bandura's SCT (1986) and Wilson's Information Behaviour Model (1997) (see Guideline for Understanding Doctoral Peers' Information Behaviour, page 48). Specifically, consistent with SCT, information seeking and sharing behaviour of doctoral peers can be

influenced by factors related to the environment in which it takes place and the person engaged in it (i.e., doctoral student). It also recognised that these factors have an impact on one another, as indicated by arrows in Figure 5.1. The factors and the categories they fall under are also like Wilson's intervening variables. In other words, environmental and personal factors that can have impact on going to peers for information resemble those identified in Wilson's model.

Environmental factors are important for a behaviour to take place. This is reiterated by both Bandura (1986) and Wilson (1997), who used environment as one of the intervening variables that could impact information behaviour. With respect to this study, the findings emphasize the role of an institution in controlling environmental factors. Specifically, an institution can directly and indirectly influence the choice of doctoral students to go to their peers for information. Directly, the institution provides access and facilitates connections among doctoral peers that could lead to possible information seeking and sharing. Indirectly, and perhaps unintentionally, by limiting the availability of resources to students, an institution can encourage going to peers for information.

An institution, in this case the university-related entities (e.g., the faculty, department, graduate student associations, etc.), can impact access to peers in two ways. First, it can introduce peers to one another, and second, it has the power to make it easier to go to them. It does so by means of shared classes, physical space, referrals, events, and programs. For instance, by having doctoral students take the same class and then providing them with a physical workspace in close proximity, the department may facilitate information seeking and sharing (i.e., the behaviour). In other words, an institution can use its resources to cultivate a culture that promotes information seeking

and sharing. It can further encourage it by providing location and time where peers may encounter one another (i.e., an environment), even if peers do not believe it might not affect their behaviour. The existing literature states that difficulty in accessing a source of information can influence its use, even if a seeker may not believe it does (i.e., less frequent use of a source when it is difficult to access) (Agarwal et al., 2011), further highlighting the important role of an institution.

Studies on environment and sharing of knowledge also show that proximity can facilitate exchange among peers (Nakano et al., 2023). For doctoral peers, close physical distance is indeed a significant factor in "building and maintaining peer relationships" (Lee et al., 2017, p. 121). In this study, it was shown that doctoral students often go to peers given that they happen to be in the same physical location. For the participants, being in the same space sparked spontaneous conversations, which they appreciated regardless of the perceived usefulness of the source (i.e., the peer). This is similar to previous research that shows graduate students go to their peers first for general information about graduate school because they are physically close to one another (Sloan & McPhee, 2013). As well, studies on mentoring among students find close physical space as a necessity for facilitating mentoring (Hall & Liva, 2021). Difficulty in access especially became evident when COVID19 hindered the access of doctoral students, at least physically, to their peers. For more details on the impact of COVID19 on this study see the Limitations section, page 213.

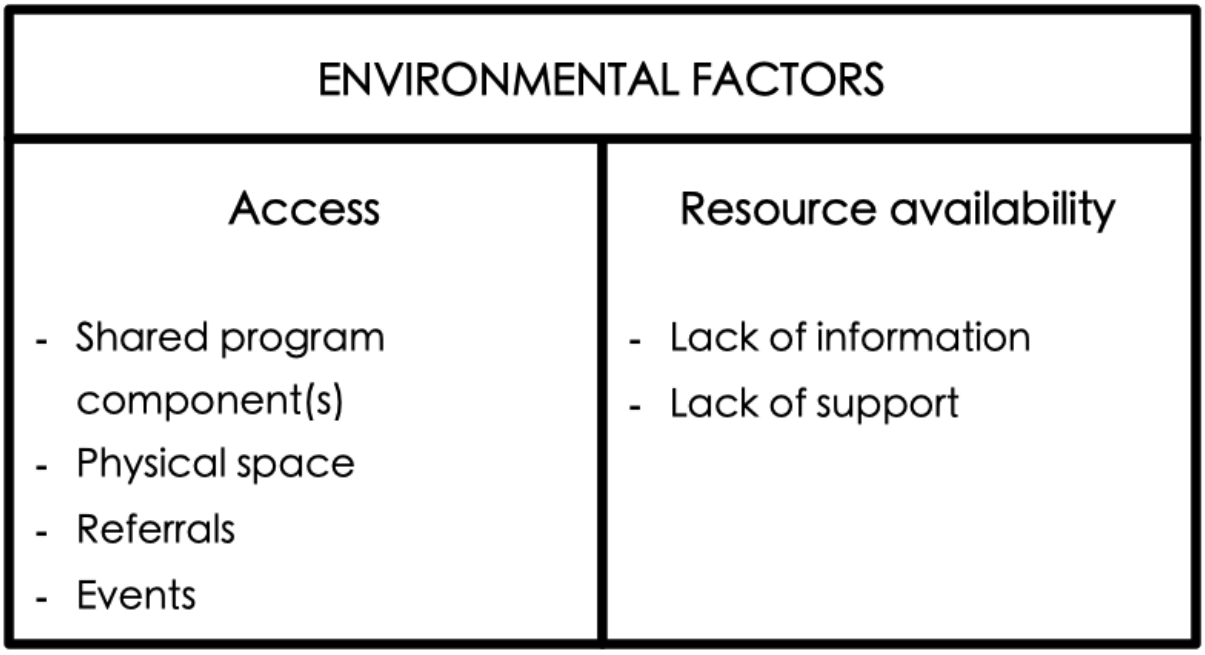
Related to the issue of access, those interviewed indicated going to peers for information due to lack of resource availability from their institution. Resource was defined as information and support. Specifically, at times, doctoral students had no choice but to refer to their peers when they felt they had limited access to information

and/or support (e.g., lack of information on department's website, lack of help from administrator(s), etc.). Therefore, by providing limited resources, an institution can indirectly create a culture which fosters information seeking and sharing.

Although doctoral students claim they benefit from going to their peers for information and support, this lack of options further elaborates how important an institution is in influencing environmental factors. Environmental factors are shown in Figure 5.2.

Figure 5.2

Environmental Factors



In addition to the environment, factors related to the doctoral student (i.e., personal factors) also impact information seeking and sharing. Among these factors, trust is the most prominent. Trust is a complex phenomenon and its discussion with regards to seeking and sharing of information (and knowledge) goes beyond the scope of

this study (e.g., Evans, 2013; Holste, 2003; Holste & Fields, 2010; Razmerita et al., 2016; Wang & Noe, 2010). For the purposes of this study, it was defined according to the synonyms participants used when referring to it (i.e., "friendship", "comfort", and "closeness"). Consistent with previous findings (e.g., Agarwal et al., 2011), it is shown that the more trustworthy a peer (a source characteristic), the more likely it is for a doctoral student to refer to them. In addition, trust is instrumental in what is sought and shared with peers. For example, personal information is exchanged when there is a higher level of trust among peers, whereas social information is exchanged regardless of the level of trust. This is similar to the findings by Lee et al. (2014), that found the level of trust influences what doctoral peers share with one another.

