# Graduate Student Mental Wellness: A Survey at a Large Canadian University

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## Dedication

This thesis, the research, and all the time & effort that has gone into it is dedicated to my dear friend Jason Driscoll, who was a brother to me. Jason unexpectedly died by suicide in May of 2017, an abrupt end to a life well lived.

Jason inspired many in life and this thesis is just one small example of the influence he continues to have on the world, even years after he left.

People will pass, but the ideals they cherished can live on forever, as long as there are those left who will cherish those ideals as well. My brother may be gone, but it's okay, because I see him every single day in the people I love.

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## Abstract

**Background:** Graduate students' mental wellness has long been overlooked as a research topic and in university policy. Recently, studies have begun to show increased prevalence of diagnosed mental illness and elevated levels of mental distress among this student population. This manuscript-based thesis explores graduate student mental wellness in two manuscripts, one that addresses the prevalence of mental illness, disproportionate rates of mental distress among demographic groups, and the importance of the student-supervisor relationship, and the other that focuses on levels of perceived stigma on a university campus and the associations with self-reported mental distress and attitudes towards accessing services.

**Methods:** An anonymous online survey was responded to by 394 graduate students at a large, Canadian, research university with topics including mental wellness, mental illness, supervisory relationships, perceived stigma, and history of service use.

**Results:** Over half of respondents scored moderate or higher levels of depression, anxiety, or both, and almost one third of students reported a professional diagnosis of mental illness. Graduate students were found to perceive some level of stigma on campus; almost 40% agreed that receiving treatment for emotional or mental problems carries social stigma. Analyses in both manuscripts found statistical differences among demographic groups on key study measures.

**Conclusion:** Graduate students reported significant levels of mental distress, with certain groups scoring higher on the depression, anxiety, and perceived stigma measures. Preventions to identify students struggling with mental health challenges and to better promote mental wellness through improved student-supervisor relationships and reducing stigma should be explored.



*Keywords:* Graduate Students, Mental Health, Mental Illness, Supervisor Relationship, Mentorship, Perceived Stigma, PHQ-9, GAD-7

## List of Abbreviations and Symbols Used

2SLGBTQ+ – Two-spirited, Lesbian, Gay, Bi-Sexual, Trans-Gender, Queer/Questioning, among other gender identity markers

ACHA/NCHA – American College Health Association – National College Health Assessment

GAD-7 – Generalized Anxiety Disorder Scale (7-item)

MHC – Mental Health Continuum

MHCC – Mental Health Commission of Canada

PHQ-9 – Patient Health Questionnaire (9-item)

PPD – Previous Professional Diagnosis

SRMW – Self-Reported Mental Wellness

SSRPH – Stigma Scale for Receiving Psychological Help

SSRPH-A – Stigma Scale for Receiving Psychological Help (Adapted)

T5 – Threshold 5

T10 – Threshold 10

U15 – Group of Canadian Research Universities

WHO – World Health Organization

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# Chapter 1: Introduction/Literature Review

## Mental Health and the Mental Health Continuum

Mental health has always been an important part of overall health, though for many years it has been seen as a taboo subject, even among health professionals (Sayburn, 2015). Recently however, there has been an increase in research on the topics of mental health, mental illness, and mental wellness, as well as an increase in research into the stigmas that accompany and surround these topics (Gaebel et al., 2006; Linden & Stuart, 2020). Throughout this thesis, I will be largely focusing on the concept of mental wellness, which takes into account both mental health and mental illness.

There has been an increase in related policy changes as student and employee mental and emotional wellness are becoming focuses for various institutions, including schools, universities, and workplaces, across North America and around the world (Mental Health Commission of Canada [MHCC], 2020). This is especially true on university campuses, with many universities offering programs and services in order to promote students' mental health and mental wellness.

Traditionally, mental health has been both viewed and defined as simply an absence of mental illness; however, many researchers and diagnosticians disagree with this definition, arguing that it takes more than just a lack of a diagnosable mental illness to be truly mentally healthy (Lamers et al., 2011).

Mental health and mental illness are better thought of as separate continua (the continuum of mental health and the continuum of mental illness). The perpendicular intersection of these two continua is known as the Mental Health Continuum (MHC) (Keyes, 2002, 2007) (see Figure 1). This model resembles a four-quadrant square, and

represents the aforementioned concept of mental wellness, which will be the focus of this thesis.

The MHC is important to consider when conceptualizing mental wellness because it shows the importance of maintaining good mental health practices regardless of the presence or absence of symptoms of mental illness (Keyes, 2002, 2007). Although the two manuscripts within this thesis focus more on the presence and symptoms of mental illness and mental distress than on good mental health practices, this important intersection between mental health and mental illness (which will be referred to as mental wellness or mental well-being) is a crucial framework to visualize during research on the mental well-being of any population.

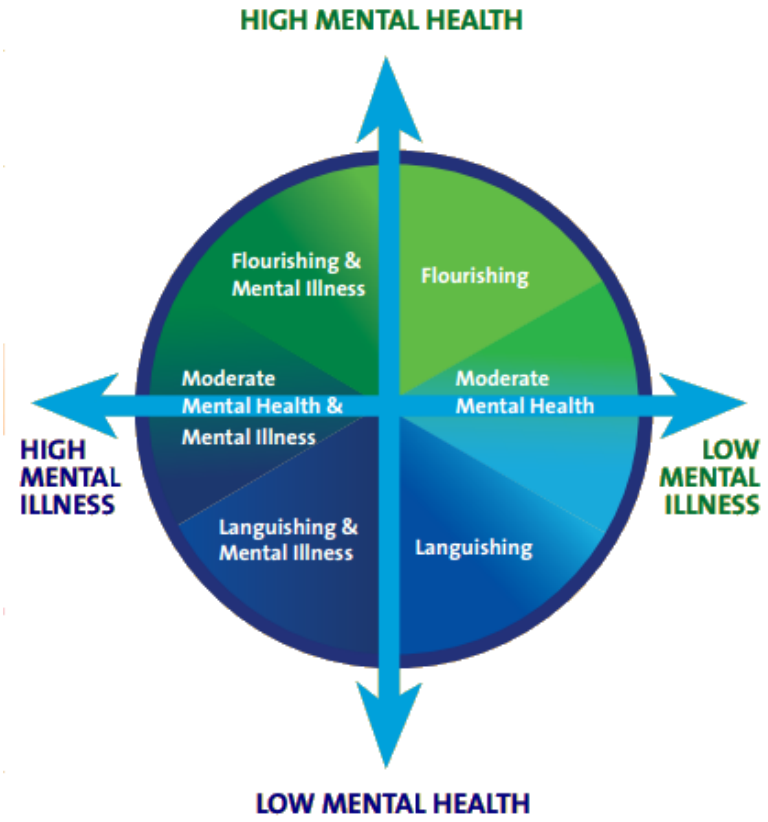


Figure 1. Model of the Mental Health Continuum (Keyes, 2002, 2007; Lamers et al., 2011), (accessed at https://www.utsc.utoronto.ca/projects/flourish/about/)

The MHC model implies that good mental health can be attained, even when experiencing mental illness, and that poor mental health can be experienced in the absence of any mental illness (Keyes, 2002, 2007). This model therefore indicates that achieving and maintaining good mental health or "flourishing", as it is referred to by Keyes, is not only important for those with mental illness, but for everyone. Therefore, the promotion of mental health should be directed towards all post-secondary students, not just those believed to have troubles with mental illness. The MHC uses the

terminology of “flourishing” and “languishing” to describe different areas on the model, but these concepts are also commonly referred to as “thriving” and “surviving”.

**A Rise in Post-Secondary Mental Wellness Concerns**

Reports from post-secondary counselling services and the directors of counselling services have indicated increases in the prevalence and severity of mental illness in post-secondary students (Gallagher, 2008). Benton and colleagues (2003) reported an increase in students seeking mental health counseling over a 13-year period (1988-2001). Furthermore, researchers have found that 90% of university counselling centre directors reported that the prevalence of mental disorders and mental illness is not only growing in number, but also in severity (Gallagher et al., 2005).

The research on post-secondary students in general documents a rising level of mental health concerns, although the meaning of this data is disputed. This conversation is well summarized by Hunt and Eisenberg (2010), where they explore the possible effects of increased help-seeking behaviour as a confounding variable (see Hunt & Eisenberg, 2010, for a summary of this discussion). More objective (outsider) methods of assessing mental illness have tended not to demonstrate an increase in mental illness on campus (e.g., the Schwartz, 2006, retrospective analysis of 10 years of counselling centre records in a US college), although self-reported symptoms representing mental illness and high levels of distress are documented as increasing on campuses (e.g., Schwartz, 2006). These seemingly conflicting studies and findings point to the need for further studies within this topic. This is especially important as it relates not only to whether the prevalence of mental illness on campus is increasing, but also whether any increase is related to changing factors at post-secondary institutions, or whether the increase simply

mirrors an increase in mental illness among the wider population. These are important questions, but, they are outside of the scope of this study, and beyond the limitations of cross-sectional studies in general.

Although the debate continues on whether the prevalence and severity of mental illness, both for campus counselling centres and on-campus in general, are actually worsening, there is little debate on the fact that the prevalence and severity of mental illness that is currently being experienced by post-secondary students is of great concern. As Linden and Stuart (2020) note, there is certainly more attention and concern being placed upon post-secondary students' mental well-being in the last decade. Although there is less focus and little historical data on graduate students, it is increasingly clear that they are also experiencing mental health challenges (Hyun et al., 2006; Levecque et al., 2017), despite the perception some hold that graduate students are less vulnerable to mental illness and distress than other students. The mental health and well-being of post-secondary students should be investigated in greater detail, including research specifically with graduate student samples.

**Graduate and Undergraduate Students**

The research that has been conducted with post-secondary students frequently does not distinguish between graduate and undergraduate students. Although there are similarities between undergraduate and graduate programs, as well as similarities between undergraduate and graduate students, there are also many differences between these programs and students that can influence student wellness and experiences.

Compared to many undergraduate programs, graduate programs tend to have additional stressors, such as increased workload, pressure to publish, smaller program

size /fewer peer relationships, and role conflict (where two or more different roles may conflict with each other) (Hyun et al., 2006; Linden & Stuart, 2020). Graduate programs also require students to be very self-motivated, and the success of students in many of these programs relies heavily on the student-supervisor relationship (Evans et al., 2018; Hyun et al. 2006; Levecque et al., 2017).

**Graduate Studies and Graduate Student Mental Health**

Graduate students are an important part of post-secondary institutions, not only as students, but also for their numerous other roles on campus, including as researchers for the university. Graduate students in research-based programs contribute to a large portion of universities' overall research output. Masters students usually publish a thesis or research project, and PhD students have to publish a doctoral dissertation, which contributes an original piece of research to their field of study (Levecque et al., 2017). However, the contributions of graduate students to research output do not end there; graduate students are also research assistants to other projects, work in the labs of university researchers, help their peers, and may assist their supervisor or advisor with their research (Levecque et al., 2017; Offstein et al., 2004). Many research projects include graduate students; while they may not always be listed as authors on published manuscripts, they often do valuable work that is essential to the projects (Levecque et al., 2017).

Other than as researchers and research assistants, graduate students are also teaching assistants, lecturers, markers, society members, board members, friends, family members, and play many other roles that are essential to the normal functioning of the university.

Graduate student enrolment and completion has been shown to be increasing in certain regions (Levecque et al., 2017), although this may not be true for all regions and graduate programs. Graduate students come from varying cultures, backgrounds, and beliefs, and therefore have varying and diverse needs, both as individuals, and as a collective student group.

The issues that graduate students face are many; graduate students must balance work and school with social and family obligations, and, as mentioned, often play important roles both socially and academically on university campuses. In addition to their academic obligations as graduate students, some students may be starting their own families, taking care of elderly family members, and/or be looking for opportunities to start their careers. Many students may also experience financial stress, carrying with them the burden of loans from one or more degree, diploma, or other academic certification, and often have the added stress of needing to search for funding to continue with their projects (Linden et al., 2018). Graduate students must balance all these concerns/responsibilities and more, in addition to the responsibilities of their program, which can weigh on the mind, and often the mental health and well-being of graduate students (Linden et al., 2018).

The mental wellness of graduate students is crucial for the university community; therefore, the prevalence of mental disorders experienced by graduate students is a problem that not only merits our attention, but also merits our research, prevention, and promotion efforts (Bolotnyy et al., 2021; Levecque et al., 2017; Zivin et al., 2009).

### *The Changing Landscape of Graduate Studies*

Graduate school can be a very stressful experience for graduate students, particularly as it relates to their mental health, with studies showing elevated stress among graduate students compared to the general public (Evans et al., 2018). Graduate students today often have to balance numerous classroom, research, family, and financial responsibilities. In fact, Hyun and colleagues (2006) found that in addition to the students' schoolwork and research, graduate students today are more likely to have familial and financial responsibilities compared to graduate students in the past. This coincides with reports that many aspects of graduate studies are becoming more and more stressful, which is likely due in part to graduate students' additional responsibilities and expectations of them (Levecque, et al., 2017).

These reports show that not only do graduate students have differing needs compared to undergraduate students, but also that the graduate programs, expectations of graduate students, and the external factors that affect the mental wellness of graduate students are changing and evolving from the experiences of graduate students in the past. This indicates that as graduate studies adapt, diversify, and evolve, so too do the mental health needs of graduate students in these programs. Because the needs of graduate students are changing, the response and support from universities also needs to change and adapt with the population, and should not include stagnant or "one size fits all" approaches to graduate student mental wellness.

### *Graduate Student Mental Health Challenges*

Graduate student mental wellness is heavily influenced by the mental distress and mental illness experienced by this population. The stress of graduate students' programs

and numerous other commitments and expectations, including those related to employment, can cause stress and lead to increased mental distress (Levecque et al., 2017), especially when good mental health practices are neglected (as referenced in the Mental Health Continuum) (Keyes, 2002, 2007).

The untreated mental distress and mental illness of graduate students can lead to destructive behaviour, self-harm, self-medication, alcohol/substance abuse, chronic stress, suicide attempts, and completed suicides (Hunt & Eisenberg, 2010; Wang et al., 2005). Not only do students with mental illnesses that go untreated for longer have greater possibilities of experiencing one or more of these consequences, but additionally, the longer a mental disorder goes untreated, the more likely that it will become resistant to treatment (Wang et al., 2005).

Wyatt and Oswalt (2013), examining American National College Health Assessment (NCHA) data from 2009 found that, compared to undergraduate students, graduate students tended to report more negative feelings and behaviours prior to the last 12 months, although undergraduates reported more in the last 12 months. Beyond that, graduate students reported having "tremendous" or "more than average" stress, compared to undergraduates. At the same time, graduates and undergraduates reported equal levels of diagnosed mental illness in the past year. This indicates that although a general perception exists that graduate students are less vulnerable to mental illness or distress than undergraduates, in reality, both student groups are experiencing elevated levels of mental distress and mental illness (Evans et al., 2018; Levecque et al., 2017; Wyatt and Oswalt, 2013).

