September 2019

Breaking Under/Grad - Assessing and Addressing Stress, Anxiety, and Resiliency Among Undergraduate and Graduate Students via Motivational Interviewing and A Smart, Healthy Campus Intervention

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

Abstract

The purpose of this dissertation was to assess mental health among students, as well as innovative interventions designed to provide tools to cope with the mental health challenges of stress and anxiety while building resiliency. Three distinct, yet related, studies were conducted. **Study I**: This academic-year-long pilot study explored senior students' ('mentors'; $N = 30$) experiences interacting with first-years to build resilience via physical activity (PA) and mentorship. Mentors' psychosocial experiences were tracked via qualitative interviews and validated questionnaires at pre-, mid-, and immediate post-intervention. Inductive content analysis revealed the program's positive influence on PA, resilience, and mental health; and some added stressors. One-way, repeated-measures ANOVAs indicated few statistically significant findings regarding participants' levels of resilience, behavioural control, and positive affect. **Study II**: This mixed methods pilot study investigated graduate students' ($n = 11$) experiences in an 8-month peer coaching program. Participants' psychosocial experiences were assessed via individual semi-structured interviews and validated questionnaires (BRS, MHI, SF-36) at pre-, mid-, and immediate post-intervention. Inductive content analysis revealed peer coaching as having positively impacted participants' ability to cope with stress and anxiety, and enhanced resilience. One-way, repeated-measures ANOVAs indicated no statistical significance for any of the questionnaires/surveys. **Study III:** Through the distribution of three campus-wide surveys/questionnaires (i.e. BRS, $n = 598$; MHI, $n = 619$; SF-36, $n = 696$), information was gathered about the current state of mental health and wellness, and resiliency among undergraduate (UGS) and graduate students (GS). Focus groups were conducted to enhance and put in context the quantitative information. Both UGS and GS indicated more services are

needed to address mental health, with a need for more counsellors. PA positively affected mental health and resilience for both groups. The need for easier/increased access to PA was voiced.

The findings from these studies have demonstrated that while GS experience some different stressors than UGS, and that they would prefer to access mental health-related services in an environment separate from UGS, both groups: (a) struggle with stress and anxiety; (b) voiced the need for more counsellors; and (c) described PA and peer-coaching/mentorship as benefitting their mental health and resilience.

Keywords: Co-Active life coaching, Motivational Interviewing, MI-via-CALC, Peer Coaching, Stress, Anxiety, Mental Health, University Students, Undergraduate Students, Graduate Students, Mentorship, Physical Activity

Summary for Lay Audience

Mental health issues, such as stress and anxiety, are prevalent – and rising – on university campuses, affecting both undergraduate (UGS) and graduate students (GS). Resilience, an important building block of mental health, is the ability to bounce back from, and adapt to, difficult situations. Thus, this thesis assessed mental health among university students, as well as creative interventions designed to provide tools to cope with stress and anxiety while building resiliency. Three distinct, yet complementary, studies were conducted. Two studies used (peer) mentorship, which has been successful at providing mental health benefits as well as increasing resilience. In **Study I**, 30 senior students (mentors) interacted with first-years to help increase the first-years' resilience, which was done via mentorship and PA. The impacts *on the mentors* was the focus – their levels of mental health, resilience, and engagement in PA all increased. In **Study II**, 11 GS participated in a peer coaching program created from motivational interviewing, Co-Active Coaching tools, and mentorship. This approach had participants work in pairs (acting as a peer coach/mentor for each other) to help one another create solutions to their own issues, instead of receiving advice. Participants described peer coaching as beneficial for their mental health and resiliency. In **Study III**, a total of 598-796 UGS and GS completed three questionnaires, and 30 engaged in focus groups/interviews. The results helped to assess the current state of mental health and resilience on a university campus and demonstrated that both cohorts struggle with stress and anxiety. While GS described differing stressors than UGS – and a desire for mental health services that were available at a separate location from UGS – all students described feeling stressed and anxious, and that PA and peer support were beneficial to their mental health and resiliency.

Although GS experience some different stressors than UGS, and they would prefer to access mental health-related services separately from UGS, both groups: (a) struggle with stress and anxiety; (b) want more counsellors; and (c) described PA and peer-coaching/mentorship as benefitting their mental health and resilience.

Co-Authorship

Whilst this dissertation is comprised of my original work, I would be remiss if I did not declare my utmost gratitude and appreciation for my fellow colleagues and co-authors, who worked tirelessly to make the projects in this dissertation stronger. First and foremost, thank you to Dr. Jennifer Irwin, my rock star supervisor, who played an integral role in the creation and execution of all three studies, as well as the three associated manuscripts. I would like to extend my deepest thanks to my friend and colleague, Shazya Karmali, for all of her hard work on Studies I and III – thank you for helping me with data collection and analysis, as well as the corresponding manuscripts. For studies I and III, I would like to thank Dr. Kevin Shoemaker for inviting Dr. Irwin, Shazya Karmali, and I to be involved with the Smart, Healthy Campus initiative. For Study I, I would also like to thank Francesca Gable and Paulina Bond, for their help with data collection, and Dr. Alan Salmoni for his contributions and insights to the manuscript. I would also like to thank Arlene Fleishhauer and Brad Matushewski, who were hugely instrumental in the smooth-running and execution of Studies I and III, with respect to data collection and analysis. A huge thank you to Dr. Chris Lee for his statistical prowess on all three studies. Thank you to Dr. Shauna Burke for advising and offering insight on all three studies. I would also like to thank Dr. Daniel Lizotte and Jacqueline Kueper for their assistance, and patience, with the data analysis for Study III. Thank you to Dr. Melanie-Anne Atkins for partnering with Dr. Irwin and myself for Study II, and for your insights and contributions to the overall project and its associated manuscript. Thank you all for your assistance.

Dedication

I would like to dedicate this dissertation to the memories of Zoltan Fried and Paul Rosenblatt: “The song is ended; you and the song are gone. But the melody lingers on.”

Acknowledgements

Throughout my life, I have always been taught that nothing worth having comes easily. Having spent the last several years in a doctoral program, I know firsthand that this is true. However, I was fortunate enough to be surrounded by a number of people who turned the process into an adventure – complete with ups and downs, but always with a lesson and something new to learn. To the following people, know that I am eternally grateful for your help and support.

First, I would like to thank my family. To my wonderful parents, Penny and Joe, who have always supported and encouraged me, no matter what. I am deeply appreciative of everything you have done – and continue to do – for me. I could probably write a novel about how grateful I am for you both. Thank you for everything. I love you. I would like to thank my grandmother, Bubbie Eva, who taught me the true meaning of the word 'resilience.' Thank you for your never-ending love and support. I would like to thank Sara and Karson Rosenblatt, and Kelly, Samuel, and Audrey Fried, for your continuous support. I would also like to thank my extended family, Marsha and Jack Rosenblatt, and Cathy and Manny DeBono, for always being so interested in my studies, and for your ongoing support – yes, we can now go out to dinner! And, to my Zaidie Zolie and to my brother-in-law, Paul Rosenblatt…you are both so missed. A special thanks to my furry and four-legged friend, Brinkley. I'm pretty sure I wrote most of this dissertation (in my head) during our many long walks together. Thanks for your companionship.

A good supervisor is paramount to a successful graduate school experience. But, I did not merely have a good supervisor. I had a ***great*** (read: the best) supervisor! I am infinitely grateful to have had Dr. Jennifer Irwin supervise me throughout my entire graduate school experience. Jen, thank you for being a leader, a teacher, a mentor, and most importantly, a friend. I have

learned so much from you, and I am deeply appreciative. Thank you for always supporting me; and for challenging me to be better. Thank you for always being kind – and for spreading kindness wherever you go. Thank you for always teaching me to act from a place of integrity; and to live life from a 'fascinating' perspective. I am honoured to have had a coveted spot on your research team.

In addition to having had a great supervisor, I am so thankful to my colleagues – both past and present – on the Irwin Team. Dr. Rebecca Liu, Hieu Ly, and Marc Moulin: Thank you for your ongoing support and encouragement, and for always giving me good ideas. I wish you all nothing but the best; and I look forward to seeing what you all do next. A very special thank you goes out to Shazya Karmali. Shaz, thanks for being such a wonderful friend. I am so thrilled that we had the opportunity to work together on two projects. Thank you for making the days we spent in a lab-with-no-windows fun…especially on the days when life was anything but. Thank you for making Tuesdays my favourite day of the week. Thank you for your friendship. I could not have asked for a better teammate.

I am lucky to have been surrounded by many wonderful faculty members. My heartfelt thanks to Drs. Shauna Burke, Chris Lee, Angie Mandich, Tara Mantler, Don Morrow, and Trish Tucker. Thank you all so much for working with me, supporting me, encouraging me, and teaching me. Thank you all for the invaluable information you have taught me, and for teaching me to be a better researcher.

Thank you to Dr. Leigh Vanderloo. I am lucky and grateful to be able to call you my friend and mentor.

Thank you to Dr. Melanie-Anne Atkins. I am so excited that we had the opportunity to work together on a project.

Thank you to the Smart, Healthy Campus team, Dr. Kevin Shoemaker, Dr. Alan Salmoni, Arlene Fleischhauer, and Brad Matushewski, for your ongoing support and encouragement with my two SHC-related projects. And, to Kevin, for inviting me onto the team. I would also like to thank Dr. Daniel Lizotte and Jacqueline Kueper for their guidance and statistical savvy. Thank you also to Francesca Gable and Paulina Bond for assisting with data collection.

I would like to extend my deepest gratitude to my amazing research assistants, who have all worked tirelessly to help me with data collection and analysis. Thank you to: Revi Bonder, Francesco Colosimo, Monica Khoshaien, Taylor Labadie, Zain Raza, Danielle Senior, and Katie Shillington. You are all intelligent and dedicated; and the hardest-working undergraduate students I have ever met. Wishing you all the best and continued success.

Without the willingness and eagerness of many Western students, my projects never would have taken flight. Thank you so very much to everyone that participated in my studies; as well as to those that expressed interest. I appreciate your bravery in sharing your personal stories with me, with the hope that it would help others.

Thank you to my (non-school) friends, for always supporting, encouraging, and motivating me…even when you have no idea what I am talking about.

And last, but certainly not least, to the amazing faculty and staff from the School of Health Studies, the Faculty of Health Sciences, and the Health and Rehabilitation Sciences Program for their continued assistance and support…and for always answering my many, many emails.

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List of Abbreviations

Abbreviation	Meaning
ACHA	American College Health Association
BRS	Brief Resilience Scale
CA	Component A
CBT	Cognitive Behavioural Therapy
Canadian Mental Health Association	CMHA
Centre for Addiction and Mental Health	CAMH
CB	Component B
CALC	Co-Active Life Coaching
CFSO	Canadian Federation of Students-Ontario
CMHP	Common Mental Health Problems
GS	Graduate Students
HPU	Health Promoting Universities
IMT	Interpersonal Mindfulness Training
M	Mean
MBSR	Mindfulness-Based Stress Reduction
Mental Health Commission of Canada	MHCC
MHI	Mental Health Inventory
MI	Motivational Interviewing
MI-via-CALC	Motivational Interviewing via Co-Active Life Coaching
MMR	Mixed Methods Research
OUCHA	Ontario University & College Health Association
PA	Physical Activity
SD	Standard Deviation

SF-36	Short Form (36) Health Survey
SHC	Smart, Healthy Campus
UGS	Undergraduate Students
WHO	World Health Organization

Chapter I: Introduction

Preface

The purpose of this dissertation was two-fold: (a) to assess components of mental health among university students at a large, urban, Canadian university; as well as (b) to explore innovative interventions designed to provide students with tools to cope with the mental health challenges of stress and anxiety while building resiliency. To accomplish this purpose, three distinct yet thematically-associated studies were conducted, and are presented in the order in which they were conducted. First, an academic-year-long, mixed-methods pilot study that involved measuring the impacts of mentorship and physical activity, with respect to building mental health resiliency, was completed. This study was undertaken through an undergraduate course at Western University, Kin 4444, and the Smart, Healthy Campus Initiative (SHC). It involved fourth-year Kinesiology students (i.e. mentors; $N = 30$) mentoring first-year Kinesiology students, wherein fourth-years encouraged first-years to increase their physical activity (hereinafter designated as PA) in order to build resiliency. A second study was carried out, wherein a mixed-methods, eight-month-long pilot study investigated graduate students' (henceforward acknowledged as GS; $n = 11$) experiences in a peer coaching program – derived from Co-Active Coaching, motivational interviewing, and mentorship – intended to address stress and anxiety, while enhancing resilience. A third, and final, mixed-methods study was conducted between November 2017 and March 2018 to gather information about the current state of mental health, mental wellness, and resiliency among a university student population – including both undergraduate (henceforth denoted as UGS) and GS populations, wherein a total of 598-796 UGS and GS completed three questionnaires, and 30 participated in focus groups/interviews.

The following thesis was written utilizing the integrated-article format. Thus, each consecutive chapter serves as is its own unique manuscript detailing a research project related to the topic of mental health and resilience among the university student population. Resultantly, information presented in the introduction, and in each of the succeeding chapters, may be repeated.

Introduction

"'I don't understand. Can you explain it to me?' 'I'm scraped out. I'm…that car we sent to Mars, flipped upside down so the sun can't reach my solar panels. I've always been able to flip myself back over eventually, but…I ran out of times. This is how I am now'" (Falk & Shakman, 2015). In FXX network's show *You're the Worst* – described as "an exploration of debilitating mental illness masquerading as romantic comedy" (Syme, 2017, para. 5) – actress Aya Cash plays Gretchen Cutler, a young woman living with a mental illness. The exchange above is anchored by Cash's character, with her explaining to her boyfriend what it is like for her to live with a mental illness. One of the reasons this dialogue, albeit fictional, is so poignantly important is because there is research to suggest that negative perceptions and portrayals of mental illness thwart people from seeking appropriate healthcare (Corrigan & Druss, 2014; Holmes, 2016). However, (more) accurate depictions, such as the above, possess the ability to "[humanize] an otherwise [stigmatized] condition…which actually [contributes] to visibility that can help public health efforts" (Holmes, 2016, para. 12). Whether people like it or not – or are aware of it or not – popular culture, such as television shows, has the power to impact the (health) decisions of viewers (e.g. Elkamel, 1995; Srivastava, Chaudhury, Bhat, & Mujawar, 2018).

Although it might not seem like it, the portrayal of mental health in television shows is a critical piece of the puzzle that is mental health and illness, with specific respect to accessing help (Corrigan & Druss, 2014; Elkamel, 1995; Holmes, 2016; Srivastava et al., 2018). The reason for this is due to today's societal structure. Of course, this is referring to the fact that students of the present day are often defined as the 'The Netflix Generation' (Cross, 2014). As Cross describes it, the modern student has grown up in an environment where access to videos is omnipresent. Statistics illustrate that individuals between the ages of 18-24 years are the biggest consumers of online videos, with individuals watching an average of 398 videos per month (Cross, 2014; Piech, 2013). The next group to heavily view videos are those between the ages of 25-34 years, who watch an average of 381 videos per month (Piech, 2013). Interestingly, the typical age range of Canadian UGS is 17-24 years (Statistics Canada, 2010), and 25-39 years for Canadian GS (Organisation for Economic Co-Operation and Development [OECD], 2013; The Conference Board of Canada, 2018).

The information above might be interpreted as there being a high likelihood that students are among those individuals who consume the greatest number of videos. While television shows have the ability to help promote an accurate depiction of mental health/illness, as well as promoting getting help, one could argue that viewers in need require access to appropriate programs. Given that university students tend to be in this age range, and appear to comprise the largest group of viewers, it is likely that students who watch shows related to positive and accurate adaptations of mental health will be inspired to access the care that they need. But, while many shows are very good at providing numbers and websites where people can access mental health help, it is likely not feasible for these shows to actually deliver and/or facilitate care. It is, however, feasible for schools, such as universities, to provide mental health services

for their students (Farr, 2018; Helminiak & McNeil, as cited in Wyatt & Oswalt, 2013; Meilman & Hall, 2006; Rodger et al., 2014; Rowling, 2007, 2008, 2009; Santor, Short, & Ferguson, 2009). Thus, academic institutions are in the unique position to provide programs that bolster student mental health.

Mental Health and Students: Rationale for Studying Student Mental Health

The reason it is imperative for academic institutions to provide services to their students is due to the fact that university students experience a great deal of stress, anxiety, and other mental-health-related symptoms as a result of school (American College Health Association [ACHA], 2013, 2015, 2016; Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Wyatt & Oswalt, 2013). The details pertaining to this statement will be provided – and expanded upon – in the following sections.

Adding it all up: Statistics surrounding student mental health. Findings from both American and Canadian studies have illuminated the on-campus issue of student stress, reporting that the strong majority of university students experience moderate (77.6%) or serious (10.4%) stress, most of which are affected by stressors related to academe (i.e. grades and workload; Abouserie, 1994; Dixon & Kurpius, 2008). The Canadian Campus Survey, conducted in 2004, determined that 47% of Canadian university students (n = 6,282 UGS from 40 different schools) feel constantly under strain (Adlaf, Demers, & Gliksman, 2005). More recently, researchers have suggested that mental health issues are rampant and at 'crisis-like' levels among university populations, affecting both UGS and GS (Evans et al., 2018; Pfeffer, 2016; Wyatt & Oswalt, 2013).