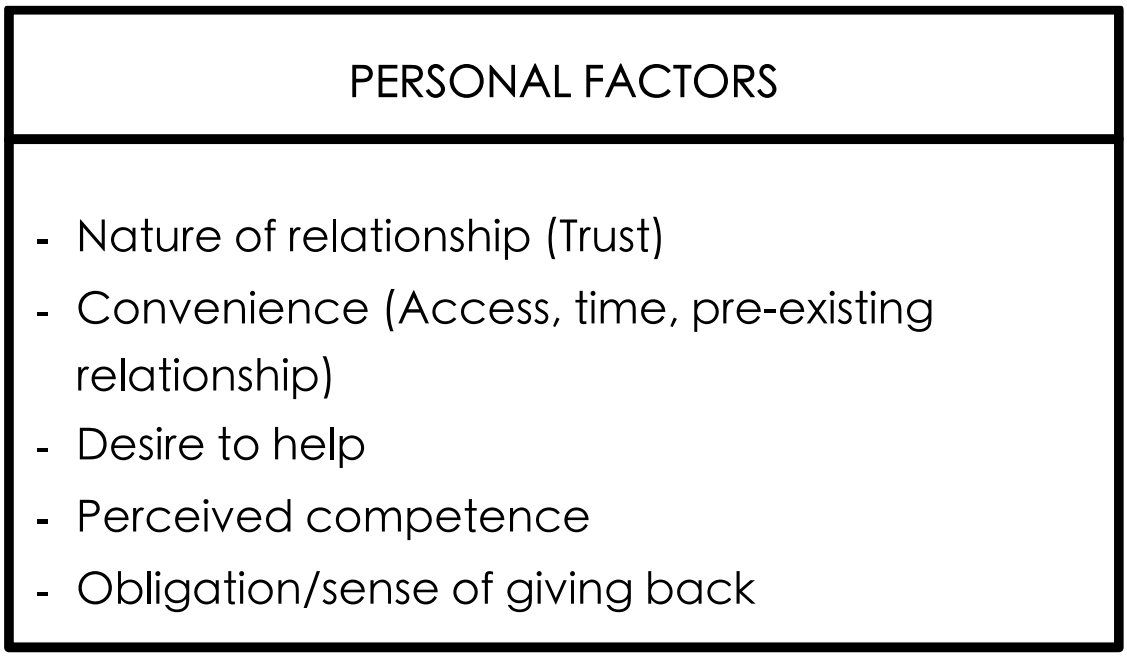
Trust is developed in several ways among doctoral students (i.e., length of time and frequency of contact, going through the same experience, proven track record, and having a common element). However, what is interesting to note is the role that having a common element with peers has on information seeking and sharing among them. Specifically, factors such as demographic information, background, shared interests, similar goals and values, and being in the same situation contribute to higher levels of trust, which in turn brings peers closer. Anecdotal findings from other studies also highlight the collegiality that having common element(s) with one another brings (Hadjioannou et al., 2007; Mudaliar, 2022). This sense of trust facilitates information seeking and sharing among doctoral peers and is consistent with Wilson's intervening factors of demographics and interpersonal in his model (1997).

In addition to trust, doctoral students choose their peers for information because it is often more convenient. This convenience is perceived; doctoral students *believe* their peers are more convenient than other sources, regardless of the actual

convenience. This belief can be categorized as a psychological variable present in Wilson's model (1997). Other psychological variables influencing the choice of doctoral students to refer to their peers, as observed in this study, include the perceived ability of peers to provide information, the desire of doctoral students to help one another, and a sense of obligation to give back to the doctoral community. Personal factors are displayed in Figure 5.3.

Figure 5.3

Personal Factors

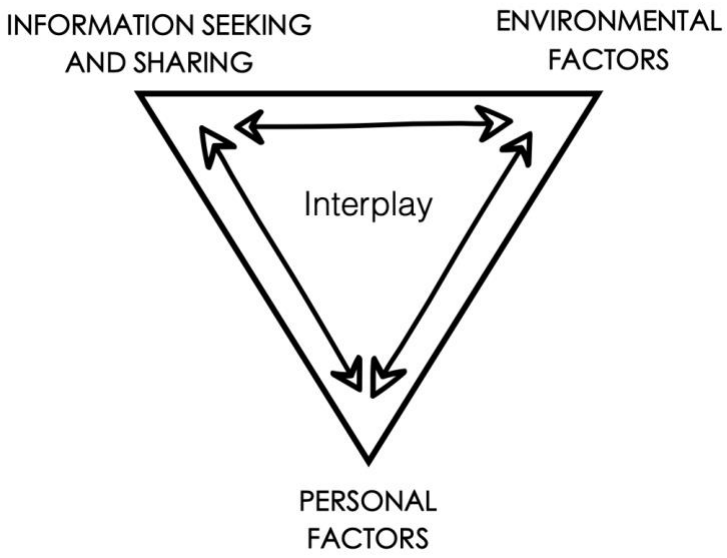


Environmental factors, personal factors, and information seeking and sharing behaviour are not independent and each can have an impact on one another. Impact may be highlighted in several ways. For example, in an environment poised for information seeking and sharing, one's personal factors may hinder engagement. Alternatively, personal factors may motivate engagement in information seeking and

sharing despite the environment. The interplay among these three is consistent with what Bandura refers to as triadic reciprocal determinism, meaning each of these factors can influence one another, though not equally (Bandura, 1986). The interplay between the engagement in information seeking and sharing, environmental factors, and personal factors can be depicted in a triangle such as the one shown in Figure 5.4.

Figure 5.4

Depiction of the Interplay Between Engagement in Information Seeking and Sharing, Environmental Factors, and Personal Factors



Quality of information is an important factor to consider when going to others for information (Agarwal et al., 2011). However, in this study it was found that quality was not necessarily a factor to consider when choosing a peer. Instead, a determinant was one's perceived ability to help and the respective perceived usefulness of the information. The latter was the subject of the third research question and is discussed next.

5.3. RQ3) What is the Perceived Usefulness of the Information Sought and Shared Among Students?

The goal of the final research question was to better understand the role of peers as sources of information. Specifically, it aimed to see to what extent they could complement and/or replace other sources of information. Usefulness of skills and non-skills information sought from and shared with peers is discussed below.

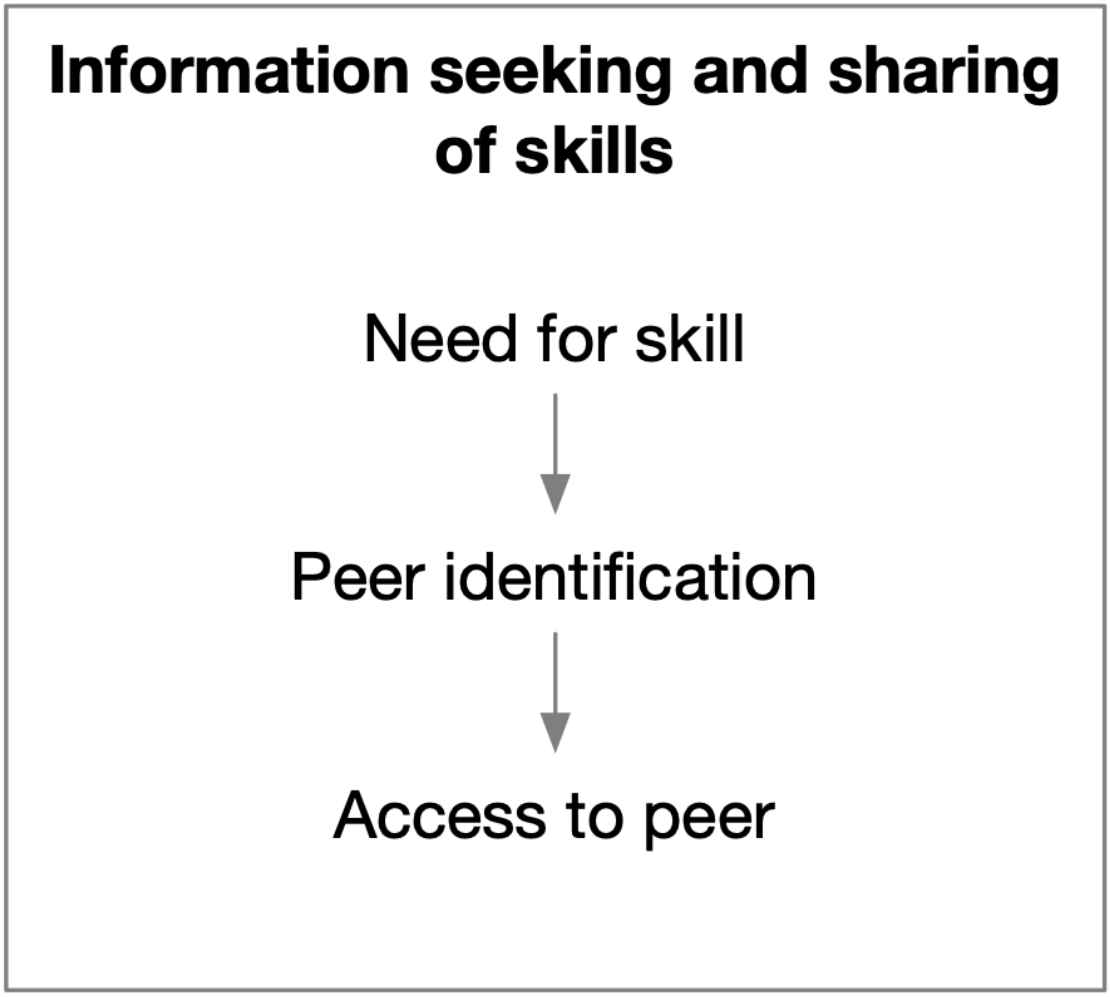
5.3.1. Usefulness of Information on Skills

Having established that information seeking and sharing occurs among doctoral peers, the next objective of this study was to understand its perceived usefulness as it relates to skills. In short, the information sought and shared is useful to peers and can contribute to the improvement of their skills. This was observed in skills such as communication, teaching/teaching assistantship, research, software, working with others, and critical thinking. Yet, three criteria need to be met for the information to be perceived as useful: need identification, peer identification, and access to peer.