### *Suicide Ideation and Attempts*

Suicide is one of the most concerning issues to consider when studying mental disorders and mental illness in a population. Although rates of suicide deaths are generally thought to be low in the graduate student population, the percentage of graduate students who have thought about, seriously considered, or attempted suicide, are alarmingly high and speak to a need for targeted prevention (Bolotnyy et al., 2021; Drum et al., 2009; Linden et al., 2018). It is also important to remember that for suicide attempts and suicide deaths, small numbers and percentages still have an incredible impact on campus communities, as the loss of a student, to any cause, is tragic.

One study showed that 11% of graduate students considered suicide on several days in the past two weeks (Barreira et al., 2018). Drum and colleagues (2009) found that 4% of graduate students reported that they seriously considered suicide in the past 12 months, and 15% reported that they seriously considered suicide at least once in their lifetime; 5% of graduate students in the same study also reported that they have attempted suicide at least once in their life. Data with Canadian graduate students are scarce, however, in a study among Canadian post-secondary students, 16% of students reported they had seriously considered suicide, and 2.8% had attempted suicide, both in the past 12 months (American College Health Association (ACHA), 2019).

Similar to the increase in students with mental disorders, there is seemingly an increase in the prevalence of students seriously considering suicide the longer they have been in graduate studies. The percentage of students considering suicide in the past two weeks was nearly twice as high for students in later stages of their programs, with 8.1%

of first year PhD students compared to 23.3% of sixth or later year PhD students (although this study is cross-sectional) (Bolotnyy et al., 2021).

There is currently no compiled data on the national rates of suicide deaths of Canadian post-secondary or graduate students, making the rates of suicide among this demographic hard to estimate (Linden & Stuart, 2020). However, considering the rates of considered and attempted suicides, it can be surmised that suicide is an issue that should be a top priority when considering the health and needs of graduate students. Gallagher (2011) found that only 20% of post-secondary students who died by suicide had previously accessed services at their university wellness centre. This implies that it is not only the prevalence rates of suicidal ideations that are of concern, but also the low rate at which this at-risk group accesses services and supports. Not only do supports and services need to be readily available, but they need to target and cater to those who most need the services and those who would see the greatest improvement from the services. It is important to recognize that mental health promotion efforts should not only be reactive to those who are most in need, but also proactive and available to all in order to help establish healthier environments and help prevent elevated levels of mental distress that could result in crisis.

**Influential Factors**

There are specific factors that can affect the mental wellness of graduate students. In this study, the factors of marginalization of graduate students, stage of program, student-supervisor relationships, stigma of mental illness, and access of services will be explored in more detail, and will be the main topics of interest in the two manuscripts included in this thesis.

### *Marginalized Students and Mental Illness*

In addition to the growing concern about mental health challenges in post-secondary students and graduate students (Linden & Stuart., 2020), the well-being of students who belong to marginalized groups has come under scrutiny. Students who identify as visible or invisible members of marginalized groups face additional pressures that are foreign to students who are not members of these marginalized groups, which can have negative impacts on marginalized students' mental wellness.

Evans and colleagues (2018) documented higher scores on commonly used measures of anxiety and depression for gender-non-conforming students compared to gender-conforming students and for women compared to men. Women also report more mental health needs (Hyun et al., 2006). Certain racial groups have also been shown to have different mental health challenges in a post-secondary population (Hyun et al., 2006; Jochman, 2019; Lipson et al., 2018; Woolston, 2017). However, very little research on graduate students has included measures of diversity; this is especially true of Canadian studies.

The intersectionality and the importance of graduate students' identities will be explored as an influential factor in their mental wellness. It is important to note, that it is not graduate students' identity as a member of one or more marginalized or historically underrepresented groups that is a seen as an influential factor for their mental wellness, but rather the discrimination and marginalization that these students experience because of these various identities

Specifically, this thesis explores the mental wellness of groups that experience marginalization based on their gender identity, sexual orientation, and racial identity,

although it is important to mention that there are many other groups that experience marginalization, such as students who have physical and/or mental disabilities. The exploration of gender, sexual orientation, and racial identity as areas of marginalization is intended to explore whether significant differences can be found between non-marginalized and marginalized students in these three areas, and not to imply that marginalization occurs only within these identities. The three groups: gender identity, sexual orientation, and racial identity were chosen because the university in question has a specific policy of addressing inequities in these groups. The university also has a policy of addressing inequities in students with disabilities. However, because the disability of mental illness forms a significant part of disabilities, and the thesis is examining mental illness/unwellness specifically, including this category would essentially result in analyses where the predictor and outcome were much the same.

#### *Stage of Program Differences*

Bolotnyy and colleagues (2021) found that length of time in a PhD program was related to mental health disorders (21.2% of students in their first year had symptoms of moderate to severe depression and anxiety while 36.7% of students in their sixth year or later had those symptoms). Sverdlik and Hall (2020) also found differences associated with stage of program. It is important not only to document mental health challenges and factors leading to them, but also particular groups who are more at risk within the graduate population.

### *Student-Supervisor Relationships*

The student-supervisor relationship (also referred to as advisory relationship) for students in research-based graduate programs is not only important for the success of

graduate students (Schlosser & Gelso, 2001), but also for the mental wellness of graduate students. Several studies have found connections between various aspects of graduate student mental wellness and the relationship they have with their advisor (e.g., Evans et al., 2018; Hyun et al., 2006; Levecque et al., 2017; Peluso et al., 2011), including better mental health (Levecque et al., 2017) and lower symptoms of mental illness (Peluso et al., 2011) in higher rated/more functional student-supervisor relationships. The connections between student success, better mental health, and fewer symptoms of mental illness with the student-supervisor relationship make this relationship an important one to explore, as it could represent an area where actionable mental health/wellness promotion recommendations could be made that could positively affect graduate student mental wellness, and will be explored more fully in Manuscript 1 (Chapter 3).

### *The Stigma of Mental Illness*

The increase in graduate students self-reporting mental illness, as well as the elevated prevalence of mental illness in graduate students compared to the general public (Evans et al., 2018; Levecque et al., 2017) means that university campuses will be "hotspots" of students not only experiencing the symptoms of mental illness, but also experiencing the stigma of mental illness and the stigma of seeking treatment for mental illness. These stigmas can exacerbate the symptoms of mental illness.

Stigma, as it relates to mental illness, is defined as the "devaluing, disgracing, and disfavouring by the general public of individuals with mental illnesses" (Abdullah & Brown, 2011, p. 935). The stigma of mental illness and of seeking treatment for mental illness is important as stigma is thought to reduce both the likelihood of accessing

services for mental illness, as well as the likelihood of adherence to prescribed treatment once a diagnosis has been made (Gulliver & Christensen, 2010; Sirey et al., 2001). The topic of stigma will be explored more fully in Manuscript 2 (Chapter 4).

**Accessing Services/Help-Seeking**

Despite the importance of their mental wellness, many graduate students have never accessed treatment or services for mental health challenges (Hyun et al., 2006). There are several proposed theories for why people experiencing symptoms of a mental disorder may not access services; one theory is that the stigma surrounding mental illness and receiving treatment for mental illness reduces the chance that a student will ask for help from friends, family, a supervisor, or a medical professional. In addition to stigma, there are other reasons why someone may not access services, such as not knowing services are available, reduced access, inability to take time off work for appointments, inability to get to and from appointments, inability to pay for services, and/or not believing services are needed, to name a few.

While stigma's role in accessing services remains a topic of discussion and dispute about the exact effect it has, one thing is clear: accessing services remains low among graduate students (Hyun et al., 2006). This reduces the likelihood that those who experience mental distress or mental illness will receive the help and supports they need and deserve in a timely manner; this reduced likelihood of receiving treatment for mental distress and mental illness can, as previously mentioned, lead to increased risk to students' well-being.

It should be noted that when talking about accessing services or "help-seeking", it is important that it not be framed in a way that blames those who do not access services.

There are many valid reasons why students, including marginalized students, may not access services, as they may feel the services are not representative of their needs, or that they may be further marginalized by attempting to access services, among other reasons. Although pre-existing terms in the literature exist such as help-seeking behaviour and willingness to seek help (among others) are often used, I will employ those terms only when necessary. Language, such as history of accessing services, or attitudes towards accessing services, is preferable, as it avoids language that could be interpreted as blaming students for not accessing services.

Terminology such as "help-seeking" also implies that all interactions with available services are positive, and frequently does not address the issue that services, especially those not provided by the university, are not equally available or accessible. Terminology of "willingness to seek help/access services" also does not adequately address the inequitable service availability/accessibility, and may imply that it is the students' responsibility to be more "willing" to access a service, instead of reworking and creating new services designed to better address the needs and concerns of all students.

**Health Promotion**

As a health promotion thesis, the information and findings from the thesis are intended to include a knowledge mobilization component. This thesis itself is intended as a resource to guide promotion planning (specifically mental health/wellness promotion) and thus includes implications for health promotion and recommendations for strategies, including inclusion of marginalized individuals or groups in all decision making.

### *Knowledge Mobilization*

Knowledge mobilization includes how knowledge is shared, delivered, and used. Knowledge mobilization also includes the idea that knowledge comes in many different forms, and the need to integrate recent findings into larger bodies of research over time, and further share research in actionable forms that can be used to change policies and behaviours to reflect the best available knowledge (Levin, 2008).

Paulo Freire's Pedagogy of the Oppressed (1972) provides a useful approach to knowledge mobilization, common in Health Promotion, as it relates to involving the opinions and knowledge of the students who are the intended recipients of, or most affected by, various policies and prevention strategies. Freire's approach will be applied to graduate students as a distinct group, but also to marginalized and stigmatized groups within the graduate student population as well. This pedagogy is important as it relates to the mobilization of the results and findings of this research since the purpose of this research project is not only to explore graduate student mental wellness, but also to bring about change in graduate programs that will benefit the mental wellness of graduate students. Since graduate students in general, as well as graduate students who belong to specific marginalized groups, will be the ones these policies intend to benefit, these groups of students should be active participants in the decision making process of these policies, and should be involved in every step of the policy decisions.

## Research Problem

There is growing evidence that there is a serious problem with the mental wellness of graduate students (Evans et al., 2018; Hyun et al., 2006; Levecque et al., 2017), yet relatively few studies have explored the topic of graduate student mental

wellness with graduate student only samples, especially in Canada. To explore this research problem, a survey was created and delivered to graduate students at a large, Canadian, U15, research university.

**Research Questions and Hypotheses**

This thesis aims to answer the following questions for graduate students at the study university: 1) What is the self-reported mental wellness and prevalence of previously professionally diagnosed mental illness of graduate students? 2) What is the relationship between student-supervisor relationships and self-reported mental wellness? 3) What is the level of stigma that graduate students perceive is directed towards graduate students who seek treatment for mental health challenges? These first two research questions are addressed in Manuscript 1 (Chapter 3), and the third research question is addressed in Manuscript 2 (Chapter 4). Although this research study and survey are largely descriptive, the following three hypotheses were created after review of the literature, and are addressed in Manuscript 1 (Chapter 3):

1. Students that are members of historically underrepresented or marginalized groups will experience disproportionate rates of mental illness symptoms compared to non-marginalized students.
2. Graduate students who have been in their masters or PhD program for longer will experience significantly more symptoms of mental illness compared to students in earlier years of their program.
3. Students reporting worse student-supervisor relationships will experience significantly more symptoms of mental illness.

Additionally, after review of the literature, five hypotheses related to perceived stigma were created and are addressed in Manuscript 2 (Chapter 4):

1. International students, cisgender men, and older students will perceive significantly higher levels of stigma compared to domestic students, cisgender women, and younger students respectively.
2. Students who have accessed the campus counselling centre will perceive significantly lower levels of stigma than students who have never accessed the campus counselling centre.
3. Students who scored higher on an *attitudes towards accessing services* scale will perceive significantly lower levels of stigma than students who scored lower this scale.
4. Students who have a diagnosis of mental illness and students who scored higher on the PHQ-9 and the GAD-7 will have significantly higher perceived stigma scores compared to students who have not been diagnosed with a mental illness and who scored lower on these scales respectively.
5. Among students who have a previous professional diagnosis of mental illness, students who have received treatment in the past 12 months will have significantly lower perceived stigma scores compared to those who have not sought treatment.

**Thesis Scope**

The survey created and used for this study included 12 sections with 114 questions designed to assess various parts of graduate students' lives, experiences, relationships, as well as their symptomology of depressive/anxiety disorders and their

history of diagnosed mental illness. The survey was largely quantitative, with some qualitative data collected in open-ended questions. The length of this survey resulted in a large dataset with much to explore. As such, the amount of data collected extends beyond the scope of a masters thesis. This thesis represents only two of the possible manuscripts and reports that are expected to be derived from the survey data. Seviour and Robinson will continue to analyse and report on the remaining data, including the collected qualitative data from open-ended responses.

The two thesis manuscripts, one focusing on the main hypotheses and a description of the mental wellness/illness of graduate students, and the second focusing on the perceived stigma on the university campus, will be referred to as Manuscript 1 (Chapter 3) and Manuscript 2 (Chapter 4) respectively throughout this thesis.

## Chapter 2: Methods

This study is largely quantitative, with some use of open ended questions (not reported on in either two manuscripts), and is a form of cross-sectional survey research. While quantitative research does not frequently state an attached worldview, a guiding worldview for this research was pragmatism, since it was problem-centered and aimed to address identified problems by recommending and discussing possible solutions to the identified problems (Cherryholmes, 1992; Creswell, 2014).

### Recruitment

#### *Overview and Covid-19 Disclaimer*

During the recruitment process for this survey, the university closed its campuses due to the global pandemic caused by the Covid-19 virus. This decision was in-line with similar decisions made by other universities across Canada and globally. The closure of university campuses and subsequent switch to online learning had an impact on various recruitment strategies for this study, especially those on-campus, making it impossible for several strategies to be implemented as planned. Strategies were adapted where possible, or cancelled if adaptation was not possible or feasible.

#### *Recruitment Period*

Recruitment for this project began on March the 2nd, 2020. The survey was originally intended to last from March 2nd to April 2nd, allowing a full month of recruitment. Due to ongoing concerns around the Covid-19 virus, we halted active recruitment from March 17th-24th, and extended the closing date of the survey to April 15th, 2020.

Participants were recruited using multiple approaches, especially focused on working with relevant groups around campus, including various graduate student organizations and key graduate faculties. The main vehicles for recruitment were recruitment posters, interaction/partnerships with influential groups and societies at the university, word of mouth, social media, and contact with program graduate coordinators. As an incentive for participation, we offered a random draw for one of two $50 gift cards of the winners' choice to either a local grocery store or to the university bookstore. The survey link for the random draw was included in the informed consent so that students did not feel that they had to participate in order to enter the draw.