UGS. When looking at the mental health section from the ACHA's (2018a) most recent survey, one could deduce that mental health issues are prevalent among the UGS population. The

following statistics, it should be noted, are based on the responses from UGS at American universities (*n* = 19,664 from 40 schools). Within the last 12 months, 57% of UGS rated their overall levels of stress as being 'more than average' or 'tremendous.' Further, 62.9% of UGS described feeling 'overwhelming anxiety' within the last 12 months, while 42.7% reported feeling 'so depressed that it was difficult to function.' In addition, 55.1% felt 'hopeless', while a staggering 86.4% 'felt overwhelmed by all [they] had to do.' Another question on the survey revealed that 83.2% of UGS 'felt exhausted (and not from PA)'. Further, 49.7% of respondents expressed that in the last 12 months, academics were 'very difficult to handle', with 27.4% of UGS citing anxiety and 34.1% of UGS naming stress as factors negatively affecting their individual academic performance (ACHA, 2018a).

GS. Based on survey results from the ACHA's (2018b) most recent survey, mental health issues are also common among GS. As above, the following statistics are based on answers provided by an American population (*n* = 5,104 from 30 schools). According to the survey, 20.1% of GS reported that anxiety negatively impacted their individual academic performance within the last 12 months, while 24.1% cited stress as negatively impacting their academic performance. Specifically addressing the mental health section of the ACHA's (2018b) survey, 83% of GS 'felt overwhelmed by all [they] had to do', while 82.5% 'felt exhausted (and not from PA), and 46.1% described feeling 'hopeless'. Further, 60.4% of GS respondents described feeling 'overwhelming anxiety', while 36.9% reported feeling 'so depressed that it was difficult to function'. Additionally, 43.3% of GS cited that within the last 12 months, academics were 'very difficult to handle', and 61.4% of GS described their 'overall levels of stress' as 'more than average' or 'tremendous' (ACHA, 2018b).

Older statistics from a study published by The Graduate Assembly of the University of California Berkeley (Panger, Tryon, & Smith, 2014) revealed that approximately 60% of GS (*n* = 790, from one institution) feel hopeless, exhausted, overwhelmed, and sad and/or depressed nearly all the time (Arnold, 2014). Further, within a one-year time span, 10% of students admitted to wanting to die by suicide (Arnold, 2014). The authors (Panger et al., 2014) also noted that 25% of GS were uninformed about any on-campus help; and of the students who were aware of on-campus help, only 27% of students utilized those services (Arnold, 2014).

More recently, Evans and colleagues (2018) raised the concern of there being a mental health crisis among the GS population (*n* = 2,279 from 26 countries and 234 institutions). In their study (Evans et al., 2018), they found that: (a) 41% of GS participants reported being moderately to severely anxious compared to 6% of the general population; (b) of the GS who experienced moderate to severe anxiety, 56% did not feel they were able to achieve a good work-life balance; and (c) overall, GS were more than six times as likely to experience depression and anxiety compared to the general population.

Canadian statistics: UGS and GS. With respect to Canadian data, the most recent findings are from the ACHA's 2016 Spring Survey. However, this survey amalgamated the responses of both UGS (83.1% response rate) and GS (13.7% response rate), instead of collecting them separately, as was (and is) done with the American student population. Based on the results, which are specific to the province of Ontario (*n* = 25,168 from 20 schools), 60.8% of students reported that within the last 12 months, they experienced levels of stress that were 'more than average' or 'tremendous', and 59.3% reported that academics were 'very difficult to handle'. Further, 65.4% of students 'felt overwhelming anxiety', while 46.1% expressed feeling 'so depressed that it was difficult to function', and 87.8% of students described feeling exhausted

(and not from PA). Additionally, 61.4% of students reported feeling 'hopeless', and 89.2% reported feeling overwhelmed by all of their obligations. Ontario students also addressed factors that negatively affected their individual academic performance, with 33.1% naming anxiety, and 42.9% citing stress (ACHA, 2016).

Canadian GS. In a Canadian-based study (Canadian Federation of Students-Ontario [CFSO], 2018), Ontario GS (n = 2,001 from 19 different institutions) answered questions related to mental health issues, bullying, and harassment, which led to the following findings: (a) 63% described feeling anxious and fearful of failing and/or appearing weak; (b) 67% reported feeling a sense of anxiousness with respect to finishing their programs on time (and balancing their workload); (c) 51% did not feel supported by their academic institution; and (d) 70% felt pressured to overwork (CFSO, 2018).

UGS and GS at the host institution. With specific regard to the students at the host institution, the ACHA (2013) distributed their survey to students; however, the results are not as recent as their other, American-based, surveys. Even still, according to the survey – which was completed by 79.4% of UGS and 20.2% of GS – 27.4% of students (n = 810) described anxiety as negatively impacting their individual academic performance, and 33.3% of students reported stress as negatively impacting their individual academic performance. Additionally, 51.1% of students cited feeling 'hopeless', 86.4% reported feeling overwhelmed by all of the tasks they had to complete, and 84.3% described feeling 'exhausted (and not from PA)'. Further, 56.1% of students expressed feeling 'overwhelming anxiety,' while 39.3% reported feeling 'so depressed that it was difficult to function'. In addition, 56.7% of Ontario students conveyed that their academics were very difficult to handle within the last 12 months. In addition to the information from the ACHA (2013), a 2015 survey conducted at the host institution by the University

Students' Council revealed that 30% of respondents ranked access to a mental health care practitioner on campus as poor (Hall, 2017).

In 2018, *Active Minds Western*, a student-run, mental-health-based club at the host institution, released an informative paper about the mental health of students (n = 697) on campus (Clagget et al., 2018). Although the survey was distributed to both UGS and GS, the strong majority of respondents were UGS (95.41%; 2.81% were GS). According to the results (Clagget et al., 2018), 49.56% of students described struggling to maintain their mental health or found it very difficult to maintain their mental health. Further, students were asked to cite which factors caused them difficulty with managing their emotions, time, and social interactions. Of the factors that could be chosen (academic, self, monetary, family, social, and community), academic was chosen as the factor most responsible for causing them difficulties, with 92% reporting that academics have caused difficulties with time management, 61% citing academics as causing difficulties with managing social interactions, and 72% expressing academics as causing difficulties with managing emotions. Interestingly, the survey also reported that 83% of students would not approach their professors for help with mental health. As a way to understand and address the needs of the host institution's students, several questions were posed related to the host institution's policies, programs, and practices (Clagget et al., 2018). Based on those questions – in which responses were ranked as either *strongly agree*, *disagree*, *neutral*, *agree*, or *strongly agree* – students responded in the following manner: (a) 92.45% of students agreed or strongly agreed that the host institution should ensure that courses are promoting mental health maintenance; (b) 79.02% strongly agreed that the host institution should incorporate mental health education into orientation week programming to educate first-year students about available mental health and wellness resources; (c) 88.39% of students agreed or strongly agreed

that existing mental health services should be streamlined (i.e. combined) to improve access to care; and (d) 92.45% of students agreed or strongly agreed that the host institution should implement mandatory and continuous mental health training for faculty and staff (Clagget et al., 2018).

Although there are numerous statistics provided that pertain to UGS' and GS' stress, anxiety, and resiliency, the lack of (current) Canadian data – and specifically Western University – has made it clear that this information is needed. As such, this dissertation included a study (*Study III*) to better understand the status of mental health among UGS and GS at the host institution.

Rationale: Why study university students?. It is important to study students not only due to the negative effects of mental illness on their psychological wellbeing, but also because not addressing mental health issues has the ability to negatively affect students' academic success and retention (Eisenberg, Downs, Golberstein, & Zivin, 2009; Kessler, Foster, Saunders, & Stang, 1995; The California Mental Health Services Authority, 2010; Wyatt & Oswalt, 2013). Further, if UGS exhibit mental health issues and do not address them, they are more likely to get worse (Kessler, Avenevoli, & Merikangas, 2001; National Institute of Mental Health, 2001; Rodger et al., 2014). Therefore, it may be assumed that an UGS with an unaddressed mental health issue may experience worse symptoms if they were to enter graduate school – especially seeing as graduate school potentially brings forth a new set of stressors.

With respect to GS, it has been said that this population is important to address as individuals in graduate school are training to become the future professionals in their field: "[GS] will be the coming generation of researchers and innovators; and they will be the mentors and instructors of further generations of young people" (Massachusetts Institute of Technology

[MIT], 2014, para 1.). Ergo, if they do not have the skills/tools they need to manage their own (mental) health and wellbeing, it stands to reason then, that they will not be able to be productive members in their fields, nor will they be able to provide help to others.

Further, GS and UGS are often reported as being different from each other (Arnold, 2014). While GS are oft thought to be 'just older students,' this is reportedly not accurate (Arnold, 2014). Although both populations complete assignments, write exams, attend classes, and worry about finances, there is a blatant difference between these groups (Arnold, 2014). GS endure heavier workloads and obligations (Arnold, 2014), and have additional roles and responsibilities (e.g. teaching and research assistantships). Additional stressors are those related to funding, pressure to publish, and finishing dissertations within a reasonable timeframe (Arnold, 2014). While frequent assignments and quizzes are conventional among the UGS population, these are replaced in graduate school by fewer projects (Arnold, 2014). And, while these projects are fewer in number compared to what is completed in an undergraduate program, graduate projects take much longer to complete and are worth much more – with respect to grades and/or how they are applied toward earning the final degree (Arnold, 2014). According to researchers, GS are often neglected when it comes to mental health services and mental health-related research (Djokić & Lounis, 2014; Wyatt & Oswalt, 2013). Given that GS are reported to be different from their UGS counterparts, it is alarming that there is evidence to suggest a lack of mental health services, and research, for this cohort, especially when there is also evidence to suggest that psychological issues among this cohort are increasing (Clay, 2013).

Definitions

Before going any further, it is important that the technical terms utilized throughout this dissertation are described.

Mental Health. For the purposes of this dissertation, mental health was defined as "a state of well-being whereby individuals recognize their abilities, are able to cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their communities" (World Health Organization [WHO], 2003, p. 7). According to the WHO (2003), mental health is important for all individuals, not just those who suffer from mental disorders. Further, the Canadian Mental Health Association (CMHA; 2019), describes mental health as not only circumventing serious mental illness, but as being affected by numerous factors from daily life, including the stress of balancing work with health and relationships. Thus, more serious mental health issues were not addressed during the studies in this dissertation (i.e. bipolar disorder, schizophrenia, etc.); all three studies focused on the broader concept of mental health, as defined above, but with a specific focus on components of mental health, specifically stress, anxiety, and resiliency.

Stress. Stress is a person's response to an external demand or a stressor, such as a trigger, (Cook, 2014; Selye, 1956). There is evidence to suggest that chronic stress (i.e. stress that is long-lasting) leads to increased chances of acquiring illnesses (Mariotti, 2015).

Anxiety. Anxiety is described as being more intense than stress; and it is a natural human reaction that causes both negative mental and physical effects (Rector, Bourdeau, Kitchen, & Joseph-Massiah, 2008). It is frequently linked with feelings of worry and fear, even without the presence of a stressor (Arkin & Rucks, 2007). Persistent anxiety is capable of impeding an individual's health and wellness (Arkin & Rucks, 2007; Rector et al., 2008).

Resiliency. Resiliency – also referred to as resilience – is an individual's capacity to 'bounce back' (or recover) from, and cope with, difficult life situations, and is vital for mental wellbeing (Centre for Addiction and Mental Health [CAMH], 2012; Tugade & Fredrickson,

2011). Throughout this dissertation, two forms of resiliency were examined: (a) psychological – "adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress" (American Psychological Association [APA], 2018, para. 4); and (b) academic – "increased likelihood of educational success despite personal adversities or vulnerabilities brought on by environmental conditions" (Wang, Haertel, & Walberg, 1997, p. 119).

Interventions for Students: Studies That Informed this Dissertation

While putting together this dissertation, it was crucial to look at existing literature (*NB*: this section is not meant to be an exhaustive literature review, but is meant to provide a brief rationale for the interventions that were put together in the following chapters).

Currently existing interventions for UGS. There have been numerous research studies that have looked at coping mechanisms regarding stress, anxiety, and overall mental health, with respect to an UGS population. In a meta-analysis conducted by Yusufov, Nicoloro-SanataBarbara, Grey, Moyer, and Lobel (2018), the authors deduced that learning coping skills, Cognitive Behavioural Therapy (CBT), social support, and psychoeducation were effective at reducing perceived stress among UGS, while relaxation training was the most effective technique to help UGS reduce their levels of anxiety. Huang, Nigatu, Smail-Crevier, Zhang, and Wang (2018) also conducted a systematic review and meta-analysis concerning common mental health problems (CMHP) and interventions that address those CMHPs. The authors (Huang et al., 2018) also concluded that CBT, and mindfulness-based interventions were effective for managing mental health issues among the university population. Interestingly, the same conclusions were made in a systematic review and meta-analysis by Winzer, Lindberg, Guldbransson, and Sidorchuck (2018), such that psychoeducation, CBT, and MBSR (mindfulness-based stress reduction; e.g. mindfulness, breathing techniques) were the most used

and most effective at helping students alleviate and manage their mental health. However, Winzer and colleagues (2018) did not just assess mental health interventions for students, but they also addressed the interventions' long-term effects on mental health. Resultantly, the authors (Winzer et al., 2018) concluded that future studies should consider collecting longer-term follow-up data to determine an intervention's long-term effects – this conclusion was also found in systematic reviews by additional research teams (e.g. Conley, Durlak, & Kirsch, 2015; Conley, Durlak, Shapiro, Kirsch, & Zahniser, 2016; Davies, Morriss, & Glazebrook, 2014; Farrer et al., 2013). Another conclusion made by Winzer and her colleagues (2018) was with respect to future studies, such that the authors suggested that "future research should also focus on mental health organizational interventions to investigate their potential for students in [higher] education" (p. 21) and "to further improve the sustainability of student mental health promotion, psychological interventions may be combined with a whole-setting approach, as endorsed by the WHO initiative health promoting universities (HPU; WHO, [1998])" (p. 20).

Although a modest body of literature exists pertaining to UGS mental health, it is evident from the findings of several systematic reviews and meta-analyses that further research is still warranted with respect to: (a) longer-term effects of these interventions on students' mental health; and (b) addressing mental health interventions that are offered at universities. In addition to findings from the literature, the president of the Ontario University & College Health Association (OUCHA; responsible for the ACHA Canadian findings), has insisted that "lives are at stake" (Pfeffer, 2016, para. 2), and that more needs to be done, especially with respect to on-campus programs and strategies.

Currently existing interventions for GS. Addressing the GS population, only a small quantity of interventions exist, which was found in a meta-analysis (Yusufov et al., 2018) and

substantiated in a systematic review (Stillwell, Vermeesch, & Scott, 2017). These interventions include a study by Cohen and Miller (2009), who utilized interpersonal mindfulness training (IMT) on 21 American GS to observe its impact on perceived stress and mindfulness. Cohen and Miller (2009) found that IMT positively affects perceived stress and anxiety, as well as social connectedness, emotional intelligence, and mindfulness. Another approach was by Steinhardt and Dolbier (2008), who investigated the impact of CBT, coping skills training, psychoeducation, and social support on the perceived stress and resilience of 57 American GS (n = 30 experimental; n = 27 wait-list control). The researchers found that at post-intervention, the intervention group displayed significantly higher scores for resilience and protective factors, more effective coping strategies, and lower scores on symptomatology (i.e. perceived stress) compared to the wait-list control group. In a meta-analysis, Yusufov and colleagues (2018) deduced that coping skills, CBT, and social support are the most effective types of interventions among the various approaches used to date, in terms of decreasing perceived stress; and relaxation training, psychoeducation, and mindfulness are the most efficacious for reducing anxiety. In a systematic review, Stillwell and colleagues (2017) determined that MBSR was effective in lessening the negative effects of perceived stress.

It should be noted that the above-noted interventions did not address a Canadian population. To the researcher's knowledge, there are no interventions regarding the mental health of Canadian GS (and/or they were not available at the time this dissertation was being put together).

Based on the above-noted findings, more extensive investigations building upon previously used approaches are recommended. And, because such a small number of interventions have been implemented to date, it is imperative to investigate other innovative

strategies to help GS cope with stress and anxiety, while enhancing their resilience. This sentiment was shared by other researchers, such that Evans and colleagues (2018) voiced the "critical need for additional studies investigating strategies addressing the mental health crisis in the GS population" (p. 283).

Innovative approaches. While the above noted interventions are empirically sound, the rising rates of mental health among the university population is troubling, suggesting that other, more innovative approaches might be needed. Thus, other avenues were explored, such as peer mentorship, peer coaching, and PA, all of which possess an evidence base describing their efficacy as it relates to positively impacting mental health and resilience. However, as far as the researcher (and her colleagues) can surmise, all of these interventions have either: (a) not all been utilized together in a single intervention; and/or (b) not been utilized with a university student population.