Consistent with the Information Behaviour Model by Wilson (1997), context and identification of a need are the first steps in engaging in information seeking and sharing. Hence, when it comes to information on a skill, a doctoral student must first develop a need to obtain more information on that skill. The activation of this need is different for each student and may depend on what they are trying to accomplish. For instance, in this study only one participant found the need to improve their leadership skills. This is because they were put in a position that required such skill. Second, the student must know who, among their peers, might be able to provide them with that information. Finally, the student must be able to reach the peers who could provide them with this information. When these three criteria are met, the information can contribute to improvement of a skill. As already mentioned, an institution has an important role to play by providing an environment that could allow for both peer identification and access (e.g., classroom, office space, student, lounge), which could lead to information seeking and sharing. The criteria for usefulness of information on skills are displayed in Figure 5.5.

Figure 5.5

Criteria Required for Usefulness of Information on Skills



5.3.2. Usefulness of Non-Skill Information

While not an explicit purpose of the study, by speaking with doctoral students, it was realized that providing information on skills was only one useful aspect of peers. Indeed, peers were perceived as useful for non-skill information and providing other help and support. More specifically, doctoral students appreciated their peers for their contribution to other parts of their lives. For instance, consistent with previous studies (e.g., Bao & Bouthillier, 2007; Hadjioannou et al., 2007; Mudaliar, 2022), being in the same situation brought peers closer to one another, relieved stress, and built collegiality. Previous findings also suggest that doctoral peers provide support in terms of academic, mental, and career (Lorenzetti et al., 2019). Similar results were observed in this study, whereby peers helped one another succeed and progress through their program in any way they could (see the Other Information section in the Findings chapter, page 183).

A final remark on the usefulness of peers was observed when doctoral students compared their peers to a more authoritative figure when seeking information. Doctoral students mentioned that with peers they felt less pressured and valued the ability to brainstorm with ease and disregard ideas if they found them irrelevant to their needs. What this implies is that the usefulness of information need not be as important or even the goal of going to peers. Such is not uncommon and is seen in the literature revolving peers in doctoral education (e.g., Boud & Lee, 2005; Ferguson, 2009; Hadjioannou et al., 2007); however, it is inconsistent with studies outside of doctoral education indicating source quality as a factor for choosing an individual over another (Agarwal et al., 2011; Xu et al., 2006). Understanding the role of peers in doctoral education as

compared to other settings was not the focus of this study; hence, it is unclear whether the low impact of quality on the choice of peers may be generalizable to other settings.

5.4. Limitations

There were several limitations to this study. They may be categorized into data collection procedure, timing of data collection, and recruitment limitations. To understand information seeking and sharing among doctoral peers, this study relied on one-on-one interviews to collect data (i.e., self-reported data). Participants had no prior knowledge of the interview questions and were asked to think about their current and past engagement in information seeking and sharing at the time of the interview. This meant relying on memory, which was subject to the participants not recalling every incident and possibly missing out on information that could have added more value to the findings (Berg & Lune, 2004). To account for this, the researcher used examples to jog the memory of the interviewees, yet it is possible that some might have been forgotten. With respect to the answer to the questions at the interview, they were self-reported. In self-reported data, what the participant says they do may not be what they do in reality (Berg & Lune, 2004). For example, when looking at the choice of a peer, participants may have given reasons consistent with what they thought was an acceptable answer, as opposed to the actual rationale behind their decision. The researcher addressed this limitation by asking the same question from multiple angles and by asking for several examples in order to holistically capture what the participant meant.

The timing of data collection was also a limitation. The study probed information seeking and sharing behaviour of doctoral students in general. However, data collection occurred during an unprecedented time when COVID19 pandemic had already impacted several doctoral students' ability to meet and socialize with peers (L. Wang & DeLaquil,

2020). While most of the participants had experienced doctoral education prior to the pandemic, some had commenced their program during a time when students had shifted to virtual education. This hindered their ability to have as much interaction with peers as they otherwise might have had, and possibly provided an atypical information seeking and sharing experience. To address the possible effects of COVID19, attempts were made to distinguish the pandemic experience when discussing the findings.

In terms of the participants, students from the Faculty of Arts at McGill University were recruited using a purposive sampling approach. Faculty of Arts was chosen since most of their programs include the target demographic intended for this study (i.e., students enrolled in a Social Sciences/Humanities program, not belonging to a research lab). The researcher visited the faculty's website, found the doctoral programs in that faculty, and reached out to their program coordinator to distribute a recruitment message to students. Over 50% of the participants were international students. The experience and information seeking and sharing behaviour of international students may not be the same as those who are local (e.g., what they look for, who they go to, etc.), which further may have impacted the findings. For instance, it is shown that culture and language barriers may hinder international students from going to others for information (George et al., 2006). It should be noted, however, that such reluctance was not observed in this study. Additionally, the ratio of international students in the study is close to that of the university in which the study was conducted (see Study Population, page 57); therefore, accurately capturing the information seeking and sharing among doctoral peers of that university.

Overall, the researcher does not believe that the limitations of the study impacted its goal and the usefulness of the findings.

Chapter 6. Conclusion

This chapter will provide concluding remarks on this study by briefly reiterating the findings as well as its contribution to the field. It will also make recommendations for future research.

This study highlighted the importance of interacting with peers throughout doctoral education. The objective of this study was to investigate information seeking and sharing among doctoral students in unstructured environments. Specifically, it looked at the potential impact of peers in such environments in the context of one another's skills improvement. This is an unexplored, yet important, area given that studies show that doctoral students are lacking certain skills, despite efforts to help them improve skills in structured environments (See Skills and Skills Improvement section, on page 39, for more details). Recognizing the novelty of this topic, an exploratory approach was followed, which used twenty qualitative semi-structured interviews to collect data. Using the interviews, three aspects of this phenomenon were studied.

First, the general nature of information seeking and sharing among doctoral peers (i.e., RQ1. What is the nature of individual information seeking and sharing among doctoral peers?) was considered. With respect to nature, it was found that doctoral students share both non-skill and skill information with their peers. Non-skill information is on academic, administrative, personal, social information, as well as tips and tricks to ease proceeding through graduate school. Skill information includes those on communication, teaching/teaching assistantship, research, software, working with others, and critical thinking. Seeking and sharing of such information; therefore,

established that the phenomenon is in fact happening. Nonetheless, it was found that the extent to which it happens depends on certain factors. These factors were the second goal of this study (i.e., RQ2. What factors may impact information seeking and sharing among doctoral peers?)

The findings highlighted factors related to the environment in which information seeking and sharing occurs and the persons involved. With respect to the former, it was discovered an institution plays an important mediating role and that access to peers and the availability of resources can encourage going to peers for information. For factors related to the persons involved, the nature of the relationship among peers (i.e., trust), the convenience of going to them, the desire to help one another, perceived competence, and a sense of obligation can impact the choice to go to peers for information. The categorization of factors under environment and person is consistent with Bandura's SCT (1986) and the Wilson's Information Behaviour Model (1997).