***Participants***

Participants for this study were recruited from approximately 3500 graduate students enrolled at a large, Canadian, U15, research university. Participants had to be enrolled full or part-time in a program that awards either a masters degree or PhD upon completion, including students in both research and course-based programs. Students enrolled in undergraduate programs or professional programs that do not award a Masters or PhD, such as law, undergraduate medicine, and dentistry, were excluded.

Our study included 394 total respondents, or approximately 11.3% of the total graduate student population. There was some respondent attrition throughout the survey, and 370 and 365 students responded to our two main measures of the PHQ-9 (Kroenke & Spitzer, 2002) and GAD-7 (Spitzer et al., 2006), which account for 10.6% and 10.4% of the graduate student population respectively.

### *Sampling Design and Ethics Approval*

We were not able to obtain a complete email list of graduate students, therefore a single-stage sampling design where the entire sample population is contacted was not possible. Instead, we employed a multi-stage study design with a non-stratified, convenience sample of graduate students who responded to this survey.

## Survey

### *Survey Design and Methods*

This study used a cross-sectional, anonymous, online survey in order to collect large amounts of data quickly and efficiently, reducing the manual collection and analysis time, and eliminating errors that may have arisen from manual input of survey data. This study design also provided benefits to the student respondents as an Internet survey is accessible and can be completed at the time and location of the respondents' choosing.

### *Survey Development*

This project development began through the work of Caitlyn Ayn (a previous graduate student of Dr. Robinson's), Dr. Robinson, and Dr. Marty Leonard. After meeting with graduate student researchers who had conducted smaller single faculty studies within the university, Dr. Robinson and I continued and completed the development of this survey and delivered it to the graduate students at the study university.

### *Data Collection*

Data collection was carried out via the secure online surveying platform *Opinio*, a Canadian company used frequently by researchers at the study university, and was completed on the respondents' personal devices.

A separate email address was associated with the study so that potential participants could contact me with any questions or concerns about either the survey or the overarching study. Dr. Robinson's email address was also available for any potential participants who had questions. Collected data was initially stored on servers at the study university, then downloaded onto USB sticks and deleted from the servers at the end of the survey period. Ethics approval was received from the study university's research ethics board before the study began: REB # 2020-5041.

**Measures**

Measures were selected and/or created through discussion with relevant faculty and student groups at the study university, and by consulting two unpublished scoping reviews on the process and questions used to survey graduate students on their mental health, one conducted by Caitlyn Ayn on the types of questions that have been asked in mental health surveys, and one by Stephen Seviour on how questions have been asked in mental health surveys. In our 114-question survey, various measures and single questions were used. Because several measures are included in both manuscripts, these will be described in the following measures section, whereas the measures unique to Manuscript 1 or Manuscript 2 will be described in the methods section of their respective manuscripts. It is important to note that the nine-item Patient Health Questionnaire and the seven-item Generalized Anxiety Disorder scale don't diagnose mental illness, but instead measure symptoms of mental illness. High scores on either of these measures are suggestive of diagnosable mental illness.

### *Measures Included in Both Manuscript 1 and Manuscript 2*

#### Patient Health Questionnaire – 9-item (PHQ-9).

The nine-item Patient Health Questionnaire (PHQ-9) (Kroenke & Spitzer, 2002; Kroenke et al., 2001) is a well validated scale that measures the recent occurrence of depressive symptoms and can be used to screen for major depressive disorder and other depressive disorders. Each of the nine items has four response options: *Not at all* (0), *Several days* (1), *More than half the days* (2), or *Nearly every day* (3). Scores for each item are summed, creating a total score for each participant. This results in a continuous variable with a range from 0-27. As per Kroenke and Spitzer (2002), scores of 0-4 are interpreted as No depression, 5-9 Mild depression, 10-14 Moderate depression, 15-19 Moderately severe depression, and 20+ Severe depression. Mean substitution was used for respondents who missed less than three questions (Kroenke et al., 2010). The internal reliability of this measure was good, with a Cronbach's alpha of .88 in our study.

#### Generalized Anxiety Disorder Scale – 7-item (GAD-7).

The seven-item Generalized Anxiety Scale (GAD-7) (Spitzer et al., 2006), is a well validated scale that measures the recent occurrence of anxiety symptoms and can be used to screen for probable anxiety disorders. Similar to the PHQ-9, the GAD-7 has four response options: *Not at all* (0), *Several days* (1), *More than half the days* (2), or *Nearly every day* (3). Item scores for each respondent are summed. This creates a continuous variable with a possible range of 0-21. Spitzer et al. (2006) identify scores of 0-4 as No anxiety, 5-9 as Mild anxiety, 10-14 as Moderate anxiety, and 15+ as Severe anxiety. Mean substitution was used for respondents who missed less than three questions as seen

in other studies using this measure (e.g., Teymoori et al., 2020). The Cronbach's alpha of this seven-item scale was .85 in our study.

**Previous Professional Diagnosis (PPD).**

In this single item question, respondents were asked whether they had ever been previously professionally diagnosed with a mental illness (PPD).

## Chapter 3: Manuscript 1

# Graduate Student Mental Wellness: Current Issues and a Call for Support

Stephen Seviour

Lynne Robinson

## Abstract

**Background:** The research output and functioning of universities depend on the hard work of graduate students, yet their mental wellness has long been overlooked by researchers and is increasingly cause for concern. Data suggest a trend to worse mental health for post-secondary students, and that diversity and equity issues are central to mental wellness. The intersection of diversity and mental wellness for graduate students merits study not only for their benefit, but for the strength of the institutions they support. Our study provides a snapshot of the mental wellness of this increasingly diverse population and of factors influencing it.

**Methods:** An anonymous, online survey was administered to 394 graduate students at a large Canadian university, asking about their mental wellness, history of mental illness, and experiences as graduate students.

**Results:** Over 30% of respondents identified having been professionally diagnosed with a mental illness. Only 22.2% and 24.3% scored below threshold on two well established measures of anxiety and depression respectively, while 33.4% had occasional or serious thoughts of suicide in the past 12 months. Cisgender women and non-cisgender respondents scored significantly higher on anxiety and non-cisgender respondents scored higher on depression. Mental wellness was significantly associated with student-supervisor relationships.

**Conclusion:** Graduate students experience significant levels of mental distress. More research and efforts are needed to reduce these concerns and to effectively foster environments where graduate student mental wellness is supported as a priority, especially for marginalized student groups. Future teaching and research environments in Canada depend on it.



*Keywords:* Graduate Students, Mental Health, Mental Illness, Supervisor Relationship, PHQ-9, GAD-7

## Literature Review

**[A brief introduction and review of the literature on graduate student mental wellness was included here on the final manuscript that has been sent for publication. Sections that contained redundant information from Chapter 1 have been removed to avoid unnecessary repetition. Please see Chapter 1 for background information on post-secondary and graduate student mental wellness.]**

A scan of ACHA reports for the USA graduate and professional reference group reveals that reported impacts of anxiety, depression, and stress on academic work have been steadily increasing, as have reported prior professional diagnoses of mental illness (see Table 1) (ACHA, 2014, 2015, 2016, 2017, 2018, 2019).

**Table 1**

*NCHA Graduate Group Reports for Previous Diagnoses and Impacts of Anxiety and Depression*

| NCHA Graduate Reference Group Report by Year | % Reporting an Academic Impact in the Last Year From: | | | % Reporting Previous Professional Diagnosis |
|---|---|---|---|---|
| | Anxiety (%) | Depression (%) | Stress (%) | |
| 2014 Spring | 14.9 | 9.4 | 19.2 | 22.1 |
| 2015 Spring | 15.3 | 9.3 | 19.1 | 23.6 |
| 2016 Spring | 15.8 | 10.7 | 20.4 | 24.6 |
| 2017 Spring | 17.3 | 11.2 | 20.1 | 28.1 |
| 2018 Spring | 17.5 | 12.1 | 21.7 | 29.4 |
| 2019 Spring | 20.3 | 14.1 | 23.9 | 34.3 |

Given the importance of education for future economic and mental well-being (Zajacova & Lawrence, 2018) and the vulnerability of the graduate student age group to mental health problems (Kessler et al., 2007), a focus on promoting mental health in the academic setting is likely to have long lasting benefits. Despite the relatively longer

history of data collection in the USA (Kraft, 2011), Canada does not have a standard way to collect post-secondary health or mental health data (Kwan et al., 2013). In 2009, Canadian data was collected at eight institutions by ACHA (Kwan et al., 2013), but there have only been three broad-based NCHA surveys reported with Canadian data (2013, 2016, 2019).

Of the 172 articles Linden et al. (2018) included in their scoping review, only 15 in the "distress" category were with Canadian post-secondary students. Our own recent (unpublished) scoping review found only 23 published studies of the mental health of graduate students as distinct from undergraduates; only two included Canadian students (e.g., Peluso, et al., 2011; Rummell, 2015). The lack of research on graduate student mental health in a Canadian setting is concerning, since such studies are needed to guide mental health promotion efforts.

The primary purpose of our study was to explore the mental wellness of graduate students at a large research-oriented university and to identify factors that influence mental wellness. The study included the self-reported mental wellness/unwellness of graduate students at the university, the mental health problems they identify, and the university related factors that contribute to or detract from their mental wellness. We also wanted to understand how having been previously diagnosed with a mental illness was related to self-reported current symptoms of mental illness. We hypothesized that: 1) students that are members of historically underrepresented or marginalized groups will experience disproportionate rates of symptoms of mental illness compared to non-marginalized students, 2) graduate students who have been in their masters or PhD program for longer will experience significantly more symptoms of mental illness

compared to students in earlier years of their program, and finally that 3) students reporting worse student-supervisor relationships will experience significantly more symptoms of mental illness.

## Methods

**[Repeating information in this section was removed to reduce redundancies in the writing. Please see Chapter 2 for detailed methods.]**

### Measures

**[Measures that were included in both manuscripts (PHQ-9, GAD-7, and PPD) were removed to reduce redundancies. Please see Chapter 2 for descriptions of the measures used in both Manuscript 1 and Manuscript 2.]**

#### *Threshold 5 and Threshold 10 (T5 & T10)*

Two new variables were created from the PHQ-9 and GAD-7 variables; the first (T5) was a binary no/yes for respondents who scored 5 or more on one or both of the PHQ-9 and the GAD-7, which is the threshold score for mild depression and mild anxiety respectively. The second (T10) was also binary no/yes, but for respondents who scored 10 or more on one or both of the PHQ-9 and the GAD-7, which is the threshold score for moderate depression and moderate anxiety respectively.

#### *Non-Suicidal Self-Injury, Suicide Ideation, and Suicide Attempts*

We asked one question on self-injury: **"**During the past 12 months have you engaged in an activity that could be considered non-suicidal-self-injury*"*, followed by examples of self-injury, and one on suicide ideation: **"**During the past 12 months, how would you describe your thoughts of suicide (suicide ideation)". Both topics are commonly found as part of mental wellness surveys and similar questions have been

recently used in other surveys (e.g., ACHA, 2020). The self-injury question has response options: *No* (0) or *Yes* (1). The suicide ideation question has the response options of: *Never thought about suicide* (0), *Had occasional thoughts of suicide* (1), and *Seriously considered suicide* (2). We also asked if the respondent had attempted suicide in the past 12 months and if they have ever attempted suicide.

***Self-Reported Mental Wellness (SRMW)***

Self-reported mental wellness (SRMW) was measured using this slight variant of a common single-item question frequently used in mental wellness surveys (Ahmad et al., 2014), "How would you rank your overall mental wellness on a scale of 1-5? (worst possible - best possible)".

***Student-Supervisor Relationship***

The student-supervisor relationship scale is comprised of eight questions. Of these eight questions, seven were adapted/created from survey development for this study conducted by both authors (six were adapted from a separate, faculty specific, study that was conducted by graduate students at the study university and then shared with both authors). One question was created ab novo by the authors, "Thinking of the last 12 months, how would you describe your relationship with your supervisor". The one remaining question included in this scale was adapted from advisor relationship questions used by Hyun and colleagues (2006).

The scale included two general questions, one on the supportiveness of the supervisor (from Hyun et al., 2006) and the other on the quality of the student-supervisor relationship with the response options: *Very unsupportive* (0), *Somewhat unsupportive* (1), *Neutral* (2), *Somewhat supportive* (3), or *Very supportive* (4), and: *Very negative* (0),

*Somewhat negative* (1), *Neutral* (2), *Somewhat positive* (3), or *Very positive* (4) for these two questions respectively.

The remaining six items included more specific questions on supervisor supportiveness. The questions addressed: supervisor support of the student not being able to take on a task or meet a deadline; the student feeling able to talk about their wellness with their supervisor; feeling respected by their supervisor; and the supervisor having the student's best interests at heart. They queried the supervisor's support of the student's self-care and work-life balance, and the supervisor being conscious of the student's demands and commitments. For these six items, the response options were: *Strongly disagree* (0), *Disagree* (1), *Neither agree nor disagree* (2), *Agree* (3), and *Strongly agree* (4).

The scores from these eight questions were summed to create a continuous student-supervisor variable with a range of 0-32. Mean substitution was not used for this scale, primarily because the scale results, at this time, had not been fully explored to determine if there was a pattern to the missing data. The supervisory role is a highly powerful one and there was potential for some consistent influence on responses. Additionally, because the student-supervisor relationship frequently does not apply to students in course-based graduate programs, only students in research-based programs were included in the analysis of this scale. This measure was found to have good internal reliability, with a Cronbach's alpha score of .94.

## Results

The sociodemographic characteristics of our sample are found in Tables 2 and 3. Cisgender women comprised 70.5% of the sample, 77.3% of the sample were

heterosexual. Racial identities of participants are found in Table 2; these groupings were categorized based on the Canadian Institute for Health Information's (CIHI, 2020) proposed race-based and Indigenous identity data standards. More than half of the sample (68.4%) were in research-based programs, and 65.4% were masters level students.