(Peer) Mentorship. While there are many different definitions of mentorship, the one utilized for the purposes of this dissertation was based on a symbiotic relationship, wherein individuals with shared experiences offered each other social and emotional support (Mental Health Commission of Canada [MHCC], 2016). In a Canadian report by Cyr, McKee, O'Hagan, and Priest (2016), participants (n = 820) engaged in interviews, focus groups, and surveys and conveyed the utility of peer-mentorship by describing that the use of peer-based support for mental health was positive, with one participant voicing that, "Peer support is about providing all the tools besides medication" (p. 50). Further, peer mentorship is lauded as being an important building block for mental well-being (MHCC, 2016; Rutten et al., 2013), such that mentorship has been linked with providing many benefits including: (a) skill acquisition; (b) self-development and self-reflection and (c) gaining support networks (Grima, Paillé, Mejia, &

Prud'homme, 2014; Ragins & Scandura, 1999; Zey, 1984). Mentorship has demonstrated its efficacious nature with respect to increasing resilience and has done so in student populations (Zimmerman & Bingenheimer, 2002). Thus, the information described in this section was crucial when designing the interventions in this dissertation (*Studies I and II*).

PA. Engaging in PA has been linked to a myriad of health benefits and has been associated with increases in mental health and resiliency (Hegberg & Tone, 2015). Based on the findings from a recent systematic review (Dogra et al., 2017), a plethora of literature epitomizes PA as an effective way to: (a) promote positive emotional wellbeing (Taliaferro, Rienzo, Pigg, Miller, & Dodd, 2009); (b) diminish the impact of, and protect against, negative stress (Nabkasorn et al., 2006); and (c) abate the symptoms of depression and anxiety (Stathopoulou, Powers, Berry, Smits, & Otto, 2006). Further, habitual participation in PA has been correlated with improved academic performance, as well as higher graduation rates among post-secondary students (Huesman, Brown, Lee, Kellogg, & Radcliffe, 2009; Sng, Frith, & Loprinzi, 2017). Despite all of the benefits associated with regular engagement in PA, data indicates that 40% to 50% of post-secondary students do not participate in PA (Harbour, Behrens, Kim, & Kitchens, 2008). With respect to the host institution, 65% of students have reported insufficient activity levels (i.e. less than the suggested 150-minutes per week required for health benefits; Irwin, 2007). These insufficient PA levels could potentially be connected with the nature of being a student, such that being a student appears to encourage prolonged sitting and sedentary behaviour (Buckworth & Nigg, 2004; Moulin & Irwin, 2017). Because schools and educational settings have been documented as key health settings for promoting healthy behaviours (Jenkinson, Naughton, & Benson, 2012; Moulin & Irwin, 2017; WHO, 1998), a goal of this dissertation was to increase PA among the student population. However, few health interventions

exist at the university level (Jenkinson et al., 2012). Thus, it has been deduced that more research investigating the interactions between PA and mental health among the university student populace is necessary (Dogra et al., 2017). The above-noted research on mentorship and PA were pivotal in the creation of this dissertation's intervention focused on UGS stress, anxiety, and resiliency (*Study I*).

Peer Coaching (Derived from Motivational Interviewing and Co-Active Life Coaching). Building on peer mentorship, a peer coaching model was implemented for one of the dissertation's interventions (*Study II*). Specifically, motivational interviewing (MI; Miller & Rollnick, 2002) applied via Co-Active Life Coaching (CALC; Kimsey-House, Kimsey-House, Sandahl, & Whitworth, 2018; MI-via-CALC), was utilized, which is an integrated model that has been studied (Newnham-Kanas, Irwin, & Morrow, 2010) and used extensively in the research program whence these dissertation studies emanated (e.g. Mantler, Irwin, Morrow, Hall, & Mandich, 2014; Mantler, Irwin, & Morrow, 2013). MI-via-CALC is described as a "theoretically-grounded, collaborative type of coaching wherein the coach and client are seen as equals who function as a team to resolve issues upon which the client chooses to focus" (Fried & Irwin, 2016, p. 18; Kimsey-House et al., 2018). The objective of this model is to address a client's/receiver's ambivalence toward behaviour changes, while generating solutions to elicit those behaviour changes through powerful, open-ended questions (Kimsey-House et al., 2018). On its own, MI has been shown to be effective for treatment adherence in anxiety disorders (Westra & Dozois, 2006). However, MI lacks rigorous training and concrete tools for implementation (Hettema, Steele, & Miller, 2005). Perversely, CALC embodies all of MI's tenets, while having standardized tools and consistent training to put those tenets into action (Newnham-Kanas et al., 2010). Further, a handful of literature reviews concerning health

coaching inferred that while copious amounts of coaching interventions exist – as well as a myriad of coaching practices – only a few studies define and provide details on the specific coaching and methods used (Ammentorp et al., 2013; Olsen, 2014; Olsen & Nesbitt, 2010). By contrast, a scoping review (Liu, Irwin, & Morrow, 2015) underscored CALC's growing evidence base as an effective method for adjusting health behaviours. From a research perspective, it is crucial that research studies are described with as much transparency as possible, so that other researchers may garner an understanding of the specific components that were used during an intervention (e.g. powerful questions, providing advice only with permission, acknowledging a client's/receiver's experience), and so that other researchers and readers are able to understand what transpired in the intervention (i.e. validity; Maul, 2018).

With respect to MI-via-CALC's utility as an intervention for various health behaviours, an extensive body of literature exists, all which have been linked with reductions in stress (e.g. Fried & Irwin, 2016; Goddard & Morrow, 2015; Mantler, Irwin, & Morrow, 2010; Mantler et al., 2013; Mantler et al., 2014; Newnham-Kanas, Irwin, & Morrow, 2008; Newnham-Kanas, Irwin, & Morrow, 2011; Newnham-Kanas, Irwin, Morrow, & Battram, 2011; Pearson, Irwin, & Morrow, 2013; Pearson, Irwin, Morrow, & Hall, 2012; Pearson, Irwin, Morrow, Battram, & Melling, 2013; van Zandvoort, Irwin, & Morrow, 2008; van Zandvoort, Irwin, & Morrow, 2009). One of the studies specifically employed MI-via-CALC as an intervention for UGS' mental health (Fried & Irwin, 2016). In a mixed-methods pilot study (Fried & Irwin, 2016), UGS worked with certified coaches for an academic semester to alleviate and manage stress. With respect to the quantitative findings, statistical significance was found in a favourable direction for all scales from pre-intervention to mid-intervention and from pre-intervention to post-intervention, but not from mid-intervention to post-intervention. These findings were supported

by the findings from qualitative interviews, where participants explained MI-via-CALC's positive impact on their stress and overall mental health. Although this study (Fried & Irwin, 2016) proved promising for the UGS in this study, a review of the literature revealed that this intervention approach had not yet been utilized with GS in any capacity. Thus, an opportunity to provide this type of intervention to GS was apparent. As such, the purpose of this dissertation's intervention focused specifically on GS was to investigate GS' experiences in a peer coaching program – derived from mentorship, MI, and CALC – intended to address stress and anxiety, while enhancing resilience (*Study III*).

Purpose of Dissertation

The introduction to university students' stress, anxiety, and resiliency, provided above was intended to contextualize some of the information that informed this dissertation's focus. As a health promotion project, a main objective of this doctoral dissertation was to provide students with knowledge and skills to build resilience and help cope with mental health, utilizing evidence-based approaches. To put this plan into action, the researcher (and her colleagues) employed a mixed methods research (MMR) approach, wherein both qualitative (inductive) and quantitative (deductive) data were data collected. In this manner, both types of data helped to complement and supplement each other and allowed the findings from the studies to tell a more complete 'story' of participants' experiences – which could not have been obtained utilizing only one approach.

As presented at the start of this chapter, and here as a lead-into the chapters that follow, the purpose of ***Study I*** was to explore senior students' (i.e. mentors) experiences in a UGS course focused on building resilience among first years via increasing PA and engaging in a peer mentorship relationship. The focus of ***Study II*** was to investigate GS' experiences in a peer

coaching program (derived from mentorship and MI-via-CALC), with respect to the program's impact on participants' stress, anxiety, and levels of resiliency. Finally, ***Study III*** sought to collect and assess data related to the current climate of mental health and resilience among the UGS and GS population.

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Chapter II: Study I. Making the Grade: Mentors' Perspectives of a Course-Based, Smart, Healthy Campus Pilot Project for Building Mental Health Resiliency Through Mentorship and Physical Activity[1]

Campus mental health issues are ubiquitous. Mental health – "a state of well-being in which every individual realizes his or her own potential and can cope with the normal stresses of life" (World Health Organization [WHO], 2003, p. 7) – is becoming a more prominent issue, specifically surrounding university students (Canadian Institute for Health Information, 2015). Recently, 46% of Ontario university students revealed they felt so depressed it was challenging to function, while 65% expressed overwhelming anxiety, and 61% reported feeling hopeless (American College Health Association [ACHA], 2016). With respect to the study's host institution, 56% of students rated their overall stress levels as 'more than average' or 'tremendous'; and 33% reported stress affected their academic performance, while 27% reported it was impacted by anxiety (ACHA, 2013). A staggering 86% of students described feeling overwhelmed by their obligations (ACHA, 2013). Further, a survey conducted at the host institution revealed 30% of respondents ranked access to a mental health care practitioner on campus as poor (Hall, 2017). This information is important; given that health is often accepted as an all-encompassing construct with many fundamental building blocks, known as the (social) determinants of health, all of which interact and affect each other (Mikkonen & Raphael, 2010; WHO, 2003). While many determinants have been identified as being crucial influences for health, some appear to be 'more important' than others, with education being one of the most

[1] A version of this article has been accepted and is published in the International Journal of Evidence Based Coaching and Mentoring. Citation: Fried, R., R., Karmali, S., Irwin, J. D., Gable, F. L., & Salmoni, A. (2018). Making the grade: Mentors' perspectives of a course-based, Smart, Healthy Campus pilot project for building mental health resiliency through mentorship and physical activity. *International Journal of Evidence Based Coaching and Mentoring, 16*(2), 84-98. doi: 10.24384/000566. See Appendix for copyright information.

crucial (Feinstein, Sabates, Anderson, Sorhaindo, & Hammond, 2006). It is suggested that people with higher levels of education are healthier than those with lower levels (Mikkonen & Raphael, 2010).

Universities have begun to focus on interventions in a manner that address a myriad of determinants related to mental, and overall, health (Council of Ontario Universities, 2017; Ontario's Universities, 2018). Many programs exist across different universities, and are often focused on physical activity, mentoring or peer-leadership, and/or resiliency. While some interventions combine these elements, the researchers of the current study are unaware of any studies or programs that have included all three in a single intervention, especially with respect to university students.

Mentorship, Physical Activity, and Resiliency

Mentorship. The premise of the Smart, Healthy Campus pilot study (SHC) was to pair third- and fourth-year students with first-year students, wherein senior students mentor the first-years. According to the Mental Health Commission of Canada (MHCC; 2016), peer-to-peer interactions are a critical component of mental health. Mentoring is described as a supportive relationship between people who have a common lived experience, where a mentor provides emotional and social support to mentees (MHCC, 2016). Also described as – and used interchangeably with – peer-assisted learning, mentoring is a process wherein individuals learn from and with each other (Jenkinson, Naughton, & Benson, 2012). Mentorship provides benefits to those who act as mentors, and has been deemed a rewarding experience (Durham University, 2017). Merits of mentorship include: (a) personal development and self-reflection; (b) the ability to learn from others; (c) acquiring new skills; (d) building a support network; (e) career enhancement; (f) gratification from helping younger individuals; and (g) receiving external

recognition and praise (Allen, Poteet, & Burroughs, 1997; Grima, Paillé, Mejia, & Prud'homme, 2014; Kram, 1983; Ragins & Scandura, 1999; Zey, 1984). The specific aim of this paper is to address the experiences of the mentors who participated in the pilot program focused on building resilience among first-years via physical activity (PA) and mentorship.

Physical activity. Physical activity (PA) has numerous health benefits and has been associated with increases in mental health and resiliency (Hegberg & Tone, 2015). According to a recent systematic review (Dogra et al., 2017), a myriad of literature exemplifies PA as an effective way to: (a) minimize symptoms of depression and anxiety (Stathopoulou, Powers, Berry, Smits, & Otto, 2006); (b) reduce the impact of and protect against negative stress (Nabkasorn et al., 2006); and (c) promote positive emotional wellbeing (Taliaferro, Rienzo, Pigg, Miller, & Dodd, 2009). However, data indicates that 40% to 50% of post-secondary students do not participate in PA (Harbour, Behrens, Kim, & Kitchens, 2008), with 65% of students at the host institution reporting insufficient activity (i.e. less than the recommended 150-minutes per week required for health benefits; Irwin, 2007). Furthermore, being a student seems to facilitate prolonged sitting and sedentary behaviour (Buckworth & Nigg, 2004; Moulin & Irwin, 2017). Thus, given that schools and educational settings are recognized as key health settings for promoting healthy behaviours (Jenkinson et al., 2012; Moulin & Irwin, 2017; WHO, 1998) SHC's goal was to increase PA. However, few health interventions exist at the university level (Jenkinson et al., 2012). Therefore, it has been concluded that more research examining the interactions between PA and mental health among university students is warranted (Dogra et al., 2017).

Resiliency. Resiliency is the ability to recover from, and cope with, difficult life situations, and is vital for mental wellbeing (Centre for Addiction and Mental Health [CAMH],

2012). The researchers explored two types of resiliency: (a) psychological – "adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress" (American Psychological Association [APA], 2018, para. 4); and (b) academic – "increased likelihood of educational success despite personal adversities or vulnerabilities brought on by environmental conditions" (Wang, Haertel, & Walberg, 1997, p. 119). There is literature supporting the notion that both physical activity and mentoring effectively enhance resilience (Hegberg & Tone, 2015; Zimmerman & Bingenheimer, 2002). Accordingly, as a health promotion project, SHC's pilot project objective was to provide students with knowledge and skills to build resilience and help cope with mental health, with the intention of reducing the need for clinical interventions.

Methods

Research stance. Referred to as "the third methodological movement," mixed methods research (MMR) has grown dramatically (Cameron, 2011, p. 96). This approach was used in the current study to gain a more complementary and composite understanding of the study purpose than could have been acquired utilizing only one approach (Shannon-Baker, 2016). That is, the researchers decided that exploring various aspects of the mentors' experiences of this pilot project could be addressed most thoroughly through a mix of qualitative (inductive) and quantitative (deductive) approaches. Although controversy exists about the tenets of social science research paradigms, and whether paradigms are useful for MMR, identifying the conceptual approach taken *may* be helpful for readers to grasp the authors' perspective (Shannon-Baker, 2016). As such, for the purpose of transparency, we note that the current study was conducted from paradigm of *pragmatism*, which is considered useful for program- or intervention-based studies, as it underscores "…communication and shared meaning-making in order to create practical solutions to social problems." (Shannon-Baker, 2016, p. 322).

Researchers using a pragmatic approach within MMR emphasize the research questions, while "maintain[ing] both subjectivity in their own reflections on research and objectivity in data collection and analysis" (Shannon-Baker, 2016, p. 322). Informed by Feilzer (2010), the authors' stance in pragmatism is further reflected in the data analysis procedures, outlined below, which aim to identify the findings from participants while minimizing the influence of our personal views and interpretations.

Recruitment and participants. Full-time undergraduate students were invited to participate in this pilot study by enrolling in a senior Kinesiology course, which was offered by the host institution (located in Ontario, Canada). Prior to enrolling, students were told that the course included the potential to participate as research subjects. They were given the letter of information and consent form and were notified that class enrollment did not have to equate to study enrollment (see Appendix B for ethics approval, and Appendix C for letter of consent). While certain components of the course were required for grading, nothing was used as study data unless consent was provided. Thirty students (herein called mentors) were enrolled in the course and provided consent. The inclusion criteria consisted of being: (a) a full-time undergraduate student; (b) a senior (i.e. third-, fourth-, or fifth-year); and (c) enrolled in the course. There were no dropouts. However, data from only 28 mentors were used for quantitative analyses (Table 1; Appendix D), because one participant did not complete the pre-intervention questionnaire and another skipped multiple items on specific questionnaires, meaning proper scores for those scales could not be computed (i.e. the SF-36 requires at least 50% of questions to be filled out to calculate sub-scale scores, and the MHI indicates that the total score should not

be computed if more than 9 questions are skipped). Data from all 30 mentors were used for qualitative analyses[2].

[2] For information about the first years (i.e. protégés) from this program, refer to Gable & Meisner (currently underway).

Table 1

Demographic Information

Participant Characteristic	*N*	%		
Sex				
Male	9	32.1		
Female	19	67.9		
Age			Mean	SD
19	1	3.6	21.36	0.78
20	1	3.6		
21	14	50		
22	11	39.3		
23	1	3.6		

Procedure. This mixed-methods, full-year pilot study used a repeated-measures design. Participants acted as their own controls (as per Kieffer, 2002), and data collection occurred at three time points: pre-intervention (September 2016), mid-intervention (December 2016), and immediate post-intervention (April 2017). Due to delays in ethics approval, and matching mentors with the first-year Kinesiology students (herein called protégés), qualitative data was not collected at pre-intervention.