The final objective of this study was to see the perceived usefulness of information sought from and shared with peers (i.e., RQ3. What is the perceived usefulness of the information sought and shared among doctoral peers?) In short, it was found that peers can be a useful source of information, but its extent depends on the ability and the opportunity to first identify a need, then identify a peer who might be able to help, and finally access that peer. The next section will discuss the applied and theoretical contribution of the study.

6.1. Contributions

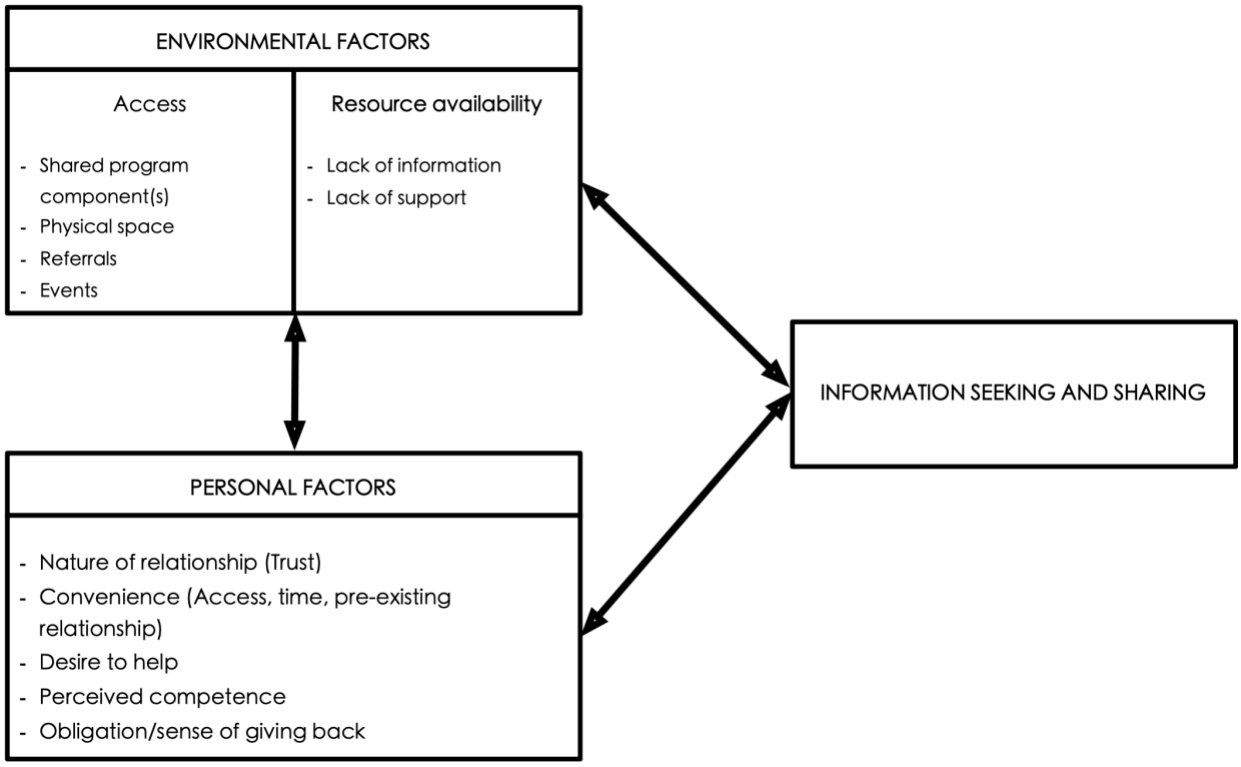
This study makes several conceptual and applied contributions. These are described below.

6.1.1. Conceptual Contributions

While exploratory in nature, this study used SCT (Bandura, 1986) and Wilson's Information Behaviour Model (1997) as guidelines for data collection and analysis. The findings yielded several factors that could have an impact on a doctoral student's engagement in information seeking and sharing with their peers in unstructured environments. With these findings a conceptual framework consistent with the mentioned theory and model was developed, which can further advance the field of Information Science. Initially introduced in the Discussion and Limitations chapter on page 196, the framework can be found in Figure 6.1.

Figure 6.1

Conceptual Framework



The conceptual framework groups factors into environmental and personal, which is consistent with Bandura's theory (1986) and Wilson's model (1997). The specific personal factors (i.e., nature of the relationship, convenience, desire to help, perceived competence, and obligation) are also similar to and are observed in Wilson's model (1997).

The framework is a starting point and future research could expand its applicability and reach (see Future Research section, page 222). For instance, it was created based on data collected from doctoral students in the Social Sciences and Humanities disciplines at McGill University in Montreal, Canada and focused on unstructured environments. Yet, it can be used as a reference and pave the way for

understanding the information behaviour of doctoral students in other disciplines, countries, and universities. Additionally, given that doctoral students will be part of the workforce, the framework may also explain the information behaviour of a portion of the future workforce.

In addition to the framework, this study shows that for doctoral peers to be a useful source of information on skills there must be a need, a peer that can provide information, and the ability to reach that peer (as explained in the Discussion and Limitations chapter on page 196). However, these criteria could also be applicable to other types of information and populations. This, too, needs to be further investigated.

6.1.2. Applied Contributions

In addition to its conceptual contributions, this research has applied contributions for both doctoral students and institutions. The outcome of this study advances the understanding of information seeking and sharing among doctoral peers by highlighting the factors that can impact going to peers for information, as well as the usefulness of peers for information. These allow students to become aware of their behaviour and the impact their peers can have throughout their doctoral journey. Consequently, doctoral students would be able to consciously plan for and engage in interactions with their peers. For instance, seeing that physical proximity can facilitate connections that lead to information seeking and sharing, they might decide to spend more time in a common area and refer to peers should they need guidance. Knowing the importance of being around peers and getting involved, doctoral students can also decide to be more active in their community.

It was found that when given the opportunity, doctoral peers exhibit a willingness to support each other's success throughout their doctoral journey. In this context, an institution plays a pivotal role by serving as an avenue for introducing peers to one another. Therefore, the practical contribution to institutions involves underscoring the importance of strategically planning and establishing environments that effectively facilitate connections among doctoral peers. These might include incorporating more peer activities in the curriculum and/or creating open space workstations, in which peers have opportunities to interact, get to know one another, and engage in information seeking and sharing. By fostering such an environment, institutions can cultivate a culture that encourages both seeking and sharing of information.

It's important to note that, as argued in the Discussion and Limitations chapter, page 196, certain criteria need to be addressed in order for peers to be a useful source of information (i.e., need for information, knowing who to go to, and access). Two significant challenges include identifying the need for information and recognizing the competencies of peers who could provide information. Institutions should consider ways of tackling these challenges. For example, they could implement a portal that showcases peers' competencies as a reference for other students. While this could be one possible solution, further research is needed to understand *how* students become aware of one another's competencies. The next section will address this and other directions for future research.

6.2. Future Research

This was an exploratory study that highlighted the information seeking and sharing behaviour of doctoral students in the Social Sciences and Humanities disciplines in unstructured environments. Its findings can be a robust starting point for several future studies. An immediate future research avenue is to conduct the same study (i.e., all research questions) among doctoral students in other disciplines, schools, and/or countries. This could also be done on a research question basis (e.g., testing the framework alone among another population). Such research avenue can uncover the applicability of the findings to a population and/or setting other than the one used by the researcher and would provide a more holistic overview of doctoral students' information seeking and sharing behaviour (i.e., an overview that is not limited to those in Social Sciences and Humanities at McGill University). Students in other disciplines may experience doctoral education differently than the ones interviewed, which can result in new insights.

With respect to the specific concepts mentioned throughout this study, participants, including P3, P7, P12, P15, and P19, talked about going to their peers for information that consisted of drama and gossip. As mentioned in the Other Information section on page 183, they argued that seeking and sharing such information was a form of support throughout their studies. Exploring the role of this information on the doctoral journey and doctoral peers can be another research direction.

Seeking and sharing sensitive information, such as drama and gossip, required a high level of trust. This study explored the concept solely based on the interviews and found that it is a function of time, going through the same experience, having a common

element, and proven track record. Trust is a complex topic and trust among doctoral peers might be yet another future research focus.