**Table 2**

*Sociodemographic Characteristics of Participants: Gender, Sexual Orientation, and Racial Identity*

| Demographic | *n* | % |
|---|---|---|
| Gender | | |
| Cisgender Woman | 270 | 70.5 |
| Cisgender Man | 103 | 26.9 |
| Non-Cisgender | 10 | 2.6 |
| Sexual Orientation | | |
| Heterosexual | 289 | 77.3 |
| Bisexual | 51 | 13.6 |
| Queer | 10 | 2.7 |
| Gay | 9 | 2.4 |
| Asexual | 6 | 1.6 |
| Lesbian | 5 | 1.3 |
| Other Sexual Orientation | 4 | 1.1 |
| Racial Group | | |
| White | 204 | 66.5 |
| South Asian | 19 | 6.2 |
| East/Southeast Asian | 19 | 6.2 |
| Middle Eastern | 15 | 4.9 |
| Mixed race | 13 | 4.2 |
| Indigenous | 8 | 2.6 |
| Black | 5 | 1.6 |
| Latino | 5 | 1.6 |
| Do not know | 19 | 6.2 |

**Table 3**

*Sociodemographic Characteristics of Participants: Other*

| Demographic | *n* | % |
|---|---|---|
| Age | | |
| 19-24 | 139 | 36.2 |
| 25-30 | 164 | 42.7 |
| 31-36 | 51 | 13.3 |
| >36 | 30 | 7.8 |
| Student Type | | |
| Domestic Student | 326 | 83.0 |
| International Student | 67 | 17.0 |
| Level of Study | | |
| Masters Student | 257 | 65.4 |
| PhD Student | 136 | 34.6 |
| Program Type | | |
| Research-Based | 269 | 68.4 |
| Course-Based | 124 | 31.6 |
| Student Faculty | | |
| Science | 117 | 30.0 |
| Health | 85 | 21.8 |
| Management | 62 | 15.9 |
| Medicine | 29 | 7.4 |
| Computer Science | 24 | 6.2 |
| Engineering | 19 | 4.9 |
| Agriculture | 15 | 3.8 |
| Arts and Social Sciences | 14 | 3.6 |
| Architecture and | 13 | 3.3 |
| Planning | | |
| Other PhD Programs | 12 | 3.1 |

Our first research goal was to explore the mental wellness of graduate students at a large research university. Tables 4 and 5 report the scores on the PHQ-9 and GAD-7. Less than 25% of respondents fell into the 'no depression' category, similarly for the 'no anxiety' category. However, the modal response on the self-reported overall rating of mental wellness was '3'; neither best nor worst, and there were more respondents above

that modal response than below it (i.e., towards the 'best possible' mental health (see Table 6)).

Combining the PHQ-9 and GAD-7 to create the T5 and T10 cutoffs revealed that 303 (83%) of respondents reported at least mild symptoms of depression or anxiety or a combination of both. Similarly, 195 (53.4%) of respondents reported at least moderate depression or anxiety or both. Of our respondents, 31.4% identified having been professionally diagnosed with a mental illness (PPD). We wondered how likely it was for someone with a PPD to also score above our T5 and T10 thresholds. Students who reported a PPD were also more likely to meet the T5 and T10 cutoffs: OR = 3.11, 95% CI = [1.474 – 6.555], and OR = 2.38, 95% CI = [1.496 – 3.781] respectively. We also carried out a post-hoc test, comparing PHQ-9 and GAD-7 scores pre and post university campus closure. Using point-biserial correlation, no significant relationship was found with the PHQ-9 ($r_{pb}$ = -.091, n = 370, p = .079), whereas a significant negative relationship was found with the GAD-7 ($r_{pb}$ = -.154, n = 365, p = .003), which means that mean GAD-7 scores were significantly lower after the campus closure. Finally, thinking of the past year, 9.2% of respondents reported some form of self-injury, 29.7% had occasional thoughts of suicide, 3.7% had seriously considered suicide, and 0.5% had attempted suicide (6.9% reported a suicide attempt in their lifetime).

**Table 4**

*Patient Health Questionnaire (PHQ-9) Scores*

| Label | *n* | % |
|---|---|---|
| No Depression | 90 | 24.3 |
| Mild Depression | 120 | 32.4 |
| Moderate Depression | 83 | 22.4 |
| Moderately Severe Depression | 51 | 13.8 |
| Severe Depression | 26 | 7.0 |
| Total | 370 | 100.0 |

**Table 5**

*Generalized Anxiety Disorder (GAD-7) Scores*

| Label | *n* | % |
|---|---|---|
| No Anxiety | 81 | 22.2 |
| Mild Anxiety | 120 | 32.9 |
| Moderate Anxiety | 103 | 28.2 |
| Severe Anxiety | 61 | 16.7 |
| Total | 365 | 100.0 |

**Table 6**

*Self-Reported Mental Wellness (SRMW) Rankings*

| SRMW | *n* | % |
|---|---|---|
| 1 | 4 | 1.0 |
| 2 | 55 | 14.4 |
| 3 | 155 | 40.6 |
| 4 | 148 | 38.7 |
| 5 | 20 | 5.2 |
| Total | 382 | 100.0 |

*Note.* 1=worst possible, 5=best possible.

We also wanted to explore the relationship between being a member of a visible or invisible marginalized and/or racialized group and reported symptoms of mental illness/distress. We believed that members of marginalized groups would experience a disproportionate number of such symptoms compared to students who are not

marginalized. However, applying linear regression, our analysis of gender, sexual orientation, and racial identity revealed only three modest relationships between non-cisgender status and both PHQ-9 and GAD-7, and between cisgender women and GAD-7, with these groups scoring significantly higher on these scales of self-reported symptoms of mental illness than cisgender men (see Tables 7 and 8).

**Table 7**

*Relationships of Gender, Sexual Orientation, and Race to the PHQ-9*

| Characteristic | Mean Score | Coefficient (B) | SE | t | *p* | 95% CI |
|---|---|---|---|---|---|---|
| Gender | | | | | | |
| Cisgender Man | 8.29 | | | | | |
| Cisgender Woman | 9.59 | .844 | .859 | .983 | .327 | [-.847 – 2.535] |
| Non-Cisgender | 13.56 | 4.865 | 2.388 | 2.037 | .043 | [.163 – 9.567] |
| Sexual Orientation | | | | | | |
| Heterosexual | 8.71 | | | | | |
| Non-Heterosexual | 11.00 | .801 | .857 | .935 | .351 | [-.886 – 2.488] |
| Race | | | | | | |
| White | 9.35 | | | | | |
| Other racial group | 9.28 | .181 | .802 | .226 | .822 | [-1.398 – 1.760] |

**Table 8**

*Relationships of Gender, Sexual Orientation, and Race to the GAD-7*

| Characteristic | Mean Score | Coefficient (B) | SE | t | *p* | 95% CI |
|---|---|---|---|---|---|---|
| Gender | | | | | | |
| Cisgender Man | 7.60 | | | | | |
| Cisgender Woman | 9.35 | 1.738 | .693 | 2.510 | .013 | [.375 – 3.102] |
| Non-Cisgender | 13.67 | 6.012 | 1.899 | 3.165 | .002 | [2.272 – 9.752] |
| Sexual Orientation | | | | | | |
| Heterosexual | 8.51 | | | | | |
| Non-Heterosexual | 10.50 | .915 | .687 | 1.331 | .184 | [-.438 – 2.268] |
| Race | | | | | | |
| White | 9.05 | | | | | |
| Other racial group | 8.99 | .029 | .648 | .045 | .964 | [-1.246 – 1.305] |

Next, we sought any correlations between time spent in graduate programs and mental health symptoms (PHQ-9, GAD-7, SRMW), applying Spearman's rank order

correlation (rho) since the variables were non-normal. For all analyses, results indicated that there was no association between length of time in graduate programs and mental health outcomes. Masters and PhD student analyses were conducted separately since the expected length of time differs between them, with no significant findings. Due to space limitations results are not further reported here, but are available.

Finally, we examined the supervisory relationship, again applying Spearman's rho. We found significant negative correlations between student-supervisor relationships for both the PHQ-9 and GAD-7 ($r_s$ = -.210, p = .002, n = 219 and $r_s$ = -.235, p < .001, n = 219 respectively), which indicates that lower student-supervisor relationship scores are correlated with higher levels of self-reported mental illness symptoms. A significant positive correlation between student-supervisor scores and SRMW was found ($r_s$ = .245, p < 0.001, n = 218), with better student-supervisor relationships being correlated with higher levels of self-reported mental wellness. Importantly, a point-biserial correlation found no significant relationship between PPD and student-supervisor relationships; this indicates that students' history of diagnosed mental illness was not associated with their student-supervisor relationship (see Table 9).

**Table 9**

*Relationship Between Previous Professional Diagnoses and the Student-Supervisor Relationship*

| Variable | Group | *n* | Mean ± SD | *n* (of test) | $r_{pb}$ | *p* |
|---|---|---|---|---|---|---|
| PPD | No Previous Diagnosis | 145 | 23.44 ± 7.60 | 218 | -.032 | .642 |
| | Previous Diagnosis | 73 | 22.93 ± 7.72 | | | |

## Discussion

In sum, our findings show that mental distress and mental illness are prevalent and important issues at one large, Canadian, U15, research university. The results of our hypothesis testing, as well as our descriptive statistics, paint an important picture of the mental wellness of graduate students for university administrators, faculty, counselling services, supervisors, graduate students themselves, and anyone who has an interest in the health and well-being of this student population. This is one of the first Canadian studies to explore the mental wellness of an exclusively graduate student sample. These findings are important not only as a snapshot of the mental health and wellness of current Canadian graduate students, but also as a benchmark for further research.

As has been found in other studies, (e.g., Evans et al., 2018; Levecque et al., 2017; Linden et al., 2018), we found that graduate students at this university experienced significant mental health challenges and mental distress, with over 50% of respondents experiencing at least moderate depression or anxiety or both on commonly used measures of current mental distress. We found that, as with the NCHA surveys of 2017, 2018, and 2019 (ACHA, 2017, 2018, 2019), almost one third of respondents had previously been professionally diagnosed with a mental illness. We also found that having a previous diagnosis did increase the odds of reporting current symptoms of mental illness. However, there were still a large number of students meeting the ‘mild’ and ‘moderate’ cutoffs who had not been diagnosed with a mental illness. These students may not have been receiving any formal treatment for their mental distress, which further puts them at risk, as prolonged mental distress or illness can have serious or even fatal consequences. It is also important to note that elevated scores on the PHQ-9 or the GAD-7 does not

necessarily mean that a student has a diagnosable mental disorder. Higher scores on these measures indicate that respondents are experiencing higher levels of symptoms that are often associated with mental illness. It could be that students with higher scores on these measures are experiencing sub-clinical levels of distress that do not warrant a diagnosis of mental illness, or that students do have symptoms of mental illness, but their daily functioning is not affected by these symptoms, and therefore a diagnosis of mental illness would not necessarily be appropriate.

Additionally, we found that approximately one third of all students surveyed reported some level of suicidal ideation, with either occasional or serious thoughts of suicide within the past 12 months; this is a very serious problem, with the very real possibility of suicide ideation leading to suicide attempts and suicide deaths. This self-harm and suicidality in graduate students is often overlooked compared to undergraduate students.

Post-secondary students who identify as non-cisgender, non-heterosexual, and/or as certain racialized groups have been found to have higher levels of self-reported mental illness, lower self-reported mental wellness, and higher levels of suicidality/self-harm (e.g., Evans et al., 2018; Hyun et al., 2006; Jochman, 2019; Linden et al., 2018; Lipson et al. 2018). However, our results show an effect only for non-cisgender respondents and cisgender women. It is important to note that while we did not find significant relationships with more symptoms in all of our categories of marginalization, this does not mean these relationships are not present. It is possible that our small sample sizes for certain marginalized groups such as racialized students and non-cisgender students reduced our ability to find statistically significant relationships. We grouped various

gender identities, sexual orientations, and racial group identities into the broader categories of non-cisgender, non-heterosexual, and other racial groups. Creating these larger groupings to increase sample sizes may have affected our ability to find differences between more precise marginalized groups since certain groups are more marginalized than others. However, it is possible that there is no increased mental distress in some populations at this university. Finally, despite some previous research (e.g., Barreira et al. (2020)), suggesting that length of time in a program is related to mental health problems, our study did not find that.

We did find that better relationships between supervisor and student were associated with fewer symptoms of depression and anxiety, as well as with better self-reported mental wellness. This is similar to what is commonly found in studies of graduate student mental health (e.g., Hyun et al., 2006; Levecque et al., 2017). This important relationship offers a clear route for positively impacting the mental health and wellness of graduate students, both by recognizing the importance of this relationship and by creating deliberate, evidence-based strategies to strengthen positive relationships and manage challenged relationships. Creating programs designed to promote positive and productive relationships between students and supervisors could directly positively impact graduate student mental health and wellness, which is important for both overall health and the productivity of graduate students (Levecque et al., 2017; Schmidt & Hansson, 2018). This finding is also important for current and potential future supervisors. It is important for supervisors to realize the impact their role has on the mental wellness of students and to be prepared to contribute meaningfully, both in individual conversations with students, but also in pushing for academic environments

where graduate student mental health is a priority. Although it was not included in the scope of this manuscript, this relationship has also been found to correlate with students' likelihood of seeking help/accessing services if needed (Hyun et al., 2006), which can also directly influence graduate students' mental wellness.

It should be noted that, although this manuscript does not report on other known challenges for graduate students, such as financial problems and family challenges (e.g., Hyun et al., 2006; Wyatt & Oswalt, 2013), we recognize that the challenges that the graduate student population faces, as well as the needs of this population, are as varied as the students themselves.

**Recommendations**

Drawing from the small body of published research in this area, as well as our own findings from this study, we list common and potentially actionable and effective strategies (see Table 10). Of the seven recommendations, the first four are supported from our study. The remaining three recommendations were outside of the scope of our study, but were important to include on a table intended as a health promotion tool/quick review of existing literature. This list can serve as a guide to the more detailed suggestions in each article. We encourage leaders of graduate programs in Canada to review these strategies and tailor them to their own contexts. All strategies should be created with graduate students in mind and with meaningful inclusion of graduate students and their supervisors in the development and implementation of policies.

In terms of single items from the student-supervisor relationship scale, the three items with the least endorsement from graduate students (in descending order) were: "I feel I can talk to my supervisor about my wellness", with 50.3% agreeing or strongly

agreeing, 17.9% neither agreeing nor disagreeing, and 31.4% disagreeing or strongly disagreeing, “My supervisor is conscious of the number of demands and commitments I have”, with 60.4% agreeing or strongly agreeing, 17% neither agreeing nor disagreeing, and 22.6% disagreeing or strongly disagreeing, and “My supervisor supports my self-care, wellness, and/or work-life balance”, with 65.4 agreeing or strongly agreeing, 20.4% neither agreeing nor disagreeing, and 14.2% disagreeing or strongly disagreeing. Recommendations that could be made specifically from these individual items (in addition to those in Table 10) are that supervisors should develop capacity to be open and comfortable talking to students about their wellness (including mental wellness), which includes letting students know that they are open to talking about these topics if the student wishes to. Another recommendation is to have supervisors check in with their graduate students regularly about the various workload and commitments they have, both academically and in their personal lives, so that they are better able to help graduate students achieve work-life balance and to promote the importance of this balance. Importantly, these recommendations are not just the responsibility of supervisors. Supervisors should be supported by the university with various supports and policies, including applicable training, such as training for supervisors on how to speak with students about the students’ mental wellness, as well as how to guide students to available resources, for both academic and mental health challenges.