Mentors attended a 3-day, 21-hour Leader Effectiveness Training (LET; Gordon, 2001), focused on interpersonal communication and conflict resolution competencies, to obtain mentorship skills. A 1-hour Motivational Interviewing (MI; Miller & Rollnick, 2002) training was also provided by one of the researchers (JDI) who underscored the importance of encouraging protégés to come up with their own answers to questions wherever possible. Mentors were randomly matched with one to three protégés, whom they mentored for an academic year. The mentor-protégé relationship involved mentors guiding protégés in dealing with stressors. The primary objective was for mentors to engage in PA with their protégés (and to encourage frequent PA) to increase the protégés' mental health and resiliency. A secondary goal was for mentors to provide support on any topic where and when possible. Mentors were asked to engage with their protégés at least twice a week, if not more, and were able to interact with their protégés in any manner and at any place that worked for the group (e.g. phone, text, video-calling, in-person, at the gym, on-campus, off-campus, etc.) During data collection, mentors were not asked to provide specific, personal, and/or confidential information about their protégés.

Quantitative measures. All measures outlined below were administered at pre-, mid-, and post-intervention.

Brief Resilience Scale (BRS). Mentors completed the Brief Resilience Scale (BRS) (Smith et al., 2008), which is the only measure that explicitly evaluates resilience in its original, most basic definition: to bounce back or recover from stress. For example, one question asks: "I tend to bounce back quickly after hard times" (Smith et al., 2008, p. 196). It uses a 5-point Likert-scale (strongly disagree to strongly agree), consisting of 6 items – with items 1, 3, and 5 being positively worded, and items 2, 4, and 6 negatively worded – and is scored by reverse coding items 2, 4, and 6 and finding the total mean of the six items. Increased means indicate higher levels of resiliency. The BRS has been deemed a reliable means of enumerating resilience (Cronbach's α = .0.84-0.87; [Smith et al., 2008; Windle, Bennett, & Noyes, 2011]). (See Appendix E).

Mental Health Inventory (MHI). Mentors completed the Mental Health Inventory (MHI) (Veit & Ware, 1983), which is used to quantify mental health status and psychological well-being, and measures overall emotional functioning. It has "four subscales (Anxiety, Depression, Behavioural Control, Positive Affect), and one total score" (Ritvo et al., 1997, p. 29). The subscales and total score range from 0-100, with higher scores indicating better mental health. The MHI is an 18-item questionnaire consisting of a 6-point Likert scale ranging from 1 (all of the time) to 6 (none of the time), with items 1, 3, 5, 7, 8, 10, 13, and 15 assigned a reverse score. It is valid and reliable (Cronbach's α = .93; NMSS, 1997; Ware, Kosinski, & Gandek, 2003), and is a suitable tool for measuring mental health in general populations, in that it was designed to measure general psychological distress and well-being in otherwise 'healthy' populations (Veit & Ware, 1983). (See Appendix F).

Short Form (36) Health Survey (SF-36). Because it includes additional domains to the tools noted above (i.e. the SF-36 includes aspects of physical functioning, whereas the BRS and

MHI assess different aspects of mental health), mentors also completed the Short Form (36) Health Survey (SF-36; Ware, Kosinski, & Gandek, 2003), which consists of 36 questions and 8 subscales, and evaluates an individual's perception of physical, emotional, and mental health. The survey has been validated as a feasible, reliable (Cronbach's $\alpha = .80$; [C. Jenkinson, Coulter, & Wright, 1993]), and simple survey to complete among both general and patient populations (Brazier et al., 1992; Garratt, Ruta, Abdalla, & Russell, 1994). The tool has been used previously on a variety of sub-populations of university students (Ribeiro et al., 2017). To score it, pre-coded numeric values are re-coded per a provided scoring key, with higher scores equating with a more positive state of health. Each item is scored between a range of 0 to 100, with the lowest and highest possible scores being 0 and 100, respectively. According to the scoring guide, "scores are representative of the percentage of the total possible score achieved" (RAND, 2018, para. 3). (See Appendix G).

Qualitative measures.

Semi-structured interviews. To investigate participants' experiences of the intervention, individual semi-structured interviews were conducted. Interview questions were piloted with the target population to ensure they were congruous with the study objectives (Table 2). Interviews occurred in a research lab on campus, lasted 15- to 50-minutes, were audio-recorded, and transcribed verbatim. To assuage social desirability, *honesty demands* (Bates, 1992) were employed (i.e. participants were told there were no right or wrong answers, nor were there specific answers being sought).

Table 2

Semi-Structured Interview Questions

Mid-Intervention	**Post-Intervention**
What motivated you to join the program?	What was it like to work with your protégé(s)?
What is it like working with your protégé(s)?	What impact did working with your protégé(s) have on you?
What impact is working with your protégé(s) having on you?	What have you learned about who you are as a mentor?
What have you learned so far about who you are as a mentor?	What advice would you give to future mentors in this course?
What else have you noticed about how being a mentor has impacted you, since working with your protégé(s)?	What characteristics would you say are important for a successful mentor-protégé relationship?
How do you see this evolving next term? Referring to either the mentor-protégé relationship and/or the mentorship program.	What else would you like the researchers to know about your mentorship experience so far?
What else would you like the researchers to know about your mentorship experience so far?	

Quantitative data analysis. Descriptive statistics were run on all quantitative data using IBM SPSS (version 21.0). To determine statistical significance, one-way, repeated-measures ANOVAs were completed with an alpha of 0.05, and were done on all scales and sub-scales. When Mauchly's test of sphericity was violated, a Greenhouse-Geisser correction was applied, and adjusted p values were calculated using adjusted degrees of freedom ($p < .017$). A Bonferroni correction was applied to all ANOVAs to control for Type I Error.

Qualitative data analysis. Transcriptions were analyzed via inductive content analysis (Patton, 2002), permitting the authors to gain an in-depth understanding of participants' mentorship experiences. This method allowed the authors to find common themes, versus fitting data into predetermined categories. NViVO software was used to help organize the data. The researchers adhered to quality assurance steps during data collection and analysis (Guba & Lincoln, 1989) to uphold data trustworthiness, which included: (a) *credibility* – member-checking between questions/at the end of interviews, ensuring responses were accurately understood; (b) *confirmability* – independent completion of inductive content analysis (RRF & SK); (c) *dependability* – researchers debriefed, summarized, and deliberated findings to safeguard against bias; and (d) *transferability* – study methods, procedures, and analyses were documented, permitting others to establish whether or not findings are transferable to other settings.

Results

Quantitatively, most findings were not statistically significant. See Table 3.

Table 3

Repeated-Measures ANOVAs (Pre-, Mid, & Post-Intervention)

Scale	***F-Statistic***	***Mean, Standard Deviation (Pre-Intervention)***	***Mean, Standard Deviation (Mid-Intervention)***	***Mean, Standard Deviation (Post-Intervention)***	***Statistical Significance (Between Time-Periods; p < .05)+***
Brief Resilience Scale	[$F(2, 54) = 8.82$, p < .05]	$M = 3.76$, $SD = 0.57$	*M = 3.68, SD = 0.57*	*M = 4.11, SD = 0.70*	Over time♣: Yes ($p = .00$) Pre- to mid-: No ($p = 1.00$) Mid- to post: Yes ($p = .00$) Pre- to post: Yes ($p = .02$)
Mental Health Inventory – *Total**	[$F(1.55, 41.91) = 2.20$, p > .05]	$M = 72.6$, $SD = 14.6$	$M = 71.2$, $SD = 15.52$	$M = 66.36$, $SD = 9.51$	Over time: No ($p = .13$)
Anxiety	[$F(2, 54) = 0.88$, $p > .05$]	$M = 64.71$, $SD = 18.80$	$M = 60.14$, $SD = 12.30$	$M = 62.29$, $SD = 14.15$	Over time: No ($p = .42$)
Depression	[$F(2, 54) = 0.34$, $p > .05$]	$M = 78.21$, $SD = 15.29$	$M = 76.07$, $SD = 15.48$	$M = 78.93$, $SD = 12.57$	Over time: No ($p = .72$)
Behavioural Control	[$F(2, 54) = 25.44$, $p < .05$]	$M = 78.93$, $SD = 19.21$	$M = 58.21$, $SD = 6.56$	$M = 57.68$, $SD = 10.84$	Over time: Yes ($p = .00$) Pre- to mid-: Yes ($p = .00$) Mid- to post: No ($p = 1.00$) Pre- to post: Yes ($p = .00$)
Positive Affect	[$F(2, 54) = 52.97$, $p < .05$]	$M = 68.75$, $SD = 15.37$	$M = 34.11$, $SD = 16.56$	$M = 33.40$, $SD = 13.34$	Over time: Yes ($p = .00$) Pre- to mid-: Yes ($p = .00$) Mid- to post: No ($p = 1.00$) Pre- to post: Yes ($p = .00$)
SF-36 – *Physical Functioning**	[$F(1.07, 28.85) = 0.88$, $p > .05$]	$M = 94.46$, $SD = 17.07$	$M = 97.68$, $SD = 4.19$	$M = 96.50$, $SD = 4.19$	Over time: No ($p = .36$)
Role Limitations Due to Physical Health	[$F(2, 54) = 0.34$, $p > .05$]	$M = 90.18$, $SD = 24.85$	$M = 85.71$, $SD = 25.85$	$M = 86.61$, $SD = 27.62$	Over time: No ($p = .72$)
Role Limitations Due to Emotional Health	[$F(2, 54) = 0.13$, $p > .05$]	$M = 63.10$, $SD = 38.85$	$M = 61.90$, $SD = 40.28$	$M = 65.46$, $SD = 43.99$	Over time: No ($p = .88$)
Pain	[$F(2, 54) = 0.21$, $p > .05$]	$M = 83.48$, $SD = 15.37$	$M = 83.48$, $SD = 16.74$	$M = 85.25$, $SD = 15.60$	Over time: No ($p = .81$)
*Energy & Fatigue**	[$F(1.62, 43.67) = 0.00$, $p > .05$]	$M = 61.43$, $SD = 14.96$	$M = 61.25$, $SD = 16.37$	$M = 61.25$, $SD = 17.41$	Over time: No ($p = .99$)
*Emotional Well-Being**	[$F(1.65, 44.51) = 0.57$, $p > .05$]	$M = 74.29$, $SD = 15.60$	$M = 73.43$, $SD = 17.60$	$M = 76.57$, $SD = 14.10$	Over time: No ($p = .54$)
Social Functioning	[$F(2, 54) = 1.37$, $p > .05$]	$M = 76.79$, $SD = 19.75$	$M = 79.91$, $SD = 21.61$	$M = 83.61$, $SD = 18.37$	Over time: No ($p = .26$)
*General Health**	[$F(1.59, 43.05) = 3.31$, $p > .05$]	$M = 79.55$, $SD = 13.19$	$M = 79.82$, $SD = 16.97$	$M = 83.39$, $SD = 13.06$	Over time: No ($p = .56$)

Notes. *Mauchly's test of sphericity was violated; Greenhouse-Geisser correction applied. Adjusted p values were calculated using adjusted degrees of freedom; $p < .017$. + $p < .05$ unless marked by *.
♣ '*Over time*' refers to any differences between related means *overall* (Laerd Statistics, 2013).

Qualitative findings from participants.

Mid-intervention. Ethical approval for qualitative interviews was received halfway through first semester, and mentor-protégé teams were not set immediately; therefore, mentors were not interviewed until mid-intervention. Participants were asked questions pertaining to their mentorship experiences, and the relationship they developed with their protégés. At mid-intervention, the following themes emerged: (a) resiliency; (b) symbiotic relationship; (c) life skills; (d) kindness; (e) impact of PA on mental health and resiliency; and (f) added stressors. When asked about the personal impact of being a mentor, the majority of participants described increased resiliency, or their ability to cope with stressful situations. Participants voiced improvements with their health (mental, physical, and overall), and new abilities to cope with their own stressors and anxieties.

Addressing the mentor-protégé relationship, most participants explained a symbiotic relationship. Participants discussed learning from their protégés, versus being the only ones in the relationship to deliver new information (e.g. coping skills, information about services, activities, etc.). Mentors also described their perspective that their relationships were working due to building trusting friendships and sharing what was happening in each other's lives.

All participants articulated improvements with life skills and personal development and communication. Participants verbalized the significance of utilizing active listening skills with their protégés, and being receptive and non-judgmental. Active listening taught mentors to adapt their expectations and accept the relationships they had, versus what they anticipated – they accepted what their protégés needed, and became the mentor their protégés required. Mentors emphasized this by describing that some of their protégés were seeking support for academics or social support, while others were interested in PA, and some had different needs altogether.

Through self-reflections, participants described learning new things about themselves, and who they were as mentors. Participants also discussed improved time management skills.

Discussing motivations for joining the study, all participants expressed their desire to extend kindness and "*give back.*" Participants felt they had acquired knowledge throughout their undergraduate experience that would assist first-years. Most participants described not having adequate, or any, access to mental health services/supports when they were in first year, inspiring them to provide first-years with support.

Most participants described PA's importance for health and mental health benefits. Participants highlighted the program's unique approach as a motivator to enroll (i.e., they wanted to help address mental health and resiliency through PA). Participants noted their enrollment in Kinesiology meant they were already engaged in organized sports or exercise; however, SHC emphasized general PA. Thus, most participants noticed increases in their levels of PA, which led them to feel less stressed and better able to cope with their stressors. Participants further reflected this by describing feeling lethargic on days they did not engage in PA.

Despite many positive experiences, the majority of participants vocalized added stressors. These were due to communication issues between mentors and protégés, protégés having different objectives (i.e. personal training) versus the study (i.e. general PA), protégés not getting along with their mentors, protégés dropping out, scheduling issues, not meeting protégés until later in the semester, a lack of mentoring/mentorship guidelines, course-related issues (i.e. not receiving assignment feedback, not knowing grades), and random mentor-protégé groupings (which did not always result in a good match).

Table 4 presents quotations that illustrate these themes.

Table 4

Quotations Supporting Themes from Mid-Intervention

Resiliency
"I think I've become more patient. Before, in dealing with stress, I'd either let it get to me or I wouldn't handle it well. But, having protégés to keep you accountable for how you deal with things has made me more accountable in other aspects of my life. When I'm feeling stressed out and stuff, I just head to the gym and I get my fix and then I'm fine afterwards…Really the focus of taking a mental break when you are stressed out or when you are studying for countless hours, I've never employed that, ever in my four years until this year. That's been helping me a lot."
Symbiotic Relationship
"What has impacted me? …Somebody will always have something to teach you, regardless of age. I think that's one thing that I have been able to take away."
Life Skills (Time Management, Social Support, Academic Support, & Communication)
Time Management
"I feel like I'm organizing my time so that like I am able to talk to them whenever they need to, and I'm like always available."
Social Support
"…the biggest thing is being a person that's willing to listen…it's more of having that person just to talk about whatever, and to have that relationship there, rather than just being like a workout buddy or whatnot."
Academic Support
"I find I'm helping more with academics than I am with athletics. They come to me for more school stuff."
Communication
"…open communication has helped a lot. They're super open in asking questions, and I feel like it's forcing me to think about certain things and actually express that, like communicating to them…I always find that I keep a lot of things to myself, but with them I feel like I'm opening up more."
Kindness
"Honestly, my biggest factor is the degree that I struggled in first year, I struggled immensely, more than I ever thought I would coming to university… If I could help even one student avoid the experience I had in first year, then that would be incredible."
Impact of PA on Mental Health & Resiliency
"And I feel like maybe that mental resiliency is correlated with the amount of physical activity I'm getting…and this exam period has been very stressful, but we still are going to the gym and getting up in the morning, and I feel better. I feel…a lot better. I don't know…it's not very much different, but I just feel better."
Added Stressors
"…it just kind of stresses me out…Is my mark going to be bad because I haven't done anything with [my protégé]? And then occasionally making the time to work out once or a couple times a week is stressful just because you have to work around their schedule. I'm not used to…working around other people's schedules; and just putting them first can be stressful if you're busy…"

Post-intervention. Immediately post-intervention, participants were asked questions pertaining to their overall experiences, and if/how the mentorship experience impacted their own levels of mental health, resiliency, and PA. Five themes were identified: (a) increased resiliency (increased coping and stress-management); (b) increased PA and new perspectives about PA; (c) personal growth (self-reflection & self-awareness, skill development [communication, active listening, leadership]; pushing boundaries [new activities, moving outside of comfort zone]); (d) social support (sense of community, connection, and friendship; invested in others [what protégés need and want, rewarding to see protégés grow and succeed; advocating for mental health awareness]; symbiotic relationship; and (e) added stressors.

Compared to the beginning of the study, the majority of participants noted increases in their levels of resiliency and PA. Participants described garnering new tools/life skills, which helped with coping and stress-management. With respect to PA, most participants described increased engagement, whether it was with their protégés, on their own, or combined. Further, the majority of participants discussed their new-found ability to view PA from new perspectives (e.g. versus regimented exercise, learning to engage in PA when injured and/or ill).