How doctoral students become aware of a peer's competence is also a research avenue worth pursuing. Participants reported observing a competence while taking a class with a peer or by learning about it by chance. Yet, it is the opinion of the researcher that a better understanding of this awareness could benefit both the students and the institutions involved, hence suggesting it as a future area of research.

Further research is also suggested on unanticipated findings, derived from the data, that were out of the scope of this study. These are the concepts of benchmarking and validations (introduced in the Information Exchanged among Peers section, page 152). Throughout the interviews, it became evident that doctoral peers go to one another to establish a baseline for the task they have on hand (i.e., finding a benchmark). For instance, students who were teaching assistants or teaching for the first time went to more experienced peers to understand how a certain topic was taught and used this information as a basis for their teachings. It is unclear to what extent, why, and how such benchmarking is happening, which requires subsequent research.

The concept of validation was brought up by several participants, which requires further investigation. Specifically, doctoral students interviewed often went to their peers to compare their actions and reactions in specific situations. An example was when a participant went to another peer to see if their reaction to a student email was justifiable. The researcher hypothesizes that validation plays a role in the support peers provide one another; however, more research is needed on this and its ramifications.

A conceptual framework describing the factors that impact information seeking and sharing among doctoral peers was developed throughout this study. The framework

was not tested; therefore, a possible next step is to test it among doctoral students of not only the same population but also those in other disciplines, universities, and countries. Additionally, given the occasional interchangeable use of information sharing and knowledge sharing (see Savolainen (2017)), its applicability to the knowledge management field and specifically sharing and transfer of knowledge can also be tested. When testing the framework, each factor can be tested independently or collectively (e.g., nature of the relationship and other factors together or nature of the relationship and other factors independently).

A final research prospect might consider adopting a different data collection technique, such as observations or journaling. This study used one-on-one interviews that were subject to the interviewees' recollection of past events. However, it is possible that certain events were not remembered or mentioned at the time of the interviews. Incorporating other data collection techniques could provide an even more in-depth understanding of information seeking and sharing behaviour of doctoral students.

Having discussed the possible future research directions, there is no better way to conclude this dissertation than to re-emphasize on the importance of peers in doctoral education and suggest that institutions work toward facilitating interaction among peers. Afterall, as one participant said, "[they] would have been lost in the program without having relationships with peers and colleagues who have gone through these before."

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Appendix A: Recruitment Email

Seeking Doctoral Students in the Faculty of Arts…

…to participate in a research project that aims to explore the role of peer-to-peer information seeking and sharing about skills. You must be:

- A doctoral student in your second year or later,
- Not belong to a research lab/group, thus not having to necessarily rely on other doctoral students to complete your research.

We are looking for participants for a 45 to 60-minute online interview over Zoom. We will ask you to describe the role of peers in your seeking and sharing of information about improving your skills (e.g., communications, teaching, research, etc.). You will receive a **$25 Amazon digital gift card** as compensation for your time. The interview will be conducted in English.

If you have questions or comments, or if you'd like to participate, please contact by email the principal investigator:

Peymon Montazeri

Ph.D. Candidate

peymon.montazeri@mail.mcgill.ca

School of Information studies

3661 Peel St, Montreal, QC H3A 1X1

Supervisors: Dr. Joan Bartlett; Dr. Kimiz Dalkir

Appendix B: Interview Guide

Information seeking and sharing among doctoral peers — Fall 2021/Winter 2022
P. Montazeri

Interview Guide

Welcome and thank you for taking the time to come here for this interview. The purpose of this study is to better understand the role of peers in your information seeking and sharing behaviour.

Information: "is a message expressed in some medium, and/or that it has the potential of altering a person's consciousness" (Case & Given, 2016, p. 57) or simply "any difference that makes a difference to a conscious, human mind" (Case & Given, 2016, p. 56)

Peers: "other people in a similar situation to each other" (Boud & Lee, 2005, p. 9), where this 'situation' is context-dependent and can vary. In the context of education, peers share the same purpose of being student learners, where neither assumes the role of a teacher or an expert and has authority over another (Boud et al., 2014). **Peers in doctoral education may be those that the students interact with, who are also in the process of completing their doctoral degrees.**

Candidate and student are interchangeably used.

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1. Please state your status at McGill in terms of program and year (when you entered) and where you're from. Your background.

2. Please explain the setting/environment that you're in. What does your typical day look like as a Ph.D. (do you go to your office? Who are you surrounded with?)

3. Since you entered your doctoral program, what type of things **in general** do you talk to/ask your peers about? Or what do you often go to your peers for?
    a. Why did you seek this information from your peers as opposed to other sources of information?
    b. How did this information help you? What was the outcome?

    For example, housing, city, school, etc.

    Give them the list and ask them to talk EACH one of them.

Types	Examples
Basic information	housing, dining, utility, technology, health
Administrative information	registration/enrollment, rules, policy, finance, visa
Professional information	research, teaching, coursework, the profession
Social information	small talk, greetings
Personal information	family/significant others, hobbies, personal travel

Figure 1 (Lee et al., 2017)

4. Think of your interaction with peers, sometimes you may refer to them for information that could potentially help you with specific skills. For example, you might have asked for help on your writing, presentation that you're working on, or you were stuck on a problem, and they have helped you sort it out.

   With specific examples, what such information (e.g., communications, teaching, research) have you sought from your peers?

   a. Why did you seek this information from your peers?

   b. Who did you ask (in terms of relationship, e.g., officemate, etc.) and why did you choose this person?

      i. Items to keep in mind: proximity? Trust? Environment? Quality? Time? Etc.

      ii. If they bring up **comfort**, ask more about it and have them elaborate.

   c. How did you use this information?

   d. How would you describe the usefulness of asking your peers, as opposed to another source, for this information?

      i. What other source(s) would you consider and why for such information?

      ii. Are peers as useful as this source(s)?

   e. How would you describe the usefulness of the information you sought from your peers?

If needed bring up the following skills to jog their memory:

Give them the list and ask them to talk EACH one of them.

Oral communication	"Present ideas persuasively to diverse audiences both visually and orally. Develop skills and confidence in public speaking."
Written communication	"Articulate ideas and knowledge effectively in writing for specific audiences and purposes. Develop strategies for dealing with 'writer's block.'"
Project management	"Plan projects and tasks, including time, workload, and resources. Develop and prioritize strategic and tactical goals. Persevere and deal with competing pressures."
Problem solving	"The ability to consider alternative courses of action and select and implement appropriate solutions"
Critical thinking	"Analyze and synthesize complex information. Critically evaluate ideas and options. Develop and test hypotheses. Analyze and interpret findings."
Teaching	"Plan and deliver learning experiences using pre-determined learning outcomes. Facilitate discussions, organize interactive sessions, and provide constructive feedback to participants."

Teamwork	"Develop emotional intelligence, interact well with others, and build collaborative relationships for effective teamwork. Define roles and responsibilities of team members. Give and receive feedback and critical appraisals from team members."
Leadership	"Galvanize the strengths of others to achieve common goals. Use interpersonal skills to influence, mentor, coach, and develop others. Negotiate and manage conflict."
Research	"Demonstrate knowledge of and/or develop an original contribution to subject area and research methods. Develop a critical understanding of relevant literature. Be familiar with publishing practices and professional development opportunities in your field."

The questions will now be flipped:

1. Since you entered the PhD program, what information in general have your peers sought from you?
    a. Why do you think they chose you?
2. What information about skills (e.g., communications, teaching, research) have your peers sought from you?
    a. Why do you think they sought this information from you?
        i. Items to keep in mind: proximity? Trust? Environment? Quality? Time? Etc.
    b. How do you think they used this information?
    a. How would you describe the usefulness of this information to your peers?

Demographic questions:

Past experience:

- What did you study before in your master's & undergrad?
- What type of work experience did you have before entering your Ph.D.? In what capacity and for how long?

Age:

- 0-19
- 20-24
- 25-29
- 30-34
- 35-39
- 40-44
- 45-49
- 50-54
- 55-59
- 60+

Gender:

- Which gender do you associate with?

Ask for email!