**Table 10**

*Recommended Strategies to Promote Graduate Student Mental Wellness*

| Recommendation | Source |
|---|---|
| Review and adopt relevant parts of the new Mental Health Commission of Canada (CMHC) *Standard for mental health and well-being for post-secondary students* | Mental Health Commission of Canada, 2020 |
| Create a strategy to educate supervisors, students, and administrators about mental health issues, and destigmatize mental health challenges with attention to the specific needs of marginalized groups | Evans et al., 2018; Hyun et al., 2006; Peluso et al., 2011 |
| Create strategies to raise awareness of the importance of and strengthen student-supervisor relationships | Hyun et al., 2006; Levecque et al., 2017; Peluso et al., 2011 |
| Develop a 'risk management' model, identifying stressors and groups of students most at risk and creating tailored approaches for them | Levecque et al., 2017 |
| Increase funding and stability of funding for students | Hyun et al., 2006 |
| Provide more support, help and information to graduate students on other, non-academic program challenges, such as work family balance and career management | Evans et al., 2018; Levecque et al., 2017 |
| Model good mental health practices and facilitate peer support and guidance | Evans et al., 2018; Rummell, 2015 |

## Limitations

**[Limitations that were included in both Manuscript 1 and Manuscript 2 were moved to Chapter 5 to limit redundancies in writing.]**

## Conclusion

There has been a steadily increasing drumbeat of concern for the mental health of post-secondary students, and, more recently, of graduate students. Our study is the first of its kind, we believe, to focus only on a Canadian graduate student population, and to survey across all available graduate programs at the study university (not faculty

specific). Thus, our findings offer a unique and current snapshot of the mental health of Canadian graduate students. Our findings reveal, as other studies are beginning to show, that graduate students are experiencing a significant level of mental health challenges and that the supervisory role is one key route to mitigating those challenges. We urge leaders of graduate student programs to survey and report on the health of their own graduate students, develop coherent plans to ameliorate challenges, monitor the results of those implemented plans and continue to share best practices with each other.

## Chapter 4: Manuscript 2

# Graduate Students' Perceived Public Stigma Towards Receiving Treatment for Mental Illness at a Canadian University

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## Abstract

**Background:** Stigmas exist toward people who receive treatment for mental health challenges. Although we often consider university campuses more removed from the biases and prejudices people with mental health challenges face, post-secondary students still perceive varying levels of stigma on university campuses. This study uses a measure of perceived public stigma used in other post-secondary studies, instead applying it to a graduate student sample.

**Methods:** An anonymous, online survey was administered to 394 graduate students at a large, Canadian university. This survey included sections on graduate students' mental wellness, self-reported mental distress, history of mental illness, perceived public stigma, attitudes towards accessing services for mental health challenges, and history of accessing services.

**Results:** Almost 40% of graduate students agreed that receiving treatment for emotional or mental problems carries social stigma. On the adapted measure of the Stigma Scale for Receiving Psychological Help, there was a slight agreement that stigma was present on campus. Cisgender men, students with a diagnosed mental illness, students who scored higher on the PHQ-9 and GAD-7, and students who have accessed the counselling centre on campus all perceived significantly higher levels of stigma. More positive attitudes towards accessing services for mental health challenges was associated with lower levels of perceived stigma.

**Conclusion:** Canadian graduate students do perceive some level of stigma on campus, with certain groups perceiving higher levels. Efforts should be made to explore the impacts perceived stigma has on graduate students' mental wellness, and to mitigate these impacts while working to reduce stigma on campus.



*Keywords:* Perceived Stigma, Mental Health, Mental Illness, Help-seeking, PHQ-9, GAD-7, History of Accessing Services

## Introduction

**[A brief introduction and review of the literature of graduate student mental wellness will be included here when this manuscript is sent to publish. Sections that contained redundant information from Chapter 1 have been removed to avoid unnecessary repetition. Please see Chapter 1 for background information on post-secondary and graduate student mental wellness.]**

### Types of Stigma

There are several different types of stigmas of mental illness, four of which are: actual public stigma, perceived public stigma, personal stigma, and self-stigma. These four types encompass different aspects and perspectives of stigma, and often have different effects. It is important to note that levels of stigma can differ depending on the specific diagnosis of mental illness, as well as visible characteristics of the person being stigmatized against (Major & Eccleston, 2005), which means that, depending on the specific mental disorder or outward appearance of someone, they may be more or less stigmatized against (Corrigan, 2004; Pescosolido et al., 1999). These types of stigma and their effects are all important areas of study, however, in this paper, we will be focusing on perceived public stigma, as students' perceived levels of stigma on campus can be directly compared to the mental wellness, previous diagnosis of mental illness, and symptoms of mental illness that students self-report. It is important to note that perceived public stigma is affected by the other three types of stigma mentioned (actual public stigma, personal stigma, and self-stigma) as they could affect the perception of stigma. Due to the overlap of these other three types of stigma with perceived public stigma, it is difficult to isolate perceived public stigma from the other forms of stigma; therefore, it is

important that any measure of perceived stigma should be viewed as a measure that can both influence and be influenced by other types of stigma. Specifically, self-stigma, or the stigma one holds against themself, can impact the levels of stigma one perceives on campus.

Perceived public stigma, or simply perceived stigma, is the stigma that someone believes (or perceives) is directed towards a certain group by the general public, whether that person is a part of the stigmatized group themselves or not. This perceived stigma can be more, less, or the same as the actual public stigma directed towards a group by the general public depending on how much stigma individuals perceive is directed towards a group (Corrigan, 2004; Golberstein et al., 2008). As perceived public stigma will be talked about in comparison to actual public stigma (the amount of stigma that is actually present), it is important to mention early on, that actual public stigma is more of a theoretical measure (of the "true" levels of stigma). However, since measures of actual public stigma also depend on people's *perceptions* of whether they were stigmatized against, it still relies on perception of stigma, and, as previously mentioned, can be influenced by other forms of stigma.

**The Effects of Stigma**

People's experiences with stigma differ, and the effects of stigma disrupt the lives of some more than others. However, most stigmatized people do experience some disruption, or other challenges that arise from the stigma directed towards them. The effects of stigma are widespread, and worthy of consideration, as they can have serious consequences; these consequences have been grouped into three major categories: social, financial, and medical.

### *Social*

Stigma can lead to social isolation because people who stigmatize against a group often desire to be socially distant from individuals in that group (Martin et al., 2000). This can create situations where graduate students who are thought to be a part of the stigmatized group may experience varying levels of social isolation by being passively and/or actively excluded by friends, peers, colleagues, and classmates (Martin et al., 2000). This stigmatization and exclusion could also be seen towards graduate students from their professors or supervisors, which is important in the graduate student mental wellness context, as it has been shown that graduate students rely heavily on the relationship with their supervisor (Evans et al., 2018; Hyun et al. 2006; Levecque et al., 2017), and that this student-supervisor relationship is important for graduate students' mental health. Exclusion can be due to either implicit or explicit bias/stigma against those with mental illness.

Social isolation can also be demonstrated when those with mental illness do not attend social events in order to avoid being stigmatized against (Major & Eccleston, 2005). This self-exclusion can be a direct symptom of mental illness itself (as may occur in anxiety disorders), but as mentioned, it can also be a secondary effect of the stigma of mental illness wherein people self-exclude or withdraw socially to avoid potential or further stigmatization (Major & Eccleston, 2005). In addition, the social effects of stigma can also be experienced by being excluded or avoided while still being physically present in a social setting (Major & Eccleston, 2005)., such as in an office workplace for employees, or in classes, group projects, or student groups/societies for students. Ultimately, the social isolation that stigma can contribute to could make an already

discriminated against group feel even more isolated, and could prevent them from making and maintaining meaningful social connections. Such connections are crucial to avoid feeling socially isolated, and for the maintenance of good mental health (Kawachi & Berkman, 2001).

### *Financial*

Aside from the social effects of stigma, there are important financial effects as well; however, the financial burdens of stigma are not generally as well known as the financial burdens of mental illness, such as reduced productivity, sick days used for mental illness, and absenteeism (Knapp et al., 2011; Rice et al., 1992). In fact, such known financial burdens of mental illness may actually increase public stigma against people with mental illness as it may be interpreted that they make up an unreliable workforce instead of a population needing consideration.

The stigma and general misunderstanding that people with mental illness experience from coworkers and employers can cause them to lose or quit their job, decrease their productivity, make it more difficult to create strong and lasting relationships with coworkers, and can restrict or prevent their ability to find meaningful employment (Sharac et al., 2010). While Sharac and colleagues' (2010) systematic review focused on what may be considered "traditional employment" such as studies including office jobs, parallels can be drawn to graduate students, who often work one or more various jobs for the university they attend, such as, as instructors, markers, teaching assistants, and/or lab assistants. Graduate students are therefore both students and employees, and must navigate the roles of each. Difficulties with employment overlap with the social consequences of stigma, which can make it harder to feel belonging in the

place of work or study, further reducing the number and strength of the meaningful connections that are important for maintaining good mental health (Kawachi & Berkman, 2001; Sharac et al., 2010).

A study of the perceptions of people with mental illness, conducted by Martin and colleagues (2000), found that 58% of people would not be willing to have a mentally ill co-worker. This may affect not only the feeling of belongingness at work, but could lead to dismissal or leaving a job by choice, which may jeopardize financial stability.

Stigma can affect those with mental illness in their quality of work, their likelihood of keeping a job, likelihood of being promoted, and of having their opinions be both sought out and respected. These effects can cause financial strain or loss of financial security. These financial consequences are so important because income is a well-known social determinant of health, and loss or reduction of income is therefore a health concern (Benzeval & Judge, 2001; Ettner, 1996). This is especially concerning when reduction/loss of income is a comorbidity alongside pre-existing mental illness.

Unfortunately, the financial impacts do not end at stigma's effects on personal employment. Another important consideration is the public and governmental perception of where health funds should be allocated (Sharac et al., 2010). Because mental health is often more stigmatized than physical health, there may be less funding from government sources and private donations. This is not to say that physical illnesses are not stigmatized, it is frequently the opposite, but many physical illnesses are less stigmatized against, more publicly supported, and generally more accepted than mental illnesses (Teachman et al., 2006). This can result in volunteer organizations for mental illnesses receiving less financial and public support than similar organizations dedicated to

physical illnesses (Stuart et al., 2012). Ultimately this results in mental health programs being either unfunded or underfunded compared to programs for ailments that have less attached stigma.

These financial effects create additional barriers to seeking help since in Canada, as in many other countries, many psychologist and therapist services require you to either have private insurance or to pay out of pocket. Canada also does not currently have a national pharmacare policy, which creates additional financial barriers for those seeking pharmaceutical treatment for mental illness. In addition to paying for various methods of treatment, assessments/appointments needed to secure certain accommodations can also be expensive.

### *Medical*

Medically, the effects of stigma against people with mental illness are two-fold. Stigma can reduce the likelihood of initially seeking help for symptoms of mental illness, as it has been identified as a barrier to receiving treatment for people aged 18-24 (Leaf et al., 1987), and it can also reduce adherence to treatment plans for those who have been prescribed treatment for mental illness (Sirey et al., 2001). By reducing both the seeking of and adherence to treatment, stigma can severely impair the healthcare response to mental illness.

## Stigma's Effect on Treatment

The combination of the social, financial, and medical effects of being stigmatized against those who have mental illness, creates an increasingly large barrier to receiving the support and treatment they need. Alone, any of these factors would create hardship and difficulties, but together, they exacerbate the risks of mental illness by reducing

access, adherence, and support for both therapeutic and pharmaceutical treatment of their mental illness. It is for these reasons that it has been said that for many with mental illness, the consequences of stigma of mental illness can be worse than those of the illnesses themselves (Thornicroft et al., 2016), since most mental illnesses have viable treatments and stigma is frequently cited as a reason someone is unwilling or unable to receive treatment (Gulliver & Christensen, 2010). Stigma has been described as the primary deterrent to seeking help (Gulliver & Christensen, 2010). Because of this, mental illness that could have been well managed, may now result in mental crisis.

Stigma's combined effect on treatment could be of particular concern within graduate studies, as many of these students may be away from their usual support groups, less able to connect and build meaningful connections with peers or their supervisor, limited in their ability to access and pay for care, and have more negative attitudes towards accessing services, depending on how much stigma they experience and perceive.

**Perceived Stigma in University Populations**

Several researchers have studied the levels of perceived stigma that exist among university populations (e.g., Golberstein, et al., 2008; Komiya et al., 2000), but it is still an area requiring further research. Specifically, studies on the levels of perceived stigma among graduate student only samples are lacking, as existing studies with post-secondary samples either do not differentiate between undergraduate students and graduate students (e.g., Golberstein et al., 2008), or include only undergraduate students (e.g., Komiya et al., 2000). Studying the stigma that graduate students perceive on campus, as well as treating them as their own distinct demographic group for sampling is important.

Increased focus on graduate students as their own demographic could lead to a greater understanding of how this group and their needs differ from undergraduates, and allow future research and policies to be better informed.

The Stigma Scale for Receiving Psychological Help (SSRPH) was designed by Komiya and colleagues (2000) to measure the levels of perceived public stigma associated with seeking help from a psychologist. Variations of the SSRPH have been used in many studies (e.g., Golberstein et al., 2008; Komiya et al., 2000; Pinto et al., 2015; Pyne et al., 2004; Vogel et al., 2005). The levels of perceived stigma measured by the SSRPH have been found to vary in the different demographic groups that it has been used in.

The SSRPH has been used to measure the perceived public stigma of university students and differences on the measure have been found in certain demographic groups within the sample population of post-secondary students. Komiya and colleagues (2000) used the SSRPH with an exclusively undergraduate student sample, and Golberstein and colleagues (2008) used an adapted version of the SSRPH in a sample that included both undergraduate and graduate students. Golberstein and colleagues (2008), found elevated perceived stigma scores in international students compared to domestic students, in older students compared to younger students, in men compared to women, and in those who have probable current mental health issues compared to those who don't. Golberstein and colleagues' 2008 study included graduate students, however, they did not differentiate between undergraduate and graduate students in their results. This is frequently seen with studies of university students' mental health and is a limitation when considering how best to address graduate student mental health and wellness, as there are differences

between undergraduate and graduate programs (Linden et al., 2018; Wyatt and Oswalt, 2013). The SSRPH has also been used with other samples unrelated to the scope of this manuscript, such as samples of adolescent girls (e.g., Pinto et al., 2015) and people diagnosed with depression (e.g., Pyne et al., 2004).

**Conclusion**

Due to the negative effects of stigma, and the lack of Canadian literature in the area, the SSRPH was modified and included to measure levels of perceived stigma in our Canadian graduate student population, and to compare these levels of perceived stigma with respondents' demographic categories and other relevant variables, as seen in our hypotheses.

**Hypotheses**

We hypothesized that: 1) international students, cisgender men, and older students will perceive significantly higher levels of stigma compared to domestic students, cisgender women, and younger students respectively, 2) students who have accessed the campus counselling centre will perceive significantly lower levels of stigma than students who have never accessed the campus counselling centre, 3) students who scored higher on an attitudes towards accessing services scale will perceive significantly lower levels of stigma than students who scored lower this scale, 4) students who have a diagnosis of mental illness and students who scored higher on the PHQ-9 and the GAD-7 will have significantly higher perceived stigma scores compared to students who have not been diagnosed with a mental illness and who scored lower on these scales respectively, and 5) among students who have a previous professional diagnosis of mental illness, students who have received treatment in the past 12 months will have significantly lower

perceived stigma scores compared to those who have not sought treatment. The fifth hypothesis (receiving treatment in the past 12 months) was restricted to those who have been previously professionally diagnosed with a mental illness, since this population is the most likely to be currently receiving treatment.