All participants vocalized personal growth by learning how to self-reflect, thereby increasing self-awareness; as well as through learning new skills from the LET seminar, such as communication, listening, and leadership[3] skills. Further discussing PA, almost all participants described how mentorship taught them to push boundaries through participating in new activities – either because their protégés wanted to, or because the mentor-protégé group wanted to try something new as a team – and learned to move outside of their comfort zones to bond with their protégés.

[3] Refer to Gable & Meisner (currently underway)

Most participants articulated feelings of comradery, with respect to befriending their protégés and other mentors, and feeling more connected to their faculty. All participants communicated their desire to help first-years, and that it was rewarding to witness their protégés learn and grow.

Further, all participants emphasized the importance of mental health advocacy, and the positive experiences they had helping their protégés with supports/services, as well as helping via PA and being a good listener.

Although the objective of the study was for mentors to help their protégés, almost all of the participants noted symbiosis, such that the mentors and protégés learned from and helped each other. As mirrored in the mid-intervention interviews, all participants articulated stressors attached to the process of being a mentor. The same program-related stressors voiced at mid-intervention were verbalized at post-intervention (see above).

Table 5 provides illustrative quotations.

Table 5

Quotations Supporting Themes from Post-Intervention

Increased Resiliency (Coping & Stress-Management)

"…to come out of this and say that because of this project, it pushed me – it really did push me to go do all the things that I could not physically do because of how anxious it made me. But, it's definitely made me such a stronger person…I feel so ready to kind of take on the next couple of years without worrying so much about all of the things that I worried about before."

Physical Activity (Increased PA, New Perspectives About PA)

"…I learned a lot about how to incorporate activity in a way that was sustainable for life."

Personal Growth (Self-Reflection & Self-Awareness, Skill Development [Communication, Active Listening, Leadership]; Pushing Boundaries [New Activities, Moving Outside of Comfort Zone])

Self-Reflection & Self-Awareness

"And that's what's good through the mentorship-protégé [relationship], we all had a lot of self-growth…I think that was an important aspect of being a mentor. We had a lot of self-growth on our own apart from our protégés, which I think helped us as mentors, as well, in the end."

Skill Development (Communication, Active Listening, Leadership)

"…the program's been very great…It's getting to be pretty impactful as it speaks to those soft skills, not just those hard skills we learn in school."

Pushing Boundaries [New Activities, Moving Outside of Comfort Zone)

"…just being able to get outside of your comfort zone and…not only in terms of physical activity, but if you can get outside of your comfort zone and do different classes, do stuff you normally wouldn't do, then that can translate over to other aspects of your life, as well. In terms of being more resilient and just not being afraid to take risks…"

Social Support (Sense of Community, Connection, and Friendship; Invested in Others [What protégés need and want, rewarding to see protégés grow and succeed; advocating for mental health awareness]; Symbiotic Relationship)

Sense of Community, Connection, and Friendship

"…it brought me together with my peers even more so than before in the last four years of Kin, so it was a great support network to have."

Invested in Others [What protégés need and want, rewarding to see protégés grow and succeed; advocating for mental health awareness]

"I saw the impact on my protégé's life…it's not just a course, this was something that truly was life-changing…"

Symbiotic Relationship

"I thought mentoring was very one-way, like they'll be benefitting [from it], they'll develop new skills, learn about themselves, and work on leadership characteristics; but, I didn't know how much I guess it would impact me…"

Added Stressors

"…a lot of the times things were really up in the air, especially when it came to our marks, not knowing what our marks were…it was pretty stressful considering it was a full-year course, and being in fourth year…I was kind of freaking out about that, and just a lot of the ways the course is set up, not everything was set in stone."

Discussion

The study's purpose was to explore senior Kinesiology students' (mentors) psychosocial experiences in an undergraduate course focused on building resilience amongst first-years via PA and mentorship. Overall, the results of this study revealed few, albeit desirable, statistically significant findings pertaining to participants' perceived levels of resilience, behavioural control, and positive affect over the course of the program. Qualitatively, participants found being a mentor to be a rewarding experience in general, although some challenges to the role were also noted, as discussed below. A main finding was that mentors reported a significant increase in resilience (BRS) over time, indicating that although the course was intended to benefit first-years, mentors themselves became more resilient, and therefore better able to address adverse events during their academic year. At post-intervention, mentors reported an average BRS score that was slightly higher than two samples of undergraduate students in southwestern USA (n = 128; Smith et al., 2008). Thus, these findings are consistent with reported undergraduate norms (Smith et al., 2008), although the slight increases in resiliency may also indicate the positive effects gained from acting as a mentor, as has been highlighted in previous bodies of literature (Allen et al., 1997; Durham University, 2017; Grima et al., 2014; Kram, 1983; Ragins & Scandura, 1999; Zey, 1984; Zimmerman & Bingenheimer, 2002).

Results from the MHI showed no significant differences over time in anxiety, depression, or overall, suggesting mentors' mental health functioning did not change. Interestingly, the MHI *behavioural control* and *positive affect* subscales significantly *decreased* over time, indicating participants experienced a reduced level of functioning in these areas. At post-intervention, mentors reported a mean that is just slightly lower than the mean score from an undergraduate sample (n = 604) in Midwest USA (Hartley, 2011). This could indicate that although mental

health functioning seemed to decrease in some areas, results from this study are consistent with undergraduate norms. It is possible that the added stressors experienced by the mentors may have caused the significant decreases in these areas. Further, quantitative assessments were distributed during exam seasons (i.e. midterms and finals), which are typically times when students experience high and increased levels of stress. Thus, it is possible that completing the measurements during these time periods may have skewed the results.

None of the SF-36 subscales significantly changed over time. This could indicate that participants did not experience a change in physical functioning, role limitations due to physical or emotional health, pain, energy and fatigue, emotional well-being, social functioning, or overall general health at various points throughout the program. While an aim of the program was to engage in – and therefore increase – PA, most of the mentors noted already being very physically active due to being in the Kinesiology program; and although levels of PA did increase among the mentors, it may not have been enough to produce any statistically significant changes. Further, several mentors incurred injuries or health issues that prevented them from engaging in PA, also potentially hindering any significant changes.

Qualitative assessments were not consistent with quantitative findings, in that most participants reported improvements in stress and anxiety, PA, and resiliency. Participation in this study seemed to result in life skill development and personal growth. It was also reported that mentors better understood the impact of PA on mental health and resiliency, and experienced improvements in dealing with adverse events through PA, which is consistent with previous literature regarding the benefits of PA for mental health in university settings (Tyson, Wilson, Crone, Brailsford, & Laws, 2010). Mentors felt they benefitted from having a protégé as much as, or perhaps even more, than their protégés did. The mentorship role, coupled with regular PA,

appeared to support mentors' improved resiliency and the ability to deal with stressors. It is clear that the role of mentorship is beneficial for the student serving as a mentor. This finding is consistent with other mentor-related research, where results were indicative of the benefits gained from being a mentor (Allen et al., 1997; Durham University, 2017; Grima et al., 2014; Kram, 1983; Ragins & Scandura, 1999; Zey, 1984; Zimmerman & Bingenheimer, 2002).

Although most mentors did express positive, and mutually beneficial, experiences with their protégés, some indicated the program was not what they expected, and became an added stressor. They explained that having a protégé resulted in greater stress, especially when there were differing values, or lack of communication, between mentor and protégé. These situations are inherent in mentor-protégé pairings, as people's differences may prevent the formation of meaningful relationships. Further, because this was a pilot course, it not clear how any course-related issues influenced the learning and resilience of the mentors, whether positively or negatively.

The researchers posit that the mixed findings may be due, in part, to not being able to use all collected data, such that some scales require at least 50% completion (Ware, Kosinski, & Gandek, 2003) – and one participant did not adhere to this – to be utilized for analysis (e.g. SF-36). Participants who did not complete the required amount of questions were excluded from data analysis, as a repeated-measures design requires each participant to act as their own control. Further, scoring manuals for the scales used in this study indicate the best results come from using a population of 30 to 60 participants. Given that these scales are psychometrically sound, a larger population is needed to conclusively state whether or not this type of intervention is able to produce statistically significant changes in its favour. Additionally, the majority of participants

in the study were female, who tend to report higher rates of mental health issues compared to males (Statistics Canada, 2015).

Limitations

The first limitation was the potential self-selection bias inherent in research studies of this nature (i.e. it is not possible to differentiate between those who consented with those who did not enroll in the course). Additional limitations were: (a) the small sample size and inability to use all 30 participants for quantitative analyses, affecting the ability to detect statistically significant results; (b) components of the intervention require time (i.e. building trust); (c) mentor-protégé groups were randomly assigned, meaning not all groups were a good fit; (d) data collection occurred during exams, potentially affecting questionnaire responses due to exam stress; (e) several mentors were injured (e.g. concussions), which hindered not only increased levels of PA, but sometimes *any* engagement in PA due to restrictions and limitations dictated by the injury; and further, when protégés were injured, their mentors did not engage in any PA beyond what they were already doing; (f) mentors were enrolled in the Kinesiology program – and some were varsity athletes – and stated that they were already very physically active, and did not always have the time or desire to engage in any additional PA; and (g) added stressors experienced by the mentors as a result of the program being new, such that the mentors were not only focused on being a good mentor and having a positive impact on their projects, but they were also very concerned with their performance with respect to their course grade.

Conclusions

Cogitating on the limitations, this pilot study proved promising. Participants' positive experiences outlined the beneficial nature of a mentorship- and PA-based intervention for university students to improve mental health and build resiliency. By participating in this study,

the mentors, themselves, experienced PA-, mental health-, and resiliency-related benefits. The findings from this study, albeit mixed (with respect to the statistical findings), further emphasized promising outcomes from previous studies, wherein PA and mentorship were utilized as interventions to enhance resiliency (Hegberg & Tone, 2015; Zimmerman & Bingenheimer, 2002). A mentorship approach should be explored further in both larger-scale and longer-term studies, and should include the additional element of PA.

Future Implications

It should be noted that this pilot study represents only the first cohort of mentors involved in the program. The SHC project is occurring in "waves" and enrolls new students every academic year. Feedback from the first experience has been incorporated into current offerings, and future research on the program may have access to a larger group of participants. Furthermore, future work in this area could be expanded by conducting longitudinal studies observing participants throughout the course of their degree (i.e. over four years), to detect the efficacy of this type of intervention, and differences that may arise throughout the years (e.g. what are the effects on protégés who become mentors?). The researchers recommend assessing other universities to assess differences among other populations, as well as to add to the limited body of literature that exists surrounding university students and PA-related interventions. Ideally, it is anticipated that results from future studies will help inform policies and practices aimed at prioritizing student mental health from their first day at university.

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Chapter III: Study II. Breaking Grad: Building Resilience Among a Sample of Graduate Students Struggling with Stress and Anxiety via a Peer Coaching Model – An 8-Month Pilot Study[4]

Postgraduate/graduate students (GS) – those pursuing a master's or doctoral degree – are unlike undergraduate students (UGS) in many ways (Arnold, 2014). In addition to completing course-work, GS are typically required to engage in research projects, and teaching and research assistantships (Arnold, 2014). One unfortunate similarity between GS and UGS centres around mental health challenges. Specifically, mental health on university campuses is considered a crisis for both cohorts (Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Wyatt & Oswalt, 2013). However, GS encounter unique stressors pertaining to research funding, supervisors, pressure to publish, and finishing theses/dissertations within a reasonable time frame (Arnold, 2014; Canadian Federation of Students-Ontario [CFSO], 2018). A recent study (Evans et al., 2018) conveyed that GS are more than six times as likely to experience depression and anxiety versus the general population. Further, in an online survey (CFSO, 2018), wherein Ontario GS (*n* = 2,001) reported events related to mental health issues, bullying, and harassment, it was found that: (a) 51% did not feel supported by their academic institution; (b) 70% felt pressured to overwork; (c) 67% reported anxiety to finish their degree requirements on time and balance their workload; and (d) 63% described feeling anxious and fearful of failing and/or appearing weak. Despite rising psychological issues among GS (Clay, 2013), they are often neglected with

[4] A version of this manuscript has been accepted and is expected to be published in July or August 2019 in the International Journal of Evidence Based Coaching and Mentoring. Citation: Fried, R. R., Atkins, M. P., & Irwin, J. D. (2019). Breaking grad: Building resilience among a sample of graduate students struggling with stress and anxiety utilizing a peer coaching model derived from mentoring, and motivational interviewing via Co-Active Life Coaching (MI-via-CALC) – A pilot study. *International Journal of Evidence Based Coaching*, *17*(2), 3-19. doi: 10.24384/sa09-av91. See Appendix A for copyright information.

respect to mental health services (Arnold, 2014). According to a recent meta-analysis (Yusufov, Nicoloro-SanataBarbara, Grey, Moyer, & Lobel, 2018), only a handful of GS-focused interventions exist, and this was corroborated in a systematic review (Stillwell, Vermeesch, & Scott, 2017). These interventions include a successful study by Steinhardt and Dolbier (2008) who investigated the impact of Cognitive Behavioural Therapy (CBT), coping skills training, psychoeducation, and social support on the resilience and perceived stress of 57 American GS (n = 30 experimental; n = 27 wait-list control). At post-intervention, they found the experimental cohort exhibited significantly higher scores for resilience and protective factors, more effective coping strategies, and lower scores on symptomatology (i.e. perceived stress) versus the wait-list control cohort. Another approach by Cohen and Miller (2009) utilized interpersonal mindfulness training (IMT) on 21 American GS to assess its impact on perceived stress and mindfulness. The researchers found that IMT positively affects perceived stress and anxiety, as well as social connectedness, emotional intelligence, and mindfulness. Yusufov and colleagues (2018) concluded coping skills, CBT, and social support as most efficacious among the approaches used to date, in terms of decreasing perceived stress and psychoeducation, relaxation training, and mindfulness for reducing anxiety. Stillwell and colleagues (2017) deduced MBSR (e.g. mindfulness, breathing techniques) was effective in reducing perceived stress. Wider-spread investigations building upon the approaches used previously, and noted above, are recommended. And, because so few interventions have been implemented to date, it is also important to explore additional innovative strategies to help GS cope with stress and anxiety, while enhancing their resilience. In fact, in 2018, Evans and colleagues discussed the "critical need for additional studies investigating strategies addressing the mental health crisis in the GS population" (p. 283).

The current pilot study utilized an innovative approach to help enhance GS' *stress*, *anxiety*, and *resilience*. The foundation of this pilot study was built on previous work in this field, such that the researchers sought to utilize and assess the impact of tools that have demonstrated considerable efficacy for mitigating and managing stress and anxiety, such as social support, as well as techniques that promote mindful behaviours. Given that a health promotion perspective formed the backbone of this current pilot study, the intervention endeavoured to provide participants with the necessary tools to increase their control over their own health and wellbeing (World Health Organization, 2016); with the further intention of providing participants with the necessary tools to build and increase resilience to stress- and anxiety-related issues in order to prevent the need for clinical interventions (when possible and applicable). For the purpose of this paper, stress is viewed as the reaction to an external demand (Selye, 1956) or an individual's response to a change in surroundings due to a stressor (Cook, 2014). Chronic stress may be detrimental to overall health because it increases the risk of experiencing psychological and physical health ailments (Mariotti, 2015). Anxiety is considered more intense than stress, and it results in mental and physical effects (Rector, Bourdeau, Kitchen, & Joseph-Massiah, 2008). It tends to be characterized by worrying and fear, irrespective of the presence of a stressor (Arkin & Rucks, 2007). Constant anxiety can be deleterious to wellbeing and health (Arkin & Rucks, 2007). By contrast, resilience is considered essential for positive mental health, and is described as the ability to recover from, and cope with, difficult life situations (Tugade & Fredrickson, 2011). To address the stress, anxiety, and resilience of GS in the current study, a peer coaching approach was used. The approach was derived using peer mentorship, and motivational interviewing tenets (MI; Miller & Rollnick, 2002) that were applied via tools from Co-Active Life Coaching (CALC; Kimsey-House, Kimsey-House,

Sandahl, & Whitworth, 2018; *MI-via-CALC*). A brief review of each component of the approach is described below:

Peer Mentorship. Occurring between people with shared experiences, mentorship can be described as a symbiotic relationship, providing social and emotional support – and it is vital for mental well-being (Mental Health Commission of Canada, 2016). Benefits include: (a) gaining support networks; (b) personal development and self-reflection; and (c) skill acquisition (Grima, Paillé, Mejia, & Prud'homme, 2014; Ragins & Scandura, 1999; Zey, 1984). Mentorship has been shown to enhance resilience (Zimmerman & Bingenheimer, 2002) and has demonstrated efficacy for building resilience in interventions assessing student populations (Fried, Karmali, Irwin, Gable, & Salmoni, 2018). For instance, Fried and colleagues (2018) addressed the use of a peer mentorship model among 30 full-time UGS and its impact on increasing physical activity and resilience. Participants utilized a mentorship model based on Leadership Effectiveness Training (LET; Gordon, 2001) and a one-hour MI training session. The researchers found that through peer mentorship, participants increased their levels of physical activity and resilience. Participants specifically noted that the intervention helped to improve their mental health and provided support and important skills for mental health and in general (e.g. listening, time-management; Fried et al., 2018). Cyr, McKee, O'Hagan, and Priest (2016) further highlighted peer-mentorship's utility, such that through interviews, focus groups, and surveys, Canadians (n = 820) reported positive responses concerning the use of peer-based support for mental health. One participant stated, "Peer support is about providing all the tools besides medication – the tools for the other 80% of your life" (p. 50).