Appendix C: Participant Consent Form

McGill

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3661 Peel Street
Montreal, Québec
Canada H3A 1X1

Tel.: (514) 398-4204
Fax: (514) 398-7193
E-mail: sis@mcgill.ca
http://www.mcgill.ca/sis

Participant Consent Form

Researcher:
Peymon Montazeri, Doctoral Candidate, School of Information Studies, McGill University, peymon.montazeri@mail.mcgill.ca

Supervisors:
Dr. Joan Bartlett, Associate Professor, School of Information Studies, McGill University, joan.bartlett@mcgill.ca

Dr. Kimiz Dalkir, Associate Professor, School of Information Studies, McGill University, kimiz.dalkir@mcgill.ca

Title of Project: Information seeking and sharing of skills among doctoral peers: An exploratory study

Purpose of the Study: The purpose of this study is to explore the role of peer-to-peer information seeking and sharing among doctoral students to improve their skills. Specifically, the researcher is interested in exploring the nature of information seeking and sharing about skills (e.g., communications, teaching, research, etc.) among doctoral peers. Its conditions and the perceived usefulness are also considered as part of this research.

Study Procedures: We would like to virtually meet with you for an interview to discuss what information with regards to skills, if any, you seek from and share with your peers and its perceived usefulness. The interview will be done over Zoom and last about 45-60 minutes. To accurately capture what you will tell us, we will audio-record the conversation. Video is not a requirement for the interview therefore you can keep your video camera function off if you wish. The audio recording will be used only to create a transcript of the interview, using Otter.ai.

Voluntary Participation: Participation in this study is voluntary. You may decline to answer any questions and may withdraw from the study, for any reason. However, given that the interviews are anonymized, and no link is kept between the participants and the collected data, withdrawal is only possible during or immediately after the interview. If you withdraw, your information (consent form, audio recording) will be destroyed, unless you give permission otherwise.

Potential Risks: There are no anticipated risks to you by participating in this research; however, although all reasonable precautions are taken, there is always the possibility of third-party interception when using communications through the internet.

Potential Benefits: Participating in this study might not benefit you directly, but we hope to advance our understanding of peer-to-peer information seeking and sharing of skills by highlighting the conditions under which such interactions may occur and how it can be facilitated by doctoral programs.

McGill

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Tel.: (514) 398-4204
Fax: (514) 398-7193
E-mail: sis@mcgill.ca
http://www.mcgill.ca/sis

Compensation: You will receive a $25.00 Amazon digital gift card as compensation for your time. This will be sent to the email that you provide. The email will only be used for sending the compensation and destroyed after.

Confidentiality: The only identifiable information collected are this consent form, the audio recording of the interview, and your e-mail address (for the purpose of sending compensation). This consent form will be stored in a folder on the password-protected laptop of the principal investigator and removed from McGill's email server. The audio recording will be saved directly on the password-protected laptop of the principal investigator – the file will be identified by code, not your name. Only the investigator will have access to the file. The recording will only be used to produce a transcript of the interview using the platform Otter.ai. The platform takes an audio file and generates a transcript. To further protect the privacy of the participants and keep them anonymous, identifiable information, if any, will be removed from the audio prior to sending to Otter.ai. Once the transcript is generated and verified, the audio file will be removed from Otter.ai's servers. The transcript text file will be downloaded on to the password-protected laptop of the principal investigator and removed from Otter.ai's servers. The platform's Privacy Policy and Terms of Service can be found at https://otter.ai/privacy and https://otter.ai/terms, respectively. The recording itself will not be disseminated in any way. This consent form and the audio recording will be kept separately from all other information relating to this study. Your e-mail address will also be destroyed once the compensation is provided.

The results of this study will be reported in the doctoral thesis of the primary investigator and may also be disseminated through the scholarly publication channels including both professional/scholarly conferences and professional/scholarly journals. In all dissemination, any findings from the research will be reported anonymously and labelled with a non-identifying code (e.g., P1, P2, etc.).

Questions: If you have any questions or request clarification about this research, you may contact one of the following:

Principal Investigator: *Peymon Montazeri*, peymon.montazeri@mail.mcgill.ca.
Supervisors: *Dr. Joan Bartlett*, joan.bartlett@mcgill.ca; *Dr. Kimiz Dalkir*, kimiz.dalkir@mcgill.ca.

If you have any ethical concerns or complaints about your participation in this study and want to speak with someone not on the research team, please contact the McGill Ethics Manager at 514-398-6831 or lynda.mcneil@mcgill.ca.

Please sign below if you have read the above information and consent to participate in this study. Agreeing to participate in this study does not waive any of your rights or release the researchers from their responsibilities.

Participant's Name (please print): _____

Participant's Signature: _____ Date: _____

Appendix D: Research Ethics Approval

McGill

Research Ethics Board Office
James Administration Bldg.
845 Sherbrooke Street West. Rm 325
Montreal, QC H3A 0G4

Tel: (514) 398-6831

Website: www.mcgill.ca/research/research/compliance/human/

Research Ethics Board 2
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 21-07-047

Project Title: Information seeking and sharing of skills among doctoral peers: An exploratory study

Principal Investigator: Peymon Montazeri

Department: School of Information Studies

Status: Ph.D. Student

Supervisor: Professor Joan Bartlett

Co-Supervisor: Professor Kimiz Dalkir

Approval Period: September 29, 2021 – September 28, 2022

The REB 2 reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

Georgia Kalavritinos
Ethics Review Administrator

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* Approval is granted only for the research and purposes described.
* Modifications to the approved research must be reviewed and approved by the REB before they can be implemented.
* A Request for Renewal form must be submitted before the above expiry date. Research cannot be conducted without a current ethics approval. Submit 2-3 weeks ahead of the expiry date.
* When a project has been completed or terminated, a Study Closure form must be submitted.
* Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
* The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
* The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this study.
* The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.

Appendix E: Codebook by Research Question

Below are the research questions and their corresponding codes and themes (in alphabetical order). It should be noted that one code may belong to more than one theme.

(RQ1) What is the nature of individual information seeking and sharing among doctoral peers?

Benchmarking

- Comparing oneself to ensure one is consistent with peers
- Confirmation / validation of actions
- Consistent grading
- Find what the norm is from peers
- Help with fair marking
- Learning what NOT to do by observing peers
- Marking together
- Objective thinking

Characteristics of Ph.D. students

- Diversity and lack of commonality limits information seeking
- Emotional intelligence
- Example of wanting to share / help
- Example of why choose one peer over the other
- Gratefulness for information received
- Having a hard time finding information and not wanting others to go through

the same

- It is enough to THINK one is competent to go to them
- Keeners (wanting to learn all the time)
- Looking after the health of peers
- Making oneself available to peers
- Master's vs Ph.D. peers
- Not believing in oneself
- Peers know what to say
- Personal characteristics influence whether one networks / gets involved
- Reciprocity
- Self-efficacy
- Sharing information because that information is their passion
- Solidarity
- Some peers are not approachable
- Taking initiative to get to know peers
- Volunteering information to others
- Wanting peers to succeed
- Wanting to separate work / school and life
- Wanting to understand culture
- What one gets from peers may not be aligned with their values but is a way to move forward
- What one seeks depends on them and their purpose as a Ph.D.

- Working in isolation

COVID19

- Impact / effect of COVID-19
- Support during COVID

Issues with Ph.D.

- Lack of awareness / not knowing about what other Ph.D.s are working on
- Lack of clear information from institution
- Lack of resources for professional development
- Lack of support from department means taking matters in the hands of peers
- Lack of support from department when it comes to Ph.D. and no peer(s) to help
- Lack of support when it comes to teaching / teaching assistantship from department
- Less interaction with other cohorts
- Lonely nature of Ph.D. in general
- Need for better collaboration
- No opportunity to get to know peers
- Peers losing track after first year
- Peers try to have socials, organize events, etc.