## Methods

**[Repeating information in this section was removed to reduce redundancies in the writing. Please see Chapter 2 for detailed methods.]**

### Measures

**[Measures that were included in both manuscripts (PHQ-9, GAD-7, and PPD) were removed to reduce redundancies. Please see Chapter 2 for descriptions of the measures used in both Manuscript 1 and Manuscript 2.]**

#### *Adapted Stigma Scale for Receiving Psychological Help (SSRPH-A)*

The first measure was the adapted Stigma Scale for Receiving Psychological Help (SSRPH). This stigma scale was originally designed by Komiya and colleagues (2000) and measured the perceived stigma of receiving treatment from a psychologist for emotional or interpersonal problems. The SSRPH was adapted by Golberstein and colleagues (2008) to measure the perceived stigma of receiving treatment for any emotional or mental health problem. This adapted version of the SSRPH, or SSRPH-A as it will be referred as to avoid confusion, was used in our study to measure the perceived public stigma on the university's campus. We also further altered the SSRPH-A to remove gendered language.

The SSRPH-A was used because it measured the perceived stigma of receiving treatment for emotional or mental problems, whereas the original SSRPH measured the

perceived stigma of receiving treatment from a psychologist for emotional or interpersonal problems. The SSRPH-A was more suited for university campuses, as many students may seek treatment that is not specifically with a psychologist, especially since counselling services on campus often offer access to various mental health professionals.

On the SSRPH-A, students were asked to respond to what degree they disagree or agree with statements regarding stigma on campus, for example "Receiving treatment for emotional or mental problems carries social stigma". Each of the five scale items had four response options: *Strongly Disagree* (0), *Disagree* (1), *Agree* (2), *Strongly Agree* (3). The individual scores were summed for each respondent, giving a continuous variable with a range from 0-15; anchors for scores are as follows: scores of 0 are interpreted as Strongly disagree, 5 Disagree, 10 Agree, and 15 Strongly agree. Higher scores indicate higher levels of perceived stigma on campus, and lower scores indicate lower levels of perceived stigma. Mean substitution was used for missing data when only one of the five items was missing, and was performed for three respondents. If respondents were missing two or more items, they were removed from analysis. Our SSRPH-A had good internal reliability, with a Cronbach's alpha of .86, which is comparable to the internal consistency of .72 found by Komiya and colleagues (2000), and the internal consistency of .74 found by Golberstein and colleagues (2008).

***Attitudes Towards Accessing Services***

This survey also included a very brief scale of attitudes towards accessing services for mental wellness challenges, which, as mentioned in Chapter 1, are sometimes referred to as willingness to seek help scales. Six questions, adapted from Hyun and colleagues (2006), were included in the full survey, but only the two questions that

specifically applied to seeking treatment for an emotional or mental wellness concern were used to create a two-item attitudes towards seeking treatment scale. Graduate students were asked to respond to "I would seek help for an emotional problem", and "I would seek help for a problem with my mental wellness". Response options were either *No* (0) or *Yes* (1). The scores of both questions were summed to create a continuous variable with a range of 0-2. This brief attitudes scale had a Cronbach's alpha of .74.

***Stand-Alone Questions***

Stand-alone questions from this dataset were also used for this study. History of accessing services was measured by asking "If you have been professionally diagnosed with a mental illness, have you received treatment (medication, counselling, etc.) in the past 12 months?", and "Have you ever accessed services from the counselling centre?". Students were also asked to disclose any history of diagnosed mental illness by answering: "Have you ever previously been diagnosed by a mental health professional as having one or more mental disorders?". Demographic information included in the original dataset (see Table 1) was also used.

**Table 1**

*Participant Demographics*

| Demographic/Characteristic | *n* | % |
|---|---|---|
| Gender | | |
| Cisgender Woman | 270 | 70.5 |
| Cisgender Man | 103 | 26.9 |
| Non-Cisgender | 10 | 2.6 |
| Age | | |
| 19-24 | 139 | 36.2 |
| 25-30 | 164 | 42.7 |
| 31-36 | 51 | 13.3 |
| >36 | 30 | 7.8 |
| Sexual Orientation | | |
| Heterosexual | 289 | 77.3 |
| Bisexual | 51 | 13.6 |
| Queer | 10 | 2.7 |
| Gay | 9 | 2.4 |
| Asexual | 6 | 1.6 |
| Lesbian | 5 | 1.3 |
| Other Sexual Orientation | 4 | 1.1 |
| Student Type | | |
| Domestic Student | 326 | 83.0 |
| International Student | 67 | 17.0 |
| Level of Study | | |
| Masters Student | 257 | 65.4 |
| PhD Student | 136 | 34.6 |
| Program Type | | |
| Research-Based | 269 | 68.4 |
| Course-Based | 124 | 31.6 |
| Student Faculty | | |
| Science | 117 | 30.0 |
| Health | 85 | 21.8 |
| Management | 62 | 15.9 |
| Medicine | 29 | 7.4 |
| Computer Science | 24 | 6.2 |
| Engineering | 19 | 4.9 |
| Agriculture | 15 | 3.8 |
| Arts and Social Sciences | 14 | 3.6 |
| Architecture and Planning | 13 | 3.3 |
| Other PhD Programs | 12 | 3.1 |

## Statistical Analyses

For our analyses, statistical tests were conducted using SPSS 25. To test our hypotheses, we used both point-biserial correlation tests and Spearman's rank order (Spearman's rho) correlation tests. The analyses of the relationships between the continuous variable of perceived stigma and our dichotomous variables of student classification, gender identity, use of the counselling centre, history of mental illness, and history of receiving treatment were analyzed using point-biserial correlation. The analyses of the relationships between the continuous variable of perceived stigma and the continuous variables of age, attitudes towards accessing services score, PHQ-9 score, and GAD-7 score were analyzed using Spearman's rho correlation. Spearman's rho correlation was used in place of Pearson's r correlation because the variables did not meet the assumption of normality for a parametric test, as they were skewed.

# Results

The frequencies and percentages of each response for all five items on the SSRPH-A were calculated and can be seen in Table 2. The first item, "Receiving treatment for emotional or mental problems carries social stigma" had the greatest percentage of "agree" or "strongly agree" responses (39.8% combined). The second item, "It is seen as a sign of personal weakness or inadequacy to receive treatment for emotional or mental problems" had the greatest percentage of "disagree" or "strongly disagree" responses (81.3% combined). Table 2 also shows the mean and standard deviation of each item. The overall mean and standard deviation of the summed perceived stigma score was 5.33+/- 3.29. Since the mean score was above 5 (Disagree), this demonstrates that students slightly agreed that stigma against people who receive

treatment for emotional or mental challenges was present on this university campus, although this number was relatively close to disagreement. However, importantly, as seen in the first item, almost 40% of respondents agreed or strongly agreed that seeking treatment for an emotional or mental problem does carry social stigma, which indicates that while students may have disagreed with some of the items more than others, they do believe that some form of social stigma exists. Of the total 394 respondents, 352 (89.34%) responded to four or more items of the SSRPH-A, and were included in our analyses. Sample sizes for our analyses varied depending on the number of graduate students who responded to the variables being compared with perceived stigma.

**Table 2**

*Means, Standard Deviations, and Frequencies of Individual Items of the SSRPH-A for 352 Respondents*

| Item | Mean ± SD | Strongly Disagree n (%) | Disagree n (%) | Agree n (%) | Strongly Agree n (%) |
|---|---|---|---|---|---|
| 1. Receiving treatment for emotional or mental problems carries social stigma | 1.35 ± .83 | 49 (13.9) | 163 (46.3) | 108 (30.7) | 32 (9.1) |
| 2. It is seen as a sign of personal weakness or inadequacy to receive treatment for emotional or mental problems | 0.81 ± .83 | 147 (41.8) | 139 (39.5) | 52 (14.8) | 14 (4.0) |
| 3. People will see a person in a less favorable way if they come to know that the person has received treatment for emotional or mental problems | 1.22 ± .83 | 71 (20.2) | 150 (42.6) | 112 (31.8) | 19 (5.4) |
| 4. It is advisable for a person to hide from others that the person has been treated for emotional or mental problems | 1.00 ± .85 | 108 (30.7) | 154 (43.8) | 71 (20.2) | 19 (5.4) |
| 5. People tend to like less those who are receiving professional help for emotional or mental problems | 0.95 ± .76 | 100 (28.4) | 181 (51.4) | 61 (17.3) | 10 (2.8) |

The hypotheses were tested, and a table was created for each of the specific tests. The analyses of student classification, gender identity, use of the counselling centre, history of mental illness, and history of receiving treatment were analyzed using point-biserial correlation and are reported in Table 3. The analyses of the age, attitudes towards

accessing services score, PHQ-9 score, and GAD-7 score were analyzed using Spearman's rho correlation and are found in Table 4.

Using point-biserial correlation, we found that there was no significant correlation with perceived stigma for domestic/international student status, nor for 12 month history of treatment for those with a previous diagnosis ($r_{pb}$ = -0.014 and 0.028 respectively). In these same analyses, the variables of gender identity, history of accessing the counselling centre, and history of mental illness all showed significant correlations. Identifying as a cisgender man, having accessed the counselling centre at least once before, and having been professionally diagnosed with a mental illness were all associated with higher levels of perceived stigma ($r_{pb}$ = 0.174, 0.116, 0.189 respectively).

For the variables analysed with Spearman's rho, age was found to not be significantly correlated to perceived stigma ($r_s$ = 0.084). However, analyses of the other variables found significant correlations between perceived stigma and the scales of attitudes towards accessing services, PHQ-9 score, and GAD-7 score. Scores on the attitudes towards accessing services scale were negatively correlated with perceived stigma, with lower levels of perceived stigma associated with more positive attitudes towards accessing services ($r_s$ = -.135). Both the PHQ-9 and GAD-7 scores were positively correlated with perceived stigma, with higher levels on these scales (higher levels of depressive/anxiety symptoms) related to higher levels of perceived stigma ($r_s$ = 0.230 and 0.193 respectively).

**Table 3**

*Correlations Between Perceived Stigma and Student Status, Gender Identity, Use of Counselling Centre, History of a Previous Diagnosis, and 12 Month History of Receiving Treatment*

| Characteristics | *n* (individual) | Mean ± SD | $r_{pb}$ | *n* (of test) | *p* |
|---|---|---|---|---|---|
| Student Status | | | | | |
| Domestic | 297 | 5.35 ± 3.34 | - .014 | 351 | .399 |
| International | 54 | 5.22 ± 3.06 | | | |
| Gender Identity | | | | | |
| Cisgender Women | 246 | 4.96 ± 3.11 | .174 | 336 | .001 |
| Cisgender Men | 90 | 6.22 ± 3.34 | | | |
| Have you ever accessed the Counselling Center? | | | | | |
| No | 255 | 5.10 ± 3.30 | .116 | 352 | .015 |
| Yes | 97 | 5.95 ± 3.20 | | | |
| Previously Professionally Diagnosed? | | | | | |
| No | 241 | 4.91 ± 2.99 | .189 | 351 | < .001 |
| Yes | 110 | 6.25 ± 3.72 | | | |
| Received treatment in past 12 months?* | | | | | |
| No | 29 | 6.07 ± 3.74 | .028 | 110 | .384 |
| Yes | 81 | 6.31 ± 3.74 | | | |

***Analysis includes only students who indicated they had previously been professionally diagnosed with a mental illness**

**Table 4**

*Correlations Between Perceived Stigma and Age, Attitudes Towards Accessing Treatment, PHQ-9 score and GAD-7 score*

| Characteristics | *n* | Mean | SD | $r_s$ | *p* |
|---|---|---|---|---|---|
| Age | 352 | 27.61 | 5.76 | .084 | .057 |
| Attitudes towards accessing services | 352 | 1.40 | .81 | - .135 | .006 |
| PHQ-9 Score | 352 | 9.28 | 6.10 | .230 | < .001 |
| GAD-7 Score | 352 | 8.95 | 5.01 | .193 | < .001 |

Descriptive statistics (not tested for significance) were also created, comparing mean perceived stigma scores between faculties (see Table 5) (the sample size for this question was 350, with a total mean of 5.33 +/- 3.30). Medicine had the highest perceived stigma scores followed by Agriculture and Engineering, while the three lowest in descending order were Health, Arts and Social Sciences, and other PhD programs. These are descriptive analyses and therefore apparent differences may not be statistically significant. Setting that aside, "other PhD programs" may have lower perceived stigma scores than other faculties as they include only PhD students, unlike the rest of the faculties, which include both masters and PhD students.

**Table 5**

*Mean Perceived Public Stigma Scores by Faculty*

| Faculty | *n* | Mean | SD |
|---|---|---|---|
| Medicine | 27 | 6.96 | 3.73 |
| Agriculture | 14 | 6.71 | 3.85 |
| Engineering | 17 | 6.35 | 3.26 |
| Science | 103 | 5.68 | 3.34 |
| Computer Science | 14 | 5.29 | 3.27 |
| Management | 57 | 5.19 | 2.92 |
| Architecture and Planning | 11 | 4.91 | 3.27 |
| Health | 82 | 4.55 | 3.20 |
| Arts and Social Sciences | 14 | 4.21 | 2.26 |
| Other PhD | 11 | 3.09 | 2.26 |

## Discussion

Among studies using a version of the SSRPH, to our knowledge this is the first study to use this measure with a population made up of exclusively graduate students at a Canadian university, and the only study focusing on the relationships of perceived stigma with self-reported mental illness, history of seeking help, and attitudes towards accessing services among an exclusively graduate student population. Therefore, although the

inferential analyses are important, the descriptive information about the levels of perceived stigma at a large Canadian university will also be important in order to have benchmark Canadian graduate student levels for any potential future studies done on the topic, both in Canada and elsewhere.

Our study showed a mean perceived stigma score of 5.33, compared to 5.79 (e.g., Komiya et al., 2000) and 5.60 (converted from 10.60 to match the correct scoring of the SSRPH) (e.g., Vogel et al., 2005) in two separate studies of undergraduate students at American universities, and 6.48 in a sample of both undergraduate and graduate students in the United States (e.g., Golberstein et al., 2008). Variations of the SSRPH have been used in other studies as well, but their populations are not related to graduate students and thus have not be used for comparison.

There could be several reasons why our mean perceived stigma scores appear to be lower than those found in other studies, such as being a sample from a Canadian university, and having our sample consist only of graduate students. Graduate students have been shown to have higher levels of mental health literacy than undergraduate students (Rafal et al., 2018), which could explain why less stigma was perceived in our sample than in other studies, since all three of the aforementioned studies included undergraduates in their samples. Additionally, scores may appear to be lower due to a general reduction in perceived stigma over time (our study was conducted more than a decade after the comparison studies). More recent studies exploring perceived stigma exist (e.g., Scheidegger, 2020; Wada et al., 2019), but do not use the same measure of perceived stigma, and are more difficult to use as comparisons.