MI-via-CALC. To structure the mentorship relationship and provide the peer coaching model that was used for the intervention, an integrated model that has been studied (Newnham-

Kanas, Irwin, & Morrow, 2010) and used extensively in the senior author's research program (e.g. Mantler, Irwin, Morrow, Hall, & Mandich, 2014; Mantler, Irwin, & Morrow, 2013), was adopted. Namely, MI-via-CALC was used. This is a "theoretically-grounded, collaborative type of coaching wherein the coach and client are seen as equals who function as a team to resolve issues upon which the client chooses to focus" (Fried & Irwin, 2016, p. 18). The intention is to address the receiver's ambivalence toward behaviour changes, while creating solutions to elicit changes through powerful, open-ended questions. Although MI is efficacious for treatment adherence in anxiety disorders (Westra & Dozois, 2006), it lacks consistent training and standardized tools for implementation (Hettema, Steele, & Miller, 2005). Contrarily, CALC encompasses all of MI's tenets, while having concrete tools and rigorous training to put those tenets into action (Newnham-Kanas, Irwin, & Morrow, 2010). Further, several literature reviews regarding health coaching concluded that while an abundance of coaching interventions exist – as well as a plethora of coaching practices – very few studies define and provide specifics on the specific coaching and methods used (Ammentorp et al., 2013; Olsen, 2014; Olsen & Nesbitt, 2010). Comparatively, a recent scoping review (Liu, Irwin, & Morrow, 2015) highlighted MI-via-CALC's increasing evidence base as an efficacious approach for modifying health behaviours. Knowing the specific components that might have been used in an intervention (e.g. powerful questions, providing advice only with permission, acknowledging receiver's experience), is essential for researchers to be as transparent as possible about what transpired (i.e. validity; Maul, 2018).

An extensive body of literature exemplifies MI-via-CALC's efficacy for various health behaviours, which have all been associated with reductions in stress (e.g. Mantler et al., 2013; Pearson, Irwin, Morrow, Battram, & Melling, 2013). Further, MI-via-CALC has specifically

been used as an intervention for university students' mental health (Fried & Irwin, 2016), wherein UGS worked with certified coaches for an academic semester. Statistical significance was found in a favourable direction for all scales from pre-intervention to mid-intervention and from pre-intervention to post-intervention, but not from mid-intervention to post-intervention. These findings were corroborated through qualitative interviews, where participants described MI-via-CALC's positive impact on their stress and overall mental health. Although promising, MI-via-CALC has not previously been utilized with GS in any capacity known to the authors. As such, the purpose of this pilot study was to investigate GS' experiences in a peer coaching program – derived from mentorship, motivational interviewing, and Co-Active Life Coaching – intended to address stress and anxiety, while enhancing resilience.

Methods

Recruitment and participants. This mixed methods, pilot research (MMR) study was conducted at a large Canadian university. Once approval was received from the host institution's Office of Research Ethics (Appendix H), GS in all departments/faculties were sent a recruitment email en masse (Appendix I). Participants were asked to contact the researchers if they were interested in participating in the program, called *Breaking Grad*, and wanted a Letter of Information/Consent form (Appendix J). Participants were contacted in order of their responses. The inclusion criteria consisted of: (a) full-time GS at the host institution; (b) English-speaking; (c) not receiving counselling/therapy; (d) not taking medications for stress or anxiety[5]; (e) experiencing stress and anxiety that interfered with daily living; and (f) ability to attend a full-day training, which was required to ensure all participants received consistent training. Participants met with a researcher (RRF) to confirm eligibility and complete pre-intervention

[5] One participant began anxiety medication and Cognitive Behavioural Therapy after mid-intervention. They were not removed as the inclusion criteria was for the start of the study; and seeking additional help may have been be a result of the intervention.

assessments. It was estimated that 20 participants were sufficient to detect a moderate effect (r^2 = .12) of a three-level within-subject independent variable more than 80% of the time, using an alpha of .05. Despite great interest (over 100 responses were received), only 16 people enrolled during the two-week recruitment period, due to others' inability to attend the mandatory training, which needed to take place by the end of September to maximize the intervention duration. That is, the current pilot study sought to assess the suitability of this intervention over an academic year (September – May). Given longer- versus shorter-term interventions have been correlated with better outcomes for GS (e.g. relaxation training; Yusufov et al., 2018) – and because some GS engage in research/fieldwork off-campus during the Summer term – the researchers chose to move forward with those enrolled to avoid reducing the duration of the intervention. Two participants dropped out by not receiving training, two dropped out before mid-intervention citing time constraints, and one dropped out before mid-intervention due to a personal issue. The final sample was 11 (Table 1; Appendix K).

Table 1

Demographic Information

Participant Characteristic	*N*	%		
Sex				
Male	3	27.3		
Female	7	63.6		
Other: Genderqueer female	1	9.1		
Age			Mean	SD
22	1	9.1		
25	1	9.1		
26	1	9.1		
27	2	18.18	27.45	2.54
28	3	27.27		
30	2	18.18		
31	1	9.1		
Ethnicity				
Caucasian	4	36.4		
East Asian	2	18.2		
Hispanic	1	9.1		
Middle Eastern	3	27.3		
South Asian	1	9.1		
Student Type				
Domestic	5	45.5		
International	6	54.5		
Degree				
Master's	7	63.6		
Doctoral	4	36.4		
Year of Enrollment				
1st	6	54.5		

2nd	4	36.4	1.64	0.92
3rd	0	0		
4th	1	9.1		
Faculty				
Education	3	27.3		
Health Sciences	1	9.1		
Information and Media Studies	2	18.2		
Affiliate University College	1	9.1		
Medicine and Dentistry (MSc/PhD, Not MDs)	2	18.2		
Science	1	9.1		
Social Sciences	1	9.1		
Employment				
Full-time	0	0		
Part-time	5	45.5		
Not working	4	36.4		
Other: Teaching Assistant for one term	2	18.2		

Procedure. This MMR, eight-month pilot study used a repeated-measures design, with participants acting as their own controls (as per Kieffer, 2002). Data was collected at pre-intervention (September 2017), mid-intervention (January 2018), and immediately post-intervention (April 2018). To provide concrete tools, participants attended an eight-hour MI-via-CALC training session presented by the researchers (JDI & RRF; both are Certified Professional Co-Active Coaches and JDI is an experienced MI-via-CALC trainer). The training was interactive and included groupwork and content- and tool-based handouts (e.g. definitions, suggestions for powerful/open-ended questions, practice coaching). Researchers also met with participants every two to five weeks (n = 8 sessions) for one-hour group check-in meetings to discuss coaching experiences and challenges, and to provide skill refinement. Additionally, a two-hour booster session was offered (January 2018) for refining skills.

Participants worked in assigned and arbitrarily-matched dyads, which changed seven times throughout the study. This was done to allow participants the opportunity to interact with a diverse group of their peers. Participants agreed to engage in four, 35-40-minute sessions per month – two as coach, and two as client/receiver. Each participant agreed to use only the tools learned during the training session, and each partnership decided on the mode of engagement they preferred (i.e. in-person, Skype/FaceTime, or telephone).

Qualitative measures.

Individual semi-structured interviews and note-taking. Semi-structured interview questions were created prior to implementation and deemed appropriate for the study by nine GS external to the study. At each time point, interviews: (a) were conducted to explore participants' intervention-related experiences; (b) occurred in a lab at the host institution, lasted 12-minutes to 1-hour (average: ~33-minutes); and (c) were audio-recorded and transcribed verbatim. To

mitigate social desirability, *honesty demands* (Bates, 1992) were employed (i.e. participants were asked to be honest, as specific answers were not being sought). Research team members (RRF, DS, & KS) recorded detailed notes during check-in meetings, which were part of the data; however, no identifiable information was recorded in order to maintain confidentiality (Table 2).

Table 2

Semi-Structured Interview Questions

Pre-Intervention	**Mid-Intervention & Post-Intervention♦**
How would you describe your current level of stress and/or anxiety?	What impact has the intervention had on you so far?
In what ways does school affect your mental health/well-being?	What have you noticed since being in the study with respect to your mental health, stress, anxiety, and resiliency?
Given the definition of resiliency, how would you describe your own resilience?	What changes have you noticed since being in the intervention?
What does a healthy school experience look like?	What is working out well for you?
In what ways are your stress- and/or anxiety-related needs supported or met – or NOT – at school?	What challenges are you having?
What supports do you feel you need to cope with your stress and/or anxiety?	What else have you noticed about how the intervention has impacted you (so far)?
If at the end of the study you were to say it was effective, what would be different?	In what ways do you intend to use the MI-via-CALC skills you obtained in this study in the future? ♦*post-*

intervention

What else should the researchers know?

Quantitative measures. The following were distributed via Qualtrics® at pre-, mid-, and immediate post-intervention.

Brief Resilience Scale (BRS). Participants completed the Brief Resilience Scale (BRS; Smith et al., 2008), an instrument that assesses resilience in its most basic and original meaning: to bounce back or recover from stress. For example, one item indicates: "I have a hard time making it through stressful events" (Smith et al., 2008, p. 196). The 5-point Likert scale (*strongly disagree* to *strongly agree*) consists of 6 items, and is scored by reverse coding items 2, 4, and 6 and finding the mean of all six items. Items 1, 3, and 5 are positively worded, and items 2, 4, and 6 are negatively worded. Higher means signify higher levels of resilience. The scale is a reliable medium to quantify resilience (Cronbach's α = .0.84-0.87; Smith et al., 2008; Windle, Bennett, & Noyes, 2011). (Appendix E).

Mental Health Inventory (MHI). Participants completed the Mental Health Inventory (MHI; Veit & Ware, 1983), which measures overall emotional functioning, and is utilized to enumerate mental health status and psychological well-being. The MHI consists of an 18-item questionnaire operating on a 6-point Likert scale ranging from 1 (*all of the time*) to 6 (*none of the time*), with items 1, 3, 5, 7, 8, 10, 13, and 15 allocated a reverse score. It is comprised of "four subscales (Anxiety, Depression, Behavioural Control, Positive Affect), and one total score" (National Multiple Sclerosis Society [NMSS], 1997, p. 29). The total score and subscales range from 0 to 100, where higher scores indicate better mental health. The MHI is valid and reliable (Cronbach's α = .93; NMSS, 1997; Ware, Kosinski, & Gandek, 2003). Because it was created to assess general psychological distress and well-being in otherwise 'healthy' populations, it is appropriate for measuring mental health in general populations, such as students (Veit & Ware, 1983). (Appendix F).

Short Form (36) Health Survey (SF-36). Participants were also required to complete the Short Form (36) Health Survey (SF-36; Ware, Kosinski, & Gandek, 2003), which includes additional dominions (e.g. physical functioning) to that of the BRS and MHI. The SF-36 appraises an individual's perception of physical, emotional, and mental health, consisting of 36 questions and 8 subscales. To score it, pre-coded numeric values are re-coded based on the scoring key, where higher scores assume a more positive state of health. Each item is scored between 0 (lowest) to 100 (highest). Based on the scoring guide, "scores are representative of the percentage of the total possible score achieved" (RAND, 2018, para. 3). The survey has been utilized with various sub-populations of university students (Ribeiro et al., 2017) and is a validated, feasible, reliable (Cronbach's $\alpha = .80$; Jenkinson, Coulter, & Wright, 1993), and simple survey to complete among both general and patient populations (Brazier et al., 1992; Garratt, Ruta, Abdalla, & Russell, 1994). (Appendix G).

Data Analysis

Qualitative. To obtain a comprehensive understanding of participants' experiences and to find emergent themes, inductive content analysis was utilized (Patton, 2002). Quality assurance steps were followed: (Guba & Lincoln, 1989): (a) *credibility* – member-checking/reflecting back responses between questions/at the end of interviews to confirm responses were accurately understood; (b) *confirmability* – inductive content analysis completed separately by multiple parties (RRF, KS, & ZR) who then met to resolve any discrepancies and collectively determine main themes; (c) *dependability* – research process was recorded in rich detail for an audit trail; findings were debriefed, summarized, and deliberated within the research team to ensure biases were not present; and (d) *transferability* – methods, procedures, and

analyses were documented, enabling others to determine whether or not findings are transferable to other situations.

Quantitative. Descriptive statistics were run using IBM SPSS (version 21.0). One-way, repeated-measures ANOVAs were run using an alpha of 0.05 on all scales and sub-scales to determine statistical significance. The Greenhouse-Geisser correction was implemented when Mauchly's test of sphericity was violated. Adjusted *p* values were obtained using adjusted degrees of freedom ($p < .017$). To counteract Type I Errors, the Bonferroni correction was administered to all ANOVAs.

Findings

Qualitative.

Pre-intervention. Participants discussed their current levels of stress and anxiety, the impact of stress on daily life, their views on resilience, and what they wanted from the intervention. The following themes surfaced: (a) presence of stress (school, feedback, comparison); (b) support (social, supervisors, school); (c) balance; (d) physical activity; (e) relatively resilient; and (f) increased coping skills. When describing their current levels of stress and anxiety, all participants discussed constant feelings of stress and anxiousness, primarily resulting from school's multiple demands, such as deadlines for grants/scholarships and individual aspects of research projects (e.g. ethics, proposals, data collection, conferences); teaching abilities and marking (e.g. teaching assistantships), and PhD candidacy exams. Participants also explained that unlike their UGS experiences, which included regular feedback for progress from exams and assignments, feedback from supervisors is often the only progress-related information received, which is sometimes infrequent and insufficient to capture academic progression. Reflecting on achievements through comparisons to peers was reported as leading

to feelings of inadequacy. All participants vocalized the importance of a strong support system, whether from family, friends, peers, supervisors, and/or school. With regard to supervisors, findings were divided: some participants reported a supportive relationship, while others the opposite. Findings were also split with respect to social interactions, with some participants describing a supportive cohort from school, or family and friends outside of school who they could utilize for support, while others felt isolated. Most participants felt school services were difficult to access due to long wait times and because they did not always match their needs (e.g. needing a counsellor, but being turned away because they were not deemed to be in crisis; being prescribed medication, when that was not wanted or perceived as needed). Every participant described a longing for better time-management and work-life balance. Participants voiced concerns about heavy workloads, often leading to prioritizing school above health. Almost all participants highlighted physical activity's positive impacts on mental health, but noted having to pay for classes at the host institution's gymnasium made it difficult to be active. All participants described feeling relatively resilient, as they had all been able to manage their stress and anxiety during difficult situations; however, they all desired to become more resilient. All participants expressed interest in learning new coping skills to manage stress and anxiety, so they could help others.

Table 3 presents illustrative quotations.

Table 3

Pre-Intervention Themes

Presence of Stress

School

"I don't know what a healthy school experience would look like…it's so far away from what we manage…"

Feedback

"…Getting feedback, knowing where I am. … now the tasks are too long and there's nothing that you are getting back. …there is no specific thing that you have to submit and get grades…"

Comparisons

"…I…get jealous [when] comparing myself [to my colleagues]…"

Support

Social

"…Being away from my country, my community, my friends, I feel isolated. … which makes [life and school] more stressful."

"…[My cohort] still do[es] everything together. … that has been awesome…to go through everything with them and feel comfortable…"

Supervisors

"…I have [a] complicated relationship with my supervisor. I'm afraid to talk with [them]."

"…I have a really great supervisor, who is always like, "What you're doing is enough," which is sometimes the best thing to hear…especially when I feel like [I'm not doing enough]…"

School

"I couldn't count on [the university]…they were really unprepared, or they didn't care enough. … I didn't feel supported."

Balance

"…I want a balance of everything and trying to get that…was a stressor…I'm studying too much, I'm not going out to have fun, I get stressed. If I'm having too much fun and I'm not studying, I get stressed…"

Physical Activity

"…I love exercising…[it's] radically changed my ability to…shake off whatever has been bothering me all day."

"I would love to go to the gym but [you have to] pay for each class…and I don't work. … if I want to do more than one class [I can't]…"

Relatively Resilient

"…I'm pretty resilient, but then deep down I don't know how to let go of some things."