Role of an institution

- Becoming aware of one's competence
- Course on how to be an academic
- Department initiative to teach skills (Course)
- Environment / Setting

- Example of useful information that came about random unintended encounters
- Formal training is useful
- Knowing who to go to is a skill on its own
- Lack of awareness / not knowing about what other Ph.D.s are working on
- Lack of support from department when it comes to Ph.D. and no peer(s) to help
- Lack of support when it comes to teaching / teaching assistantship from department
- Less interaction with other cohorts
- Meeting and / or information sharing-seeking with peers as a result of an institution initiative
- Nature of the program dictates one's peers
- No opportunity to get to know peers
- Peers / relationships / friendships formed at the beginning of program and sustained
- Proximity
- Student Association can facilitate information seeking / sharing
- Supervisor / department referring a peer to student
- Taking initiative to get to know peers
- University-sponsored event enabled friendship -> peer-ship

Sources of information for Ph.D.s

- Google as the first stop for information seeking
- Google for basic information
- Library as a resource

- Online resources may not be domain specific, but peers are
- Peers are one of many resources / people
- Sometimes someone with no experience (outsider) can provide valuable insights / new perspectives
- Spouse / partner
- Supervisor for research information
- Value of person as opposed to other sources

State of information seeking and sharing

- Becoming aware of one's competence
- Blurry nature of peer vs friend vs colleague in Ph.D.
- By being physically present, peers would be able to express their willingness / ability to help each other
- Change / shift in information behaviour as Ph.D. progresses (time)
- Conversation / information about one thing may lead to useful other type of information (spontaneous conversation)
- Conversation vs seeking information
- Different types of peers
- Draft work is given to peers
- Each peer brings something different to the table
- Each peer has a different function
- Early friendship in the program
- Environment / Setting
- Example of conversations sparked by being in the same physical space

- Example of feedback from peers
- Example of spontaneous conversations
- Faculty vs peer level conversations are different
- Feedback from peer could be more critical
- Feeling obligated to / paying the kindness (information) forward
- Formal vs informal environment
- Friend vs colleague
- Going to peers before supervisor
- Importance of diversity
- Individual differences do not necessarily mean one will not get along
- Informal conversations
- Informal group of peers / friends
- Informal meetings can improve domain specific skills
- Information from peers is complementary
- Information might not useful because end goals are different
- Information sought differs by peer type (relationship, closeness)
- Keeping in touch using social media (WhatsApp, Messenger, Zoom)
- Keeping peers close because one might need them later on
- Knowing who to go to is a skill on its own
- Lack of awareness / not knowing about what other Ph.D.s are working on
- Lack of interaction even with proximity
- Less interaction with other cohorts

- Less likely to get faculty / program specific information from peers outside of one's program
- Lonely nature of Ph.D. in general
- Mentor vs peer
- Nature of the program dictates one's peers
- Need for interaction with others / peers
- No competition environment can mean providing help and support
- Not all structured learning is bad
- Not being aware that one does not go to peers for non-academic information
- Peer initiated / organized academic events can go beyond academic information, they also encourage non-academic talk
- Peer organized meetings (formal)
- Peer organized meetings (informal)
- Peers / relationships / friendships formed at the beginning of program and sustained
- Peers cannot be forced
- Peers referring someone to student
- Peers vs professor / supervisor
- Perceived usefulness may not actually be useful
- Proximity
- Realization that they don't go to peers
- Same cohort

- Small talk with peers just for the sake of talking to someone
- Snowballing effect of peers (knowing more through each other)
- Student Association can facilitate information seeking / sharing
- Supervisor / department referring a peer to student
- Supervisor for research information
- Taking initiative to get to know peers
- The information sought differs by the peer's stage in Ph.D.
- The more involved a student, the less information they seek from peers
- There are a small number of peers that they share everything with / close with
- Wanting peers to succeed
- What one talks about with work friends / colleagues may backfire
- Workshops do not always do justice / a peer element is needed

What do students go to peers for (Information, etc.)

- Academic discussion about a topic
- Academic information
- Academic information when it is one's field / expertise
- Academic information when peer cannot access it themselves
- Academic topics not familiar with (in the field)
- Activity recommendations
- Adapting to / adjusting to / navigating a new city / environment
- Administrative information
- Advice on Ph.D.

- Asking who to go to for information
- Brainstorming and bouncing ideas around
- Casual information / talk
- Certain information is taboo
- Collaboration with peers
- Comparing oneself to ensure one is consistent with peers
- Comprehensive exam
- Confirmation / validation of actions
- Consistent grading
- Course-related information
- Data analysis
- Decision-making
- Discussion about one's paper
- Distribution of information thought to be useful to others
- Distribution of program-related information
- Domain-specific information
- Draft work is given to peers
- Emotional support
- Entertainment information
- Ethics information
- Example of feedback from peers
- Example of feedback that was useful but not as useful as thought

- Example of interpersonal information
- Example of non-academic information
- Example of peers working together
- Example of problem-solving
- Examples of why peers as sources of information
- Exchange papers
- Family information
- Feedback to peers
- Find what the norm is from peers
- Funding Information
- General advice
- General information / everyone and everything
- General interest
- Going to peers who are further ahead in Ph.D.
- Gossip
- Health information (how to access)
- Help with fair marking
- Housing information
- How department works
- How to be a better academic
- How to deal with students
- How to deal with supervisor

- How to improve teaching / lecture
- How to navigate through the Ph.D.
- How to survive Ph.D.
- How to work smarter and harder
- Information / clarification on how to move forward in Ph.D.
- Information about program
- Information from peers is complementary
- Information on conferences
- Information on daily events / news / etc.
- Information on different opportunities
- Information on general politics
- Information on how to fit in a new environment / culture
- Information on McGill resources
- Information on policies, etc.
- Information related to McGill in general
- Information repository shared by peers
- Information sought differs by peer type (relationship, closeness)
- Information that helps another's research move forward (Related to another's Ph.D.)
- Inside scoop on the department
- Interaction to stay up to date on peers
- Interpersonal / conflict resolution skill

- Keeping each other updated
- knowledge sharing / retention in academic information
- Language skills
- Leadership information
- Learning / curiosity about each other (background, etc.)
- Learning from the best practices of a peer
- Learning what NOT to do by observing peers
- Less likely to get faculty / program specific information from peers outside of one's program
- Life after Ph.D.
- Marking together
- Objective thinking
- Online teaching information
- Opinion of peers
- Oral communication skills
- Peer support
- Peers can help with critical thinking
- Peers can provide insider information / drama
- Peers for stuff they don't tell students
- Peers go to one another for advice on something one is involved in (for ex. a research project)
- Peers in the same program provide program specific information

- Peers provide academic information but not always useful (topics are different between them, does not apply)
- Peers provide context specific information / feedback (as opposed to online or other people)
- Personal information
- Playing games
- Practicing for bigger projects with peers
- Presentation skills
- Problem-solving by past experience
- Problem-solving information
- Professional communications skills
- Professional development skills
- Proofreading
- Rant about program
- Ranting in general
- Reading recommendations
- Reflection on the feedback received can bring critical thinking
- Research skills Information
- Restaurant recommendations
- Sharing assignment(s) / homework / papers / notes
- Sharing relevant / interesting papers with one another
- Skill information sought because of a need

- Small talk with peers just for the sake of talking to someone
- Social information
- Software-specific skill
- Staying up to date on peers by reading their papers / providing help on their papers
- Stuck in a situation
- Tacit knowledge
- Talking about something they have in common
- Talking through a problem / situation improves learning
- Teaching assistantship information
- Teaching feedback is not only from peers but also students (students can be more useful than peers in some context)
- Teaching information
- Teamwork
- Time management
- Tips and tricks on graduate school
- Travel information
- Visa information
- Working in group(s) creates conflicts and a learning opportunity
- Writing feedback by peers
- Writing for the lay audience
- Writing skills information

(RQ2) What factors may impact information seeking and sharing among doctoral peers?