Considering demographic differences, we found that cisgender men perceived higher levels of stigma compared to cisgender women, which is consistent with other studies that have also used variations of the SSRPH (Golberstein et al., 2008; Komiya et al., 2000). This could be related to findings that cisgender men are often less willing to access services (Galdas et al., 2005; Oliver et al., 2005), but could also point to a higher level of actual public stigma towards cisgender men who seek treatment for mental health challenges.

Contrary to our hypothesis, no significant difference was found in levels of perceived stigma between international students and domestic students. There are several possible reasons why no significant difference was found in our study (unlike the results in Golberstein and colleagues' 2008 study). "International student" is a broad term that encompasses any student who is not a permanent resident of the institution's home country, in this study's case Canada, and it is not possible to compare the demographical/regional makeup of our international student cohort with that of the dataset from the American university used in the Golberstein and colleagues' study (2008). A Canadian university may attract international students from different regions than an American university might, and considering both Canada and America are large countries, it is possible that even different regions, provinces, territories, and/or states within both countries might attract international students from different countries. It is also important to note that for our study, Canadian students are considered the domestic student group, while American students are considered international students, which could also help explain our differing results (American students only made up 3.8% of

our study population, whereas they made up 85.4% of Golberstein and colleagues' study population).

In our Spearman's rho analyses we did not find the significant correlation between perceived stigma and age seen in another study (e.g., Golberstein et al., 2008). Our study was conducted with an entirely graduate student sample, which could explain why there was no correlation found. Graduate students tend to, on average, be older than undergraduate students. The mean age in our study was 27.61 compared to 18.4 in the study conducted by Komiya and colleagues (2000), which sampled only undergraduates, and the study conducted by Golberstein and colleagues (2008), which sampled both undergraduate students and graduate students, had over half of their respondents between the ages of 18-22.

Levels of perceived stigma were significantly positively correlated with the history of a previous diagnosis, PHQ-9 scores, and GAD-7 scores. This indicates that those who have a history of mental illness, or those who are reporting acute symptoms of mental illness (PHQ-9 and GAD-7 scores) perceive more stigma on campus. This is likely because those who have been diagnosed and those who are experiencing symptoms of a diagnosable mental illness are more likely to be aware of, or be the target of, the public stigma and discrimination that accompanies mental illness and seeking help for mental illness. These results are consistent with each other and may indicate that the level of actual public stigma is higher than the mean level of perceived stigma reported by our respondents, since those who experience a specific stigma are likely the most accurate in reporting it and most affected by it. It is also possible that the levels of stigma that were perceived by students who scored higher on the PHQ-9 and GAD-7 measures were

influenced by their elevated symptoms of mental illness. It is important when interpreting correlations that you consider the different possibilities and directions of the correlation.

A significant negative correlation was found between attitudes towards accessing services and perceived stigma. We found that respondents who perceived less stigma showed more positive attitudes towards accessing services for their mental wellness. This is not surprising since people would likely be more willing to access services if they do not perceive a negative stigma attached to service use. Although this is an important finding, we did not compare this variable to actual history of accessing services among the whole population, so further study is warranted into whether more positive attitudes towards accessing services is correlated with increased service use.

Contrary to our prediction, students who reported *having ever accessed* the counselling centre on campus are more likely to have higher levels of perceived stigma. At first glance, this may appear to conflict with our result that found more positive attitudes towards accessing services *willingness to seek help* was negatively correlated with perceived stigma; however, as mentioned, attitudes towards accessing services and history of service use are two different measures. Because students who have accessed the counselling centre to seek treatment for their mental health are now part of the stigmatized group, they may be more aware than their peers of the levels of actual public stigma associated with use of mental wellness services.

To test whether or not there was a correlation between accessing the counselling centre and history of a previous professional diagnosis, a post-hoc chi-square analysis was done between these variables. The results showed a significant association between having a previous professional diagnosis and history of accessing the counselling centre

$x^2$ (1) = 16.12 p <0.001. Based on an odds ratio, it was found that students who have a previous diagnosis were 2.68 times more likely to have ever accessed the counselling centre on campus than students without a previous diagnosis. This test supports our interpretation that students who are a part of the stigmatized group are more likely to perceive higher stigma, since both respondents with a PPD and those who have sought treatment perceive increased stigma on campus. However, it is important to remember that this test was done post-hoc so further testing in this area may be warranted.

Among students who have been previously professionally diagnosed with a mental illness, there was no correlation found between perceived stigma and whether or not the student had received treatment (counselling, medication, etc.) in the past 12 months. Therefore, although students who have a diagnosed mental illness do perceive higher levels of stigma, these higher levels of perceived stigma do not appear to dictate whether or not students receive treatment, at least on a yearly basis. This is a promising result as it indicates that within this study sample, even though students with a diagnosed mental illness perceive higher levels of stigma on campus, it does not appear to have prevented them from accessing treatment. However, it is important to note that this does not mean that this increased level of perceived stigma has no adverse effects on graduate students.

**Limitations**

**[Limitations that were included in both Manuscript 1 and Manuscript 2 were moved to Chapter 5 to limit redundancies in writing.]**

There is a specific limitation of the SSRPH scales that should be addressed. The SSRPH measures the level of perceived stigma, which was relatively low in our sample;

however, perceiving lower levels of stigma could be because there is less actual public stigma, or because respondents failed to perceive the level of actual public stigma that is present on campus. Given that graduate students are known to have higher mental health literacy (Rafal et al., 2018), and are generally more aware of mental illness than undergraduates, we believe that the lower levels of perceived stigma found in this study (compared to other studies) are likely due to genuinely lower levels of stigma on campus among most graduate students, and not due to graduate students being ignorant of the levels of stigma for seeking psychological help. That being said however, our study found that almost one fifth of respondents did agree or strongly agree that on their university campus "it is seen as a sign of personal weakness or inadequacy to receive treatment for emotional or mental problems", so the campus was certainly not free of stigma. Moreover, it is likely that actual stigma is higher than our mean scores as we believe those who are part of stigmatized groups are likely to perceive levels of the actual public stigma on campus more accurately. Although we believe graduate students are not ignorant of the presence of stigma on campus, those who are not stigmatized against are likely not as aware of the presence and the pervasiveness of stigma as those who face it. As an additional limitation, these perceived stigma scores could also be influenced by a social desirability bias, where respondents answer questions in a way they perceive as being the most socially desirable.

## Conclusion

There are several conclusions we can draw from this study; first, graduate students at a Canadian university perceive relatively low stigma levels towards seeking psychological help. This is both in relation to other studies that have used the SSRPH,

and in terms of being just over a third of the total possible score, which indicates a slight agreement that stigma exists on campus. This is an important finding because graduate students are a group of students who will soon become leaders in their fields and may one day be faculty members, educators, and supervisors themselves. It is therefore a positive finding that this population is relatively low in stigma, both in terms of perceiving stigma towards themselves and others. This suggests graduate students feel relatively little stigma towards others, although future studies using measures of personal stigma would be better suited to making conclusions on this point.

Despite this positive finding, we did find that students who are a part of the stigmatized group, and those who have higher self-reported mental distress perceive higher levels of stigma, suggesting that the mean perceived stigma score may be underestimating the levels of actual public stigma. This is an important finding. Mental health service providers, university faculty members, graduate students, and anyone who interacts with graduate students should be aware of this in order to find ways to reduce the levels of actual public stigma that exists on campus and to support individuals who are stigmatized against to both find and accept the help and services that are available. Experiencing this stigma likely has adverse effects on students' mental wellness. Additionally, lowering the actual stigma experienced by students is important because our study found that graduate students who perceived lower levels of stigma towards seeking psychological help reported more positive attitudes towards accessing services for mental health challenges. This could indicate that perceived stigma is a barrier to help-seeking behaviour as has been suggested by others (Clement et al., 2015; Gulliver & Christensen, 2010), although this finding would need to be further explored.

# Chapter 5: Discussion

## Summary of Manuscript 1 and Manuscript 2 Discussions

Both Manuscript 1 and Manuscript 2 explored the self-reported mental wellness and mental illness of graduate students, but in distinct ways. Manuscript 1 addressed the main research questions and hypotheses about the mental wellness of graduate students at the study university that were presented in the introduction, and Manuscript 2 explored a secondary set of hypotheses relating to the levels of stigma that are perceived by graduate students on this university campus. Please refer to Manuscript 1 (Chapter 3) and Manuscript 2 (Chapter 4) for their respective in-depth discussions.

## What did we find?

Our findings indicated that many respondents experienced some symptoms of depression or anxiety on the self-report scales, PHQ-9 and GAD-7, with over half scoring at or above the "moderate" level on either depression, anxiety, or both. Almost one third had been previously diagnosed with a mental illness and the same number reported some degree of suicidal ideation in the past 12 months. These findings show significant mental unwellness within this population, but due to the cross-sectional nature of the study, we are unable to address whether the mental health challenges are increasing in this population. Further, we found that being a cisgender woman, being non-cisgender, and having a poorer relationship with one's supervisor were all associated with having more symptoms of depression and/or anxiety.

For self-reported mental wellness, we found that the modal response was 3 when we asked students to rank their mental wellness from 1-5 (1 being the worst and 5 being the best). 84.5% of respondents rated their mental wellness as a 3 or higher, indicating

that although there were elevated levels of mental distress as measured by the PHQ-9 and GAD-7, most graduate students are doing alright or well in their mental wellness, which could indicate, as previously mentioned, that some students with elevated scores on the PHQ-9 and GAD-7 measures are subclinical and/or are not experiencing disruption, even in the presence of symptoms of mental illness. However, the 40.6% of students who responded with a 3 (or neither best nor worst) on this single-item question of mental wellness would not be included in what Keyes would consider flourishing on the Mental Health Continuum. Just because students may not meet the requirements for a diagnosis of mental illness, does not mean that we cannot improve their mental wellness. The 56% who responded with 1, 2, or 3 on this item should be considered for mental health promotion efforts to help students not simply survive, but thrive in their graduate programs.

When comparing students' scores on the self-reported mental wellness item with their scores on the PHQ-9 and GAD-7 scales (symptoms of mental illness), it is important to remember, as per the Mental Health Continuum, mental wellness and mental illness are not opposite ends of the same spectrum/continuum, and as the model shows, it is possible to flourish while experiencing mental illness or symptoms of mental illness. For example, in our study, it was possible for students to both score high on symptoms of mental illness and also rate their own mental health as relatively good.

For perceived stigma, it was found that there is a slight agreement that stigma exists on campus, but as can be seen in Table 2 (Manuscript 2), respondents varied in their agreement or disagreement with the five items, with some items being agreed with more than others. We found that students who indicated more positive attitudes towards

accessing services perceived lower levels of stigma. Alternatively, being a cisgender man, having a diagnosis of mental illness, having accessed the counselling centre on campus, and scoring higher on the PHQ-9 and GAD-7 scales were all correlated with perceiving higher levels of stigma. (It should be noted, that in Manuscript 1, gender identity groups used in analyses were cisgender men, cisgender women, and non-cisgender respondents, and in Manuscript 2, the gender identity groups used in analyses were cisgender men and cisgender women.)

**What did we learn?**

Although many of our hypotheses were based on results that have been found elsewhere in graduate student studies, or generalized from undergraduate/post-secondary student studies, the statistically significant results we found demonstrate that these relationships are also found in a graduate student only sample at a Canadian university, which is a population that has been very little studied. We learned that different demographic groups experience disproportionate levels of symptoms of mental illness, and that similarly, differences between levels of perceived stigma also varied among certain demographic groups. We learned that the student-supervisor relationship was associated both with the mental wellness of graduate students, and the symptoms of mental illness that graduate students experience. This relationship is therefore important to consider for the promotion of mental wellness for graduate students.

**Health Promotion Strategies**

Health promotion, especially mental health promotion, is the underlying focus of this thesis. The findings from both Manuscripts 1 and Manuscript 2 should be discussed in a way that focuses on not just using the information to better inform ourselves and

others, but to create actionable change that promotes the mental wellness of graduate students. In this section we will talk about the meaningful involvement of graduate students, implications for health promotion, levels of prevention, the Mental Health Continuum, and knowledge mobilization of our findings.

### *Meaningful Involvement of Graduate Students*

The idea of meaningful consultation and involvement is a concept discussed by Paulo Freire in his book, "The Pedagogy of the Oppressed" (1972) (introduced in Chapter 1), in which Freire emphasizes the involvement of the marginalized, disadvantaged, and/or the oppressed as active partners in the actions, policies, or activities that are meant to benefit them. This idea of including the people most affected by decisions into the decision making process is not unique to Freire, and can also be seen in the phrase, "nothing about us without us", which has been used by many marginalized groups/movements, specifically the international disability movement (e.g., Yeo & Moore, 2003).

Graduate student input has been integral part of the development and delivery of the survey. Although the methods section of this thesis does not go into great detail on the development of this survey, graduate students were essential to each step of this survey, which serves as an example of the effectiveness and importance of including the people most affected by decisions and policies into the decision making process.

Caitlyn Ayn, a previous graduate student of Dr. Robinson's began the development of this survey, and also conducted a scoping review that greatly aided the final selection of questions to be included. I continued Caitlyn's work and conducted my own scoping review to complement Caitlyn's, which also further helped the development

of the methods for survey deliverance as well as the selection of questions. I also had meetings with several fellow graduate students who conducted two single faculty studies of graduate student health and wellness (including mental wellness) at the study university. They were very kind and shared their survey and results/findings, as well as their recommendations and experiences from their own survey with me. This helped provide a larger pool of potential questions to select from for the final survey, and also provided strategies to reach more graduate students.

The association of graduate students at the study university also met with me and provided their feedback on my proposed questions and sections, in addition to helping out with the rollout and recruitment of the survey. In short, including myself (as I am also a graduate student), graduate students were involved in the conceptualization of this study, initial research, survey development, feedback, testing (for time and content), and delivery of this survey, and I, along with my supervisor, analyzed, reported on, discussed, and made recommendations on the findings of this survey. These findings would not be possible if not for the hard work of many graduate students, and graduate students should continue to be a part of the conversation when policy decisions are made.

We believe that graduate students, especially marginalised graduate students, must be active partners in decisions concerning them and their mental wellness in order to truly address the root problems and inequities. The issues identified, policy recommendations, and recommendations on the meaningful involvement of graduate students, are separated by the topics of historically underrepresented and marginalized students, perceived stigma, and student-supervisor relationship. Although repetitive, it is

important to address how Freire's ideas of meaningful inclusion can be applied to each of the following situations.