Increased Coping Skills

"…If I participate [in this study], I will gain skills to communicate with people and also [have] the skills to cope with stress…"

Mid-intervention. Participants described what they noticed since being in the study, and their stress/anxiety, and resilience. The following arose: (a) improved mental health (better emotional health, increased self-awareness, reduced stress/better equipped); (b) increased resilience; (c) improved communication (listening skills, less advice-giving, acknowledgments); (d) social support and connection; (e) shifting perspectives; and (f) difficulty scheduling. When describing their mental health, most participants said it had improved overall, and they experienced better emotional health and increased self-awareness. Most participants spoke about reduced levels of stress; however, some participants noted their stress was the same, but they were better equipped to handle their stressors. The majority of participants highlighted their ability to bounce back during stressful situations. All participants emphasized MI-via-CALC's positive impacts and described they had become better listeners for their study peers, and everyone in their lives; and verbalized their new ease with listening versus advice-giving. All participants described feeling good when acknowledging others, because their receivers often reported feeling seen and heard; and, they enjoyed receiving acknowledgments for the same reason. A shared feeling of connection and support was common for all participants, and they described feeling comforted and grateful having support from their coaching partners and the rest of the group, explaining it was easier to speak to people who cared and had their best interests at heart, but did not judge or advise as friends or family might. Participants appreciated being surrounded by other GS, because they could relate to each other in terms of workload and experiences. All participants explained being accountable to their partners and to the group helped with committing to changing behaviours. Lastly, all participants vocalized their newfound ability to view stress and anxiety from different perspectives, which helped with coping and

stress management. Due to everyone being a busy GS with varying schedules, all participants voiced frustrations with scheduling coaching sessions.

Table 4 provides explanatory quotations.

Table 4

Mid-Intervention Themes

Improved Mental Health

Better Emotional Health

"My emotional health has improved 70% through this program…when I did the questionnaire…I compared my emotions…to when I first did it…I realized a big difference. I was so happy…I was too depressed…the first time…"

Increased Self-Awareness

"…[Coaching's] been positive. I'm continuing to always have…questions for myself. … evolv[ing] in knowing yourself so you can continue to do the work that you want to do and…to have the relationships you want to have. … I've shelved…emotion or stress or anxiety about different things because it was too challenging to look in the face…"

Reduced Stress/Better Equipped

"…[Coaching] has made me more easy going. …[The stress didn't] disappear completely…I'm getting better at dealing with [stress]…"

Increased Resilience

"I improved [my resiliency] a lot. … I never expected to be at this stage. … I'm really thankful!"

Improved Communication

Listening Skills

"…When you're listening to someone you just zone out. Now…I know I can focus…be open-ended about it, non-judgmental…I'm more open to listening…in a way that I'm totally involved with what the other person is saying."

Less Advice-Giving

"…I definitely try to give less advice now…"

Acknowledgments

"…Being acknowledged helped me change my perspectives. In hard or difficult situations, I used to be stuck…[coaching helped me] see through a different lens. …to feel the strength that I have the resiliency…"

Social Support and Connection

"…[Coaching] helps me work through things. … we're all graduate students. … a lot of what people want to change…are things I completely relate with. … it's nice when somebody's vulnerable with you about something you also feel a little insecure about."

Accountability

"…[Coaching's] given me an accountability, whether it's a discussed, blatant accountability or…that I'm going to be talking with somebody about it."

Shifting Perspectives

"…Through the support of the coaches…I changed the way I see myself and the experience."

Difficulty Scheduling

"…The challenge is we do not have regular meeting times [with our partners]. … it's hard to get ourselves and other people together."

Post-intervention. Participants shared their experiences and what had changed since starting the study. Themes that emerged were: (a) sense of connection and support; (b) improved mental health, resilience, and (self-)awareness (and awareness pertaining to others); (c) increased confidence; (d) gained skills (listening, shifting perspectives, acknowledging); (e) program frustrations (scheduling, pairings, more practice); and (f) overall positive experiences. All participants described feeling a sense of community, connection, and genuine support from their study peers. Overall, participants all believed their mental health and resilience improved, as did their self-awareness around mental health and accessing supports. Participants described increased confidence with managing daily stressors and anxiety, and with using MI-via-CALC. All participants highlighted the important skills they gained. They specifically noted becoming better listeners and giving less advice, learning to view stress and anxiety from different perspectives, and learning to acknowledge their coaching partners and themselves when experiencing challenges. While a positive experience overall, there were frustrations. All participants felt organizing sessions was difficult due to varying schedules. While most participants preferred steady dyads versus shifting pairings, which occurred due to uneven participant numbers, three participants preferred shifting pairings. All participants expressed the desire for more coaching practice, whether with the study group, their coaching partners, friends or family, or the general public. Many participants also described being frustrated that sometimes their coach was not using the MI-via-CALC tools, or they were not used correctly, making sessions less beneficial. Additionally, a few participants noted their partners wanted to coach in public spaces, making it difficult to have meaningful and vulnerable sessions. Regarding the intervention overall, all participants expressed the desire for the program to be offered throughout their degree and to all students.

Table 5 provides quotations that exemplify the above.

Table 5

Post-Intervention Themes

Sense of Connection and Support

"…[Grad school] can feel isolating. …any opportunity to make a meaningful connection with people you didn't previously know is welcomed…[the coaching] had a really good impact on me…"

Improved Mental Health, Resilience, and Awareness

Mental Health

"I'm willing to take the time to try and focus on my mental health. … [the intervention] gave me permission…to be the best version of myself in a mental health way."

Resilience

"…There's been some vicarious resilience I've been able to glean from listening…to people solving their problems…I can bring…those things into my life…"

(Self-)Awareness

"…Being self-reflective and identifying what might be helpful for me in the change I want to make…[I'm] a more well-rounded person in terms of dealing with my own and other people's conflicts…"

Increased Confidence

"…My energy changed. …I have more self-confidence knowing that every person is naturally creative, resourceful, and whole…it's empowering…"

Gained Skills

"I learned new skills in supporting myself and overcoming difficulties."

Listening

"[I] thought [listening to my receiver] would be difficult…it was refreshing to see that I could actually listen to a person."

Shifting Perspectives

"I enjoyed the idea that experience is this weird, amorphous thing that is intangible; but impacts us in really physical ways. It's not of one particular kind. Nothing is inherently good or bad. It's the perspective you bring…"

Acknowledging

"…I always end my interviews with an acknowledgement…that has been received positively…"

Program Frustrations

Scheduling

"…Scheduling is very hard. Scheduling with grad students who are different…"

Pairings

"…It wasn't very good that [the pairings] turned to [me] coach[ing] somebody and somebody else coaches me [versus having set pairings]."

"…[Having different partners] really works better for me…I'm the receiver and this is the coach [for] two sessions and…[in] one month you will meet two different people."

More Practice

"…I need more practice and for some reason the practice we got wasn't enough."

Skill Level

"I felt that maybe some people [didn't] know what the tools are or how to use them."

Public Spaces

"…Uncomfortable. … those sessions weren't as beneficial because they were in loud or crowded places."

Positive Experience

"Excited and full of energy. … the most positive thing that happened to me…"

Implement Program for All Students

"I would love to see this utilized in a university setting. … I've been able to garner a lot of interest from people…"

Continued Interest

"…If you are planning to have something similar…at the university in the future…I would love to participate."

Although all participants engaged in several forms of coaching (i.e. telephone, in-person, FaceTime/Skype) successfully, at the end of the study, all participants expressed their preference for in-person coaching, citing that in-person coaching afforded the opportunity to assess facial expressions and body language, which was needed as they were learning to implement MI-via-CALC skills. It was learned that participants favoured one-hour sessions, often exceeding 30- to 45-minutes, but sometimes had shorter sessions (15-minutes). Five participants did not work with all of their partners, eight participants did not have all of their sessions, and three participants worked with all of their partners and had all sessions. Thus, participants had between 24-28 sessions (~14 as coach, ~14 as receiver). Despite any discrepancies, all participants experienced approximately 30-coaching-related hours (a combined total from all program components).

Findings from the check-in meetings coincided with the semi-structured interviews.

Quantitative. There were no statistically significant findings (Table 6).

Table 6

Repeated-Measures ANOVAs (Pre-, Mid, & Post-Intervention)

Scale	***F-Statistic***	***Mean, Standard Deviation (Pre-Intervention)***	***Mean, Standard Deviation (Mid-Intervention)***	***Mean, Standard Deviation (Post-Intervention)***	***Statistical Significance (Between Time-Periods; p < .05)***[+]
Brief Resilience Scale*	[$F(1.22, 12.18) = .22$, $p > .017$]	$M = 3.14$, $SD = .69$	$M = 3.21$, $SD = .62$	$M = 3.26$, $SD = .80$	Over time[♣]: No ($p = .70$)
Mental Health Inventory – *Total*	[$F(2, 20) = 1.51$, $p > .05$]	$M = 67.27$, $SD = 13.42$	$M = 75.00$, $SD = 11.68$	$M = 73.55$, $SD = 13.92$	Over time: No ($p = .24$)
Anxiety	[$F(2, 20) = 2.01$, $p > .05$]	$M = 46.18$, $SD = 21.49$	$M = 57.09$, $SD = 23.81$	$M = 53.45$, $SD = 23.21$	Over time: No ($p = .16$)
Depression	[$F(2, 20) = 2.06$, $p > .05$]	$M = 59.09$, $SD = 17.44$	$M = 70.91$, $SD = 13.57$	$M = 69.09$, $SD = 17.87$	Over time: No ($p = .15$)
Behavioural Control	[$F(2, 20) = .18$, $p > .05$]	$M = 66.82$, $SD = 19.40$	$M = 70.00$, $SD = 10.95$	$M = 70.91$, $SD = 18.28$	Over time: No ($p = .84$)
Positive Affect	[$F(2, 20) = .74$, $p > .05$]	$M = 50.45$, $SD = 15.88$	$M = 55.91$, $SD = 15.30$	$M = 57.27$, $SD = 18.62$	Over time: No ($p = .49$)
SF-36 – *Physical Functioning**	[$F(1.33, 13.30) = 1.96$, $p > .017$]	$M = 96.82$, $SD = 5.14$	$M = 87.27$, $SD = 26.11$	$M = 85.45$, $SD = 19.42$	Over time: No ($p = .19$)
Role Limitations Due to Physical Health	[$F(2, 20) = .14$, $p > .05$]	$M = 72.73$ $SD = 42.51$	$M = 75.00$ $SD = 27.39$	$M = 68.18$ $SD = 41.97$	Over time: No ($p = .87$)
Role Limitations Due to Emotional Health	[$F(2, 20) = .39$, $p > .05$]	$M = 27.27$ $SD = 29.13$	$M = 39.39$, $SD = 29.13$	$M = 39.39$, $SD = 44.27$	Over time: No ($p = .68$)
Pain	[$F(2, 20) = 1.39$, $p > .05$]	$M = 80.00$, $SD = 23.21$	$M = 79.09$ $SD = 23.59$	$M = 65.68$, $SD = 27.46$	Over time: No ($p = .27$)
Energy & Fatigue	[$F(2, 20) = 1.23$, $p > .05$]	$M = 37.73$, $SD = 17.23$	$M = 41.36$, $SD = 20.38$	$M = 46.36$, $SD = 20.99$	Over time: No ($p = .31$)

Emotional Well-Being	[$F(2, 20) = .81$, $p >$ .05]	$M = 57.09$, $SD =$ 20.17	$M = 64.00$, $SD =$ 17.25	$M = 64.36$, $SD =$ 17.75	Over time: No ($p = .46$)
Social Functioning	[$F(2, 20) = 1.23$, $p >$ .05]	$M = 54.55$, $SD =$ 21.85	$M = 67.05$, $SD =$ 21.12	$M = 62.50$, $SD =$ 29.05	Over time: No ($p = .31$)
General Health	[$F(2, 20) = .26$, $p >$ .05]	$M = 69.55$, $SD =$ 21.96	$M = 71.82$, $SD =$ 21.13	$M = 70.91$, $SD =$ 19.21	Over time: No ($p = .78$)

Notes. *Mauchly's test of sphericity was violated; Greenhouse-Geisser correction applied. Adjusted p values calculated using adjusted degrees of freedom; $p < .017$.
+ $p < .05$ unless marked by *.
♣ '*Over time*' refers to differences between related means *overall* (Laerd Statistics, 2013).

Discussion

The majority of participants in the current pilot study were female, which may be explained, in part, by 55% of the GS at the host institution being female (2,691; Office of Institutional Planning & Budgeting, 2018). Further, more women report their mental health issues versus men (Bushnik, 2016); and between the ages of 20 to 34, women (25.2%) are more likely to report high levels of perceived life stress compared to men (20.7%; Bushnik, 2016). Additionally, GS research has highlighted that females experience higher stress levels versus males (Jungbluth, MacFarlane, Veach, & LeRoy, 2011; Matheny, Ashby, & Cupp, 2005). The researchers have previously witnessed this phenomenon (i.e. more women being enrolled in MI-via-CALC studies for stress/anxiety [Fried & Irwin, 2016] and in peer-mentorship studies for mental health [Fried et al., 2018]). It has also been observed in other mental-health-related research (see Eaton et al., 2012), and in research addressing university students' mental health specifically (Hjeltnes, Binder, Moltu, & Dundas, 2015). Although no definitive interpretation can be offered to explain the high enrollment number of international students in the current study (*n* = 6/11), it should be noted that previous research has highlighted that international students experience higher levels of stress and anxiety compared to their domestic counterparts (Hyun, Quinn, Madon, & Lustig, 2007). It is possible, however, that the higher enrollment rate is due to the nature of the study, such that peer/social support has been shown to be an important factor for mitigating stress among international GS (Sullivan & Kashubeck-West, 2015). In fact, given *Breaking Grad's* peer coaching focus, the social support experienced by participants might have been a key contributor for the positive findings.

The researchers of the current study found promising, but mixed, results. Qualitatively, all participants reported perceived improvements in their mental health and resilience and

attributed this to their engagement in the *Breaking Grad* program. Participants reported increased self-awareness, skill acquisition, the ability to shift perspectives, and a sense of community and support. The qualitative findings are consistent with a previous MI-via-CALC study (Fried & Irwin, 2016), wherein the impact of MI-via-CALC was evaluated on the stress management of 30 full-time UGS and the researchers found themes similar to the current study (e.g. decreased/more manageable levels of stress/anxiety, shifting perspectives, increased self-awareness, skill acquisition). The findings from the *Breaking Grad* pilot study also coincide with what is known about some mentorship-based interventions (Cyr et al., 2016; Fried et al., 2018). Findings from Cyr and colleagues (2016) mirror those of the current study, such that participants positively viewed peer-based support for mental health. Additionally, the current findings are synchronous with those of Fried et al.'s (2018) peer mentorship study, wherein participants emphasized peer mentoring's positive impacts. Participants lauded the intervention for helping to improve their mental health, providing support and important skills for mental health and in general, and increasing physical activity and resilience.

Although the *Breaking Grad* intervention was positively viewed by all participants, everyone vocalized frustrations. Participants described busy schedules and shifting pairs as stressors that caused difficulties scheduling sessions, leading to missed sessions and opportunities to work with all assigned partners. It is not surprising that scheduling was challenging given that GS were asked to commit to 30-plus hours to fulfill program requirements – in addition to their already heavy workloads. There is a known correlation between academic workload and perceived stress among GS – GS that spend significant amounts of time in classes, labs, and working on assignments report high levels of stress (Kausar, 2010; Wyatt & Oswalt). It

is important to note that although participants' time demands increased from their study engagement, their perceived levels of stress did not.

Quantitatively, there was no statistical significance, which was not consistent with qualitative findings. This lack of significance is likely from the small sample size, versus being evidentiary of program failure. Particularly apt for the current and underpowered pilot study, "statistical significance should not be confused with the size or importance of an effect" and although "results are not 'statistically significant' it cannot be assumed that there was no impact…[as] statistically non-significant results might or might not be inconclusive" (Cochrane Community, 2013, pp. 1-2). Therefore, as advised by Field (2013), the means were also visually inspected. The visual inspection noted improvements: means for every scale increased from pre-intervention to mid-intervention, and from pre-intervention to post-intervention. Some means decreased slightly from mid-intervention to post-intervention. These findings are similar to Fried and Irwin's (2016) study exploring MI-via-CALC's impact on UGS' stress and anxiety. Findings from the current study imply the biggest changes transpired between the onset of the intervention until the middle and were mostly maintained until the end – while noting slight decreases for some scales – again, a similar finding to Fried and Irwin (2016). The slight decreases in means in the current study may be attributed to the timing of the post-intervention assessments (i.e. end of term, which tends to be stressful due to assignments).

Limitations

There are a number of limitations in this pilot study worth noting. First, self-selection bias may have been at play, meaning there was no way to distinguish between individuals who voluntarily consented and participated versus those who did not. Additional limitations were: (a) many potential participants were unable to attend mandatory training; (b) small sample size

which affected the ability to detect potential statistical significance and generalize findings; (c) arbitrarily-matched pairings, meaning not all pairings may have been a good fit; (d) some participants had challenges using the coaching tools, disallowing their partners to receive the full coaching experience; (e) some sessions were in public settings, which made receivers uncomfortable, such that they did not want to divulge personal information in an environment where they could be overheard by others not enrolled in the study; and (f) the lack of a control/comparison group, making it difficult to determine the effects of the current peer coaching model compared to other interventions or other types of coaching/mentorship models.