Facilitators and obstacles to information seeking and sharing

- Being in the same physical proximity DOES facilitate socialization (spontaneous)
- Being in the same position/situation can differ from one peer to another
- Being in the same room / position / program does not necessitate socialization
- Being in the same situation brings people together
- By being physically present, peers would be able to express their willingness / ability to help each other
- Example of conversations sparked by being in the same physical space
- Example of spontaneous conversations
- Formal vs informal environment
- Gender matters
- Going to peers because there is no one else
- Graduate workspace
- Having similar academic / non-academic interests / background
- Importance of diversity
- Individual differences do not necessarily mean one will not get along
- Information seeking / sharing (and interaction) is a matter of actually being able to reach the peer
- Information seeking / sharing is only one aspect of socialization with peers
- Knowing which peer to go to and access to them in the first place is requirement

- Nature of the program dictates one's peers
- No competition environment can mean providing help and support
- Peers try to have socials, organize events, etc.
- Perceived usefulness is enough for use
- Personal characteristics influence whether one networks / gets involved
- Proximity
- Same background brings trust which translates into getting along better
- Same cohort
- Same country peers
- Sharing and seeking info requires patience and engagement
- Size of the department matters
- Student Association can facilitate information seeking / sharing
- Trust is a requirement for seeking information
- Unstructured (informal) environment (with peers) allows for more comfortable conversations

Trust with peers

- Ability to make mistakes and not feel bad / small
- Being in the same situation brings people together
- Being in the same subfield
- Concept of trust
- Culture brings one closer to one another
- Definition of closeness / comfort

- Faith
- Frequency of seeing one another
- Gender matters
- Going through the same experience brings peers together / close
- Having shared experience (incl. past) with peers
- Having something in common with peer brings them closer
- Intelligence as a reason for going to peers / trusting them
- Interaction to provide ease and relaxation to one another
- Length of time known each other brings trust
- Not being bound to taking peers' advice
- Not being scared of peers
- Peers knowing about each other's situation
- Pre-existing relationship
- Reciprocity
- Same / similar research topic
- Same background brings trust which translates into getting along better
- Same country peers
- Similar goals
- Similar values
- Solidarity
- Types of trust
- Unstructured (informal) environment (with peers) allows for more comfortable

conversations

- Vulnerability
- When one has something in common (which can bring trust), one more likely to go to the person and listen to them

What makes students go to peers / individual factors

- Ability to make mistakes and not feel bad / small
- Age matters
- Being in the same situation brings people together
- Being in the same subfield
- Blurry nature of peer vs friend vs colleague in Ph.D.
- Comfort with peers
- Concept of trust
- Convenience with peers
- Decision-making
- Dependence on peers
- Early friendship in the program
- Environment / Setting
- Example of why choose one peer over the other
- Examples of why peers as sources of information
- Experience with faculty
- Feeling obligated to / paying the kindness (information) forward
- Gender matters

- Getting along with peers may be forced
- Going to locals (peers) because they know the way
- Going to peers because of knowing they will help
- Going to peers because there is no one else
- Going to peers by chance (timing was right)
- Going to peers knowing they have done the thing one is interested in the past / They'll be in the same situation soon
- Going to peers that aspire the student
- Having shared experience (incl. past) with peers
- Having similar academic / non-academic interests / background
- How long peer has been in the program matters in terms of information
- Individual differences do not necessarily mean one will not get along
- Informal conversations
- Intelligence as a reason for going to peers / trusting them
- International student matters from other international students
- It is enough to THINK one is competent to go to them
- It is OK to look stupid in front of peers
- It makes sense to go to peers
- Keeping peers close because one might need them later on
- Lack of support from the university led to going to peers
- Not being bound to taking peers' advice
- Not being scared of peers

- Not believing in oneself
- Not going to supervisor because the student thinks they should know the material already
- Not wanting to bother supervisor
- Not wasting others' time
- Online resources may not be domain specific, but peers are
- Past experience
- Peers are more useful since they see things (for ex. teaching) differently than supervisor / faculty
- Peers bring new perspectives
- Peers can be sought without having fully formed ideas
- Peers have newer information (more up to date)
- Peers know what to say
- Peers may provide quality information
- Peers provide context specific information / feedback (as opposed to online or other people)
- Peers referring someone to student
- Perceived ability of peer to help
- Perceived competence of peers
- Perceived experience of peers
- Perceived usefulness is enough for use
- Possibility of future dependence on peers

- Power dynamic
- Pre-existing relationship
- Proven usefulness / unusefulness of peers
- Proximity
- Resource vs expert
- Running into peers / going to peers as a result of them being around
- Same / similar research topic
- Same background brings trust which translates into getting along better
- Same cohort
- Same country peers
- Similar goals
- Similar values
- Skill information sought because of a need
- Small talk with peers just for the sake of talking to someone
- Speed with peers
- Stage of life matters on the student's interaction with other peers
- Stage of Ph.D./career matters
- Stuck in a situation
- Supervisor / department referring a peer to student
- Talking through a problem / situation improves learning
- There are a small number of peers that they share everything with / close with
- Trust is a requirement for seeking information

- Trust peers are knowledgeable
- Understanding each other
- When one has something in common (which can bring trust), one more likely to go to the person and listen to them
- Who doctoral student goes to depends on importance of the information needed / task
- Who doctoral student goes to depends on the urgency of information / task

Why avoid peers

- Age matters
- Avoiding peers because of their perceived incompetence
- Being the only one in a situation means no one else can help
- Diversity and lack of commonality limits information seeking
- Example of information from peers not useful
- Feeling like one does not belong to a specific group of peers
- Friends can help with skills (not necessarily peers)
- Going to supervisor for very important information that one cannot afford to be wrong
- Importance of task
- Individual differences do not necessarily mean one will not get along
- Lonely nature of Ph.D. in general
- Not many peers around often
- Not speaking the same language
- Others cannot help which leads the student to be independent and find the

information on their own

- Peers are busy
- Peers are not always helpful
- Peers are one of many resources / people
- Proven usefulness / unusefulness of peers
- Self-efficacy
- Some peers are not approachable
- Teaching feedback is not only from peers but also students (students can be more useful than peers in some context)
- There are limits to information seeking and sometimes one needs to figure things out on their own
- Think peers cannot help

Why avoid supervisor / prof / etc.

- Accessibility to supervisor
- Age matters
- Busy supervisor
- Cultural differences
- Example of lack of support from supervisor
- Expectation to be automatically good at something
- Fear of being wrong
- Not being close to supervisor
- Not going to supervisor because the student thinks they should know the material already

- Not wanting to bother supervisor
- Peers are more useful since they see things (for ex. teaching) differently than supervisor / faculty
- Power dynamic
- Problem with supervisor
- Supervisor / prof not understanding what Ph.D.s are going through
- Wanting to become autonomous

(RQ3) What is the perceived usefulness of the information sought and shared among doctoral peers?

Impact and importance of peers

- Advice can be useful but contradict values
- Brainstorming and bouncing ideas around
- Collaboration with peers
- Conversation / information about one thing may lead to useful other type of information (spontaneous conversation)
- Despite low perceived usefulness of information, it can still be useful
- Each peer brings something different to the table
- Emotional support
- Encouragement / motivation by peers
- Example of dependence on peers
- Example of feedback from peers
- Example of feedback from peers influencing outcome
- Example of information from peers not useful

- Example of information from peers was useful
- Example of peers working together
- Example of useful information that came about random unintended encounters
- Feedback from peer could be more critical
- Feedback to peers
- Helping incoming / potential Ph.D.s
- Helping peers make connections
- Informal conversations
- Informal meetings can improve domain specific skills
- Information eases mind
- Interaction with peers facilitates research, critical thinking, and creative academia
- Learning from the best practices of a peer
- Learning what NOT to do by observing peers
- Mentor vs peer
- Need for interaction with others / peers
- Online resources may not be domain specific, but peers are
- Peer acting as a mentor
- Peer initiated / organized academic events can go beyond academic information, they also encourage non-academic talk
- Peer support
- Peers are important

- Peers are one of many resources / people
- Peers can give confidence in one's work
- Peers can start one off but one needs to take matters in their own hands as well
- Peers help one another move forward in Ph.D.
- Peers help reduce anxiety
- Peers keeping each other on track
- Peers may help with loneliness
- Peers not in program can still provide support
- Peers provide affirmation
- Reliance on peers
- Resource vs expert
- Social capital
- Support of peers is important
- There are a small number of peers that they share everything with / close with
- There is more to peers than their information
- Usefulness information shared with peers
- Usefulness information sought from peers
- Value of person as opposed to other sources