**Historically Underrepresented and Marginalized Students.**

Our findings showed specific disproportionate levels of mental distress in certain historically underrepresented and marginalized groups (specifically gender identity). Our findings, along with findings of other studies with post-secondary students, indicate that because such groups have often experienced inequitable treatment, and may face specific challenges, approaches to address mental wellness should be specific and sensitive to the historically underrepresented and marginalized groups that are present on campus. For example, if approaches are being taken to address gender, sexual orientation, and racial differences in the experience of mental distress or mental illness, not only should those approaches be sensitive to the gender, sexual, and racial identities of students, but should also include the meaningful consultation with students of different sexualities and gender and racial identities, especially those most marginalized. This consultation should take both the experiences of these students and their needs into consideration, and if possible should include these students in decision making roles.

**Perceived Stigma.**

The findings around perceived stigma indicate that while low, graduate students do still perceive levels of stigma, especially if they are members of the stigmatized group. The implication that the stigmatized group (in this case, graduate students who have received treatment for mental illness or distress) may more accurately measure the level of actual stigma on campus is important, as it means that stigma is likely a larger problem

than non-stigmatized graduate students and university faculty/staff may realize. This is especially true when you consider the barriers stigma creates in accessing care.

Any action taken to reduce the stigma that exists on campus should meaningfully include members of the stigmatized group for their thoughts and ideas about how to help reduce this stigma, as they have the lived experience of this stigma, and are likely more knowledgeable not only about the levels of stigma, but also the barriers it created and continues to create for them and other graduate students.

**Student-Supervisor Relationship.**

The importance of this relationship and proposed changes that could be implemented are discussed in more depth in the discussion in Manuscript 1, however, this relationship is particularly important as it relates to mental health promotion. The student-supervisor relationship is essential to health promotion because for many graduate students in research-based graduate programs, their supervisor is their primary contact for any and all things graduate school related. Although it is outside the scope of this thesis, encouraging the importance of this relationship in ways that will help both graduate students and supervisors have effective resources to ensure a strong, productive, and most importantly, mentally healthy relationship is essential.

Although not explored in this study, the mental wellness of graduate supervisors is likely also correlated with the rating of the student-supervisor relationship. If this is the case, it would indicate that universities should be prioritizing both the mental wellness of graduate students and their supervisors. Having the necessary resources available to both students and supervisors will promote mentally healthy relationships where both parties

are well supported and are able to more proactively address any issues that may arise in their relationship.

Both students and supervisors should contribute to any policy changes that are proposed to better promote this relationship and its impacts on graduate student mental health.

### *Implications for Health Promotion*

The implications of the findings in these manuscripts are far-reaching, especially when seen within our health promotion framework. The large percentage of students who are currently experiencing significant levels of mental distress, as well as thoughts of suicide and acts of self-harm are problems that need to be addressed as soon as possible. The continued mental distress of graduate students has the potential to seriously impact multiple aspects of their personal lives, as well as their responsibilities as graduate students and other responsibilities they may have at the university. Supporting the mental wellness of graduate students is therefore in the best interest of students, supervisors, and the university as a whole.

The approach to addressing these elevated levels of mental distress and mental illness, as well as the prevalence of suicide ideation, needs to be both reactive and proactive. This will help ensure that not only are we working to create environments that are more positive for the mental wellness of future graduate students, but also to address the mental distress of current graduate students. This balance will be important in all proposed changes, which should be done with the consultation and inclusion of graduate students, as they know their own needs better than anyone. These findings indicate that addressing the mental wellness of graduate students needs to also take into consideration

that the experience of these concerns may be disproportionate among certain groups of graduate students.

### *Levels of Prevention and Promotion*

When considering improving the mental wellness of graduate students, there are three levels of prevention/promotion to understand: primary, secondary, and tertiary. Primary prevention involves trying to prevent the illness from happening, secondary prevention involves trying to detect the illness early and prevent it from worsening, and tertiary prevention involves trying to improve the quality of life and reduce the symptoms experienced from the illness you already have (Min et al., 2013, World Health Organization [WHO], 2002).

Implementing strategies to help foster stronger and more positive student-supervisor relationships would be considered primary prevention, since we are trying to positively impact students' mental wellness before they experience challenges. Reducing stigma on campus could be considered secondary prevention, as we are identifying the problem before it gets too serious and preventing it from worsening (or having levels of stigma increase). Additionally, as perceived stigma has been linked to attitudes towards accessing services and history of accessing services, a reduction of stigma on campus could also increase graduate student service use and result in fewer symptoms of mental illness among those students. An example of a tertiary prevention would be where the problem is already serious. Our findings showed one third of students had some level of suicide ideation, including reporting of previous suicide attempts. Since serious suicide ideation or an indication of a previous suicide attempt is very serious, prevention to reduce suicide ideation or suicide attempts could be categorized as a tertiary prevention,

attempting to reduce the harm or the disability of an already prevalent illness or problem. These three levels of prevention/promotion are important, and can work together to create healthier spaces for graduate students by both proactively and reactively addressing the mental wellness and mental illness of graduate students (Min et al., 2013, WHO, 2002).

Finally, when planning or implementing prevention/promotion for mental wellness, it is important to understand whether the level of prevention you are planning matches the risk level, as certain levels of prevention are best suited for certain situations (WHO, 2002). Knowing the levels of mental distress, perceived stigma, suicide ideation, and other mental wellness indicators are important, which is why the sharing of this study's findings and the promotion of future research in this area are so important. This study can serve as a guide to help develop mental health promotion/prevention strategies for graduate students.

### *The Mental Health Continuum*

In relation to the Mental Health Continuum (Keyes, 2002, 2007), we found some students were doing very well (flourishing), and others were clearly experiencing significant emotional challenges. The number of students who had elevated levels of symptoms of mental illness of the PHQ-9 or GAD-7, and those who expressed suicidal ideation suggests a substantial percentage of graduate students would be considered either languishing (or surviving, which refers to moderate mental health and mental illness) on the MHC model (See Figure 1, in Chapter 1). We don't know yet whether further analyses of our various measures, taken altogether, will reveal distinct patterns of response within the graduate student population, but these patterns and connections will be explored in future work to better understand the mental wellness of graduate students.

It is important to continue assessing the descriptive and inferential data, as well as recollecting data and reanalysing data, to have an accurate idea of which groups of students are flourishing, and which are languishing. The levels of mental wellness, diagnosed mental illness, mental distress, suicide ideation, and perceived stigma are topics of interest that should be monitored and analysed together among different demographics to identify positive and negative influential factors to graduate student mental wellness. The MHC model shows that students who are diagnosed with a mental illness, can still flourish and thrive, and the goal of any health promotion policy is to not only prevent students from falling further into languishing, but also to promote the mental health and wellness of students so that more students flourish and thrive in their mental wellness.

***Knowledge Mobilization***

Knowledge mobilization refers to how findings of a study are disseminated, or mobilized, so that they are available to those who can best learn from and use these findings (Levin, 2008). This dissemination of our findings was planned alongside the development of this survey, and was always a key goal of this study. Since publication in peer-reviewed journals is often a slower process, we have already begun sharing some of our results with key groups around the study university and the surrounding community. Our three main forms of planned knowledge mobilization include presentations to interested groups, faculties, and programs; publishing manuscripts in peer-reviewed journals; and writing and delivering reports to key groups at the study university. Please note that the following information is accurate as of time of writing, but planned

presentations and manuscript submissions may change depending on various external factors.

**Presentations.**

As of March, 2021, I have shared some of our findings in presentations at a Research Days event and at a BRIC Nova Scotia Student Seminar Series event. Dr. Robinson and I have presented our results during a faculty specific presentation at the study university, and a university wide mental health awareness week presentation. We have also been invited to speak at the Spring Symposium hosted by the Canadian Association of Graduate Students (CAGS) which is tentatively planned for a date in April. We plan to continue presenting our data to various groups and key stakeholders at the study university, and have already offered to present to other university groups.

**Manuscripts.**

Manuscript 1, currently titled "Graduate Student Mental Wellness: Current Issues and a Call for Support", has been submitted to the Canadian Journal of Higher Education, and is currently under review. We also intend to publish Manuscript 2, currently titled "Graduate Students' Perceived Public Stigma Towards Receiving Treatment for Mental Illness at a Canadian University" in a relevant journal so that these findings are also available in the peer-reviewed literature and further the extant research on graduate student mental wellness. As there is a plethora of data available to us from this survey, further manuscripts are tentatively planned to increase the amount of information that can be shared from this study.

**Reports.**

As our survey contained several questions unique, and/or specifically relevant, to the experiences of graduate students at the university where the study was conducted, Dr. Robinson and I are co-authoring a series of reports specifically for relevant university groups and faculties touching on various areas of graduate student experiences, perceived facilitators and barriers, and university specific service usage within this population.

## Limitations

There are several limitations to note. First, approximately half of our responses came after the physical campus was locked down due to the global Covid-19 pandemic. While the pandemic and its effects on mental health are being studied, we do not believe that this had a significant impact on our results, as our findings of significant mental distress in graduate students were similar to those of other researchers whose data collection was not affected by Covid-19, and our comparison of pre and post lockdown numbers (see Chapter 3) do not indicate an increased level of mental distress in our sample.

Generalizability is also a potential limitation. Only 10.6% and 10.4% of the entire university graduate student population completed the PHQ-9 and GAD-7 measures. The reduced access to students because of the physical campus closure, as well as the high volume of emails students were receiving with important Covid-19 information likely negatively affected survey response. However, our response rate was relatively similar to the 13% reported by ACHA (2019) for their graduate and professional sample (online recruitment only). Our study included a sample from only one university. However, the university is a large, Canadian, research university and is a member of the U15 Group of

Canadian Research Universities, which each have similarities in size and programs offered to graduate students. It is therefore reasonable to assume that there would be similarities to the students at any of these U15 universities, at least. Moreover, our findings were similar, in general, to findings from other studies of a graduate or mixed graduate/undergraduate population.

For generalizability within the study university, we were able to compare some of our study's demographic data with two university demographic reports. The gender and international student status data were available through a 2019 graduate student report, and the racialized students and 2SLGBTQ+ data were available through a 2019 all post-secondary students report (graduate student only data was not available for these last two comparisons). These reports will not be cited as it would identify the study university. Our sample had 70.5% cisgender women compared 56.3% (graduate student report), 17.0% international students compared to 28.6% (graduate student report), 27.4% racialized students compared to 15% (post-secondary report), and 22.7% 2SLGBTQ+ compared to 8% (post-secondary report). As mentioned, the racialized and the 2SLGBTQ+ student data do not compare directly, since I am comparing the graduate student only sample with demographics from all post-secondary students at the university; however, I suggest that, based on both of these comparisons, the student sample from this study had good representativeness in the important demographic categories of cisgender women, racialized students, and students who identify as a member of 2SLGBTQ+, and actually surpassed the averages in several demographic categories. One demographic category where our sample was smaller than expected was international students. Additionally, although the percentage of racialized students in our

graduate student sample was higher than the post-secondary population, within this broader category of racialized students, both Black and Indigenous students were underrepresented in the study sample compared to the all post-secondary population. In sum, I suggest that this graduate student sample shows relatively good representativeness of the post-secondary population as a whole, but it is unknown exactly how representative this sample is of the graduate students at this university within the demographics of racialized and 2SLGBTQ+ students.

It is possible that there was sampling bias in the study sample due to the recruitment methods that were employed, since not all graduate students may have been aware of the study, and the students with the most mental health challenges may have been unwilling, or unable, to take the time to respond. However, it is also a possibility that students who saw or received the survey information viewed a mental wellness study as unimportant or not applicable to them, which could result in overstating the mental distress or unwellness in this population. Because we did not directly email all graduate students, we were not able to survey non-responders to gain further insight into why students did or did not respond. We were, however, pleased with the diversity of respondents, both from demographic groups as mentioned, and among university faculties and types of programs.

The self-report nature of our data is a limitation in some ways. Our measures of symptoms of mental illness, which do not necessarily translate directly to diagnosable mental illnesses, mean that our measures may overestimate the levels of mental distress or mental unwellness that could be diagnosed as mental illnesses. To mitigate this limitation, we used two well-known screens for mental illness that have been used and

validated by other researchers (the PHQ-9 and GAD-7), which are used in many other studies of mental wellness, allowing for comparison with these studies. We also presented two different threshold points (T5 and T10) for scores on these two measures, which showed that the majority of students scored moderate or higher on one or both of these measures. This higher cut-off point showed that the majority of students weren't just meeting the lowest cut-off score for these measures (mild depression and mild anxiety), but that most were scoring at a moderate or higher level. Additionally, because many students who experience mental distress and symptoms of mental illness have not accessed services and professionals where they could be diagnosed, relying only on the measure of students who have previously been professionally diagnosed would underestimate the level of mental unwellness in this population. Self-report methods do not have this limitation, so therefore, may well more accurately estimate the mental health challenges of a population.

Finally, collecting this volume of data from such a large number of students would not be easily achievable without relying on self-report. Moreover, since almost all research on post-secondary mental health and wellness is carried out through self-report, this allows our findings to be more easily compared with others, and the anonymous nature of the survey may have also contributed to more accurate reporting by students.

This thesis also presented several strengths which are important to keep in mind. This study fills gaps in the literature by reporting on a mental wellness survey with a graduate student only sample, and by using a sample from a Canadian university, addressing two main gaps in the literature of post-secondary student mental health and wellness. This survey also was not faculty specific, and included graduate students from

all graduate faculties at the study university. It also provided a broad overview of multiple facets of graduate student mental wellness, with the full survey including many sections exploring different areas of graduate student stress and distress, and not just focusing on one topic, such as depression. This survey also included well known and validated measures in the PHQ-9 and GAD-7, which allow the findings to be more easily compared among studies using the same measures (along with the other strengths of using these measures).

Additionally, as mentioned, this survey included graduate students in all aspects of the development, delivery, and interpretations, allowing graduate students to have a say in their mental wellness. This thesis also emphasized the importance of keeping graduate students involved in meaningful ways. Finally, one of the strengths of this survey was its identification and inclusion of areas that could be changed to improve the mental wellness of graduate students, as well as the inclusion of specific recommendations of policies that could be developed or adopted to improve graduate student mental wellness and experience. In short, this thesis and accompanying survey did not only identify and highlight areas of importance for graduate students, but also made recommendations, on policies that could be implemented, as well as how graduate students should be included in the development of and implementation of those policies.

## Conclusion

These findings show that mental unwellness is prevalent within graduate students, and that it has the potential to seriously affect these students' personal, professional, and academic lives. Although some of the findings and statistics within these two manuscripts in relation to prevalence of mental distress and mental illness are alarming, there were

also positive findings, such as the importance and relatively positive nature of the student-supervisor relationships, that provide actionable paths towards making graduate studies more positive programs in respect to the mental health and wellness of graduate students. It is important that the findings in these manuscripts are used both as an indication of where we are currently in respect to graduate student mental wellness, but also as a stepping stone to where we could and should be, helping to create a more caring, fostering, and overall more positive graduate student experience in relation to graduate student mental wellness. Further findings and best practices developed should be widely shared to help create positive change, not only on a faculty by faculty basis, or university wide, but as well through open communication between universities to share our actionable plans and to create positive widespread change.

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Appendices have been removed to protect confidential information.