Conclusions

Despite the limitations, this pilot study of *Breaking Grad* demonstrated potential. Participants' positive experiences underscored MI-via-CALC's helpful attributes in a peer coaching and mentorship program for GS to improve mental health and build resilience. That is, all participants reported it helped them to better cope with stress and anxiety, while enhancing their resilience. Due to insufficient statistical power to draw conclusions from the quantitative findings, the qualitative findings are especially important when educing conclusions. Based on this pilot study, the authors recommend that an MI-via-CALC-peer-mentorship program: (a) be assessed in both larger-scale and longer-term interventions among GS; (b) utilize a comparison group; (c) offer additional (mandatory) training sessions at the beginning of the study (to allow for more participants); and (d) use consistent dyads.

Future Implications

The researchers would like to offer this program to a larger group of students, or to integrate MI-via-CALC into pre-existing programing and services targeting GS, if possible. Researchers at other institutions should consider implementing similar programs. Idyllically,

results from additional studies will contribute to this small but growing body of knowledge and eventually inform policies, programing, and practices aimed at tackling GS mental health.

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Chapter IV: Study III. Minding Many Minds: An Assessment of Mental Health and Resilience Among Undergraduate and Graduate Students; A Mixed Methods Exploratory Study[6]

It takes about 17 years for research findings to be accepted and put into practice (Morris, Wooding, & Grant, 2011). This lag time means people may not benefit from health research until almost a generation later (Canadian Institutes of Health Research, 2018). In the current climate of mental health – where rates of student mental illness and (mental health) service utilization are on the rise (Clay, 2013; Lipson, Lattie, & Eisenberg, 2019), 17 years is much too long. Based on recent research, mental health issues are currently at a crisis point on university campuses (Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Wyatt & Oswalt, 2013). The American College Health Association (ACHA; 2016) found that 65.4% of Ontario (Canada) students described feeling overwhelming anxiety, and that 89.5% of students felt overwhelmed by all of the things they had to do. Given the rampant rates of mental health issues on campuses, it is not only important that research is put into practice quickly, but that the research is comprehensive in addressing multiple types of pupils that include both undergraduate (UGS) and graduate students (GS). Researchers have found that approximately 60% of GS feel hopeless, exhausted, overwhelmed, and sad and/or depressed nearly all the time; compared to the general population, GS are more than six times as likely to experience depression and anxiety (Evans et al., 2018; Panger, Tryon, & Smith, 2014). Resilience to the negative effects of stress has been recognized as a crucial correlate to positive adaptations to university life (Pidgeon, Rowe, Stapleton,

[6] A version of this manuscript has been submitted and is currently under review for publication in the American Journal of College Health. Citation: Fried, R. R., Karmali, S., & Irwin, J. D. (Submitted July 2019). Minding many minds: An assessment of mental health and resilience among undergraduate and graduate students: A mixed methods exploratory study. *American Journal of College Health,* submitted and under review. See Appendix L for copyright information.

Magyar, & Lo, 2014). Given the protection it offers to help assuage student angst, resilience-focused research – particularly in the United States – has been growing as of late (DeRosier, Frank, Schwartz, & Leary, 2013; Gloria & Steinhardt, 2016; Hartley, 2011; Joyce et al., 2018; Schloz, Blummer, & Brand, 2011). Although the importance of some resilience-building behaviours – such as regular physical activity engagement – can be assumed for students across the globe, to adequately appreciate the unique mental health realities of students in various parts of the world, it stands to reason that the relevance of some mental health research is location-specific (Herring, O'Connor, & Dishman, 2010; Stonerock, Hoffman, Smith, & Blumenthal, 2015). To this point, of concern for Canadian interventionists is the paucity of existing data focused specifically on Canadian university students; most research to date pertains to American students (Clay, 2013; Evans et al., 2018; Wyatt & Oswalt, 2013). Of additional concern for university student-focused researchers is the fact that many mental-health-related questionnaires – such as the ones utilized in this current study – present their normative means based on populations that are representative of the population-at-large (versus students, specifically). Furthermore, these findings are now more than a decade old, meaning newer data is needed in order to fully contextualize the current status of mental health and resilience among the student population (Brazier et al., 1992; Garratt, Ruta, Abdalla, & Russell, 1994; Jenkinson, Coulter, & Wright, 1993; RAND, 2018; Ritvo et al., 1997; Smith et al., 2008; Veit & Ware, 1983; Ware, Kosinski, & Gandek, 2003). Therefore, it is essential that further research in this area seek to acquire a more illustrative picture of the mental health status, needs, and experiences of Canadian university students, so that it may be utilized in the creation of new solutions.

Study Aims and Operational Terms

This study aimed to assess the mental health and resilience of full-time UGS' and GS' at a large Canadian university. The specific objectives were to: (1) assess the state of students' mental health/wellness and resilience using previously validated tools; and (2) understand students' perceptions about: (a) what they believe works best to promote their resilience and mental health; (b) what challenges they face in promoting their own resilience and mental health; (c) what would help them to overcome these challenges; and (d) physical activity's role in their personal resilience and positive mental health. *Mental health* is described as "a state of well-being whereby individuals recognize their abilities, are able to cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their communities" (World Health Organization [WHO], 2003, p. 7). People – especially students – often describe their mental health with respect to stress and anxiety (Byrd & McKinney, 2012; Sunderland & Findlay, 2013). *Stress* is a person's response to an external demand or a stressor (Cook, 2014; Selye, 1956). Chronic stress may increase the chances of acquiring illnesses (Mariotti, 2015). *Anxiety*, although a natural human reaction, is described as being more intense than stress, and it causes both negative mental and physical effects (Rector, Bordeau, Kitchen, & Joseph-Massiah, 2008). It is frequently linked with feelings of worry and fear, even without the presence of a stressor (Arkin & Rucks, 2007). Continuous anxiety can disrupt health and wellness (Arkin & Rucks, 2007; Rector et al., 2008). By contrast, *resilience/resiliency* is the ability to manage and recover from challenging life events (Tugade & Fredrickson, 2011). The current study concentrated on two types of resilience: (a) academic – "increased likelihood of educational success despite personal adversities or vulnerabilities brought on by environmental conditions" (Wang, Haertel, & Walberg, 1997, p. 119); and (b) psychological – "adapting well in the face of

adversity, trauma, tragedy, threats, or significant sources of stress" (American Psychological Association [APA], para. 4). One behaviour deemed to be correlated with each of the above-noted states is *physical activity* (PA); findings from systematic reviews underscore that interventions utilizing physical activity are effective at reducing the burden of mental illness (Herring et al., 2010; Stonerock et al., 2015). PA is defined as movement produced by the body that expends energy, encompassing all types of activities – versus exercise, which refers to activities that are planned, structured, and repetitive, and purposely focus on improving and/or maintaining physical fitness (WHO, 2019).

Methods

Study design. Conducted at a large Canadian university, this mixed methods research (MMR) was done via two components: Component A (CA) focused on administering previously validated questionnaires: the Brief Resilience Scale (BRS; Smith et al., 2008), the Mental Health Inventory (MHI; Veit & Ware, 1983), and the Short Form (36) Health Survey (SF-36; Ware et al., 2003), and a demographic questionnaire (Appendix M). Component B (CB) dealt with collecting qualitative data via focus groups and semi-structured individual interviews (based on participant preference). Both components occurred between November 2017 and March 2018.

Recruitment and participants. Upon approval from the host institution's Health Sciences' Research Ethics Board (ID# 109399; Appendix N), students were recruited separately for each study component. Two separate study invitation emails were sent en masse to all UGS and GS at the host institution (Appendices O and P). Eligibility for both study components included: (a) full-time students (on either main campus or one of the affiliated schools); (b) enrolled in an undergraduate, master's, or doctoral program; and (c) English-speaking.

Participants were informed that completing the questionnaires constituted consent (Appendix Q). Focus group/individual interview participants provided signed consent (Appendix R).

Quantitative measures. Measures were completed via Qualtrics®.

BRS. The BRS measures resilience with respect to its original definition (i.e. to bounce back from stress), and has been deemed reliable (Cronbach's α = .0.84-0.87; Smith et al., 2008; Windle, Bennett, & Noyes, 2011). As an example of its focus, one item inquires: "I tend to take a long time to get over set-backs in my life" (Smith et al., 2008, p. 196). Comprised of six items, it utilizes a five-point Likert scale (*strongly agree* to *strongly disagree*), and higher means connote higher levels of resilience. (Appendix E).

MHI. The MHI quantifies mental health status and psychological well-being, and assesses overall emotional functioning (Veit & Ware, 1983). It is a reliable (Cronbach's α = .93) 18-item questionnaire with a six-point Likert scale ranging from 1 (*all of the time*) to 6 (*none of the time*; Ritvo et al., 1997; Veit & Ware, 1983). It has "four subscales (Anxiety, Depression, Behavioural Control, Positive Affect), and one total score" (Ritvo et al., 1997, p. 29). All five scores range from 0 to 100, with higher scores suggesting better mental health. The MHI was made to measure general psychological distress and well-being in otherwise 'healthy' populations, deeming it appropriate for assessing mental health in general populations, such as students (Veit & Ware, 1983). (Appendix F).

SF-36. The SF-36 was created for general and patient populations (Brazier et al., 1992; Garratt et al., 1994). It measures different aspects of mental health compared to the BRS and MHI, such that the SF-36 is inclusive of physical functioning, and appraises perception of physical, emotional, and mental health. It contains 36 questions and eight subscales. Per the scoring guide, "scores are representative of the percentage of the total possible score achieved,"

(RAND, 2018, para. 3) and it is scored using pre-coded numeric values that are re-coded based on the scoring key. Items are scored between 0 to 100, with higher scores indicating better health. This reliable tool (Cronbach's $\alpha = .80$) has been used with several sub-populations of university students (Jenkinson et al., 1993; Ribeiro et al., 2017). (Appendix G).

Qualitative measures. Individuals who wanted to participate and did not feel comfortable partaking in a focus group were permitted to engage in a one-on-one semi-structured interview. Separate focus groups were held for GS and UGS, and prior to implementation, questions (Table 1) were assessed for content and clarity and deemed appropriate by eight GS known to the researchers, but external to the study.

Table 1

Focus Group/Interview Questions

Question
What does (good) mental health mean to you?
In what ways does school affect your mental health/wellbeing?
How would you describe your own resilience?
Comparing your undergraduate experience to your graduate experience, what have you noticed about your mental health? (**For GS only*)
What does a healthy school experience look like?
In what ways are your mental health needs supported or met – or NOT – at school?
What supports do you need to cope with your mental health?
What role does physical activity play in your life?
What else should the researchers know?

Quantitative data analysis. UGS and GS data were analyzed together due to a technical challenge that disallowed the linking between demographic information to any of the tools. Scores for each scale were calculated based on their scoring instructions. Descriptive statistics were run on demographic data using IBM SPSS (version 21.0).

Qualitative data analysis. Data saturation was reached after interacting with six participants from each cohort, and transcripts representing all 30 participants were included in the analysis. The time to reach saturation was consistent with Guest and colleagues' assertion that, when interviewing homogenous populations, six interviews is adequate to detect meaningful themes (Guest, Bunce, & Johnson, 2006; Guest, Namey, & McKenna, 2016). To find emergent themes – versus predetermined categories – inductive content analysis was used to analyze transcriptions as a whole (Patton, 2002). Quality assurance steps were applied: (a) *credibility* – reflecting back responses after each question to ensure participants were correctly understood; (b) *confirmability* – multiple parties independently completed inductive content analysis (RRF, FC, & MK), and then discussed any discrepancies to establish main themes; (c) *dependability* – findings were summarized, debriefed, and meticulously discussed to control for biases and the research process was recorded in detail for an audit trail; and (d) *transferability* – methods, procedures, and analyses were documented, enabling others to decide whether or not findings may be transferable in other circumstances (Guba & Lincoln, 1989).

Results

The final response totals were as follows: demographic questionnaire, $n = 792$ (Appendix M); BRS, $n = 598$; MHI, $n = 619$; SF-36, $n = 696$; and 30 for CB (Table 2).

Table 2

Participant Demographics – CA and CB

Participant Characteristic	Participant CA Demographics				Participant Characteristic	Participant CB Demographics		
	N	%				N	%	
Sex								
Male	146	18.43			7	23.33		
Female	637	80.43			22	73.33		
Other	4	0.51			1	3.33		
Prefer not to say	4	0.51						
Age			Mean 22.02	SD 4.73			Mean 26.67	SD 10.61
17-24	610	77.01			18-24	19	63.33	
25-39	129	16.32			25-39	9	26.65	
40+	11	1.4			40+	2	6.66	
Ethnicity								
Aboriginal	2	0.25			African	2	6.67	
Caucasian	562	70.96			Caucasian	21	70	
East Asian	67	8.46			East Asian	1	3.33	
Hispanic	19	2.40			Eastern European	1	3.33	
Middle Eastern	29	3.66			Middle Eastern	3	10	
South Asian	41	5.18			Mediterranean	1	3.33	
Other: Mixed; unspecified; non-conformist	56	7.07			South Asian	1	3.33	
Prefer not to say	10	1.26						
Student Type								
Domestic/Local	649	81.94			Domestic/Local	26	86.67	
International	59	7.45			Out of Province	4	13.33	
Out of Province	79	9.97			Degree			
Other: Canadian citizen, but considered international/living abroad; permanent resident	4	0.51						
Degree								
Undergraduate	568	71.72			Undergraduate	16	53.33	
Master's	143	18.06			Master's	7	23.33	
Doctoral	75	9.47			Doctoral	7	23.33	
Year of Enrollment					Year of Enrollment			

1st	281	35.48	1st	9	30
2nd	205	25.88	2nd	5	16.67
3rd	145	18.31	3rd	7	23.33
4th	123	15.53	4th	5	16.67
5th +	31	3.92	5th +	4	13.33
Other: Unspecified	4	0.51			
Faculty			Faculty		
Arts and Humanities	51	6.44	Affiliate University College	3	10
Affiliate University College	128	16.16	Arts and Humanities	3	10
Education	35	4.42	Education	2	6.67
Engineering	56	7.07	Engineering	3	10
Health Sciences	161	20.33	Health Sciences	7	23.33
Information and Media Studies	29	3.66	Ivey	1	3.33
Ivey	12	1.52	Law	1	3.33
Law	4	0.51	Music	1	3.33
Medicine and Dentistry	21	2.65	Science	2	6.67
Music	16	2.02	Social Sciences	7	23.33
Science	121	15.28	Employment		
Social Sciences	148	18.69	Full-time	2	6.67
Other: Combined degrees, continuing studies	6	0.76	Part-time	9	30
Employment			Not working	14	46.67
Full-time	33	41.67	Other: Full-time Summer, Teaching position, external funding/grants	5	16.67
Part-time	291	36.74	Living Arrangement		
Not working	437	55.18	Off-campus, with roommates	13	43.33
Other: Full-time, seasonally; freelance work; teaching assistantships; occasional contract employment; self-employed; on-leave from current employment; internships; employed by university per funding; multiple part-time jobs that equal full-time hours; stipends	27	3.41	Off-campus, alone	5	16.67
Living Arrangement			Off-campus, with family or	8	26.67

			relatives		
Off-campus, with roommates	320	40.40	On-campus (Residence)	4	13.33
Off-campus, alone	82	10.35	Involved in other interventions for mental health and resilience	3	10
Off-campus, with family or relatives	200	25.25			
On-campus (Residence)	187	23.61			

Note. CA: $n = 792$ unique participants; however, not all participants completed all questions, meaning not all responses add up to 792. CB: $N = 30$. Focus groups, $n = 19$, interviews, $n = 11$.

With respect to attrition for CA: (a) 76 participants who completed the demographic questionnaire were removed for being enrolled part-time; (b) 91 participants who completed the BRS were removed for being enrolled part-time and/or not filling out more than half of the scale, which was a requirement to have usable data from the scale (Smith et al., 2008; Smith, Epstein, Oritz, Christopher, & Tooley, 2013); (c) 79 participants who completed the MHI were removed for being part-time and/or not completing more than half of the survey, which was needed for accurate data analysis (Ritvo et al., 1997); and (d) 213 participants who completed the SF-36 were removed for being enrolled part-time and/or not completing more than half of the survey (RAND, 2018; Ware et al., 2003; Ware, Snow, Kosinski, & Gandek, 1993). From CB, one participant was withdrawn and connected with appropriate care after indicating that they wanted mental health resources. Please refer to Table 3 for the questionnaire findings.

Table 3

Questionnaire Findings

Scale	***Average Score***	***Standard Deviation***
Brief Resilience Scale	3.05	0.86
Mental Health Inventory *– Total*	52.20	19.79
Anxiety	44.35	22.81
Depression	55.23	25.51
Behavioural Control	60.26	24.03
Positive Affect	48.86	20.43
SF-36 *– Physical Functioning*	90.86	15.66
Role Limitations Due to Physical Health	76.76	34.45
Role Limitations Due to Emotional Health	35.73	38.61
Pain	77.15	21.79
Energy & Fatigue	36.29	20.20
Emotional Well-Being	52.40	21.71
Social Functioning	61.55	26.70
General Health	59.80	21.20

Notes. BRS scores are between 1.00-5.00. Levels of resilience are ranked as low (1.00-2.99), normal 3.00-4.30), and high (4.31-5.00). The MHI and SF-36 use norm-based scoring, ranging from 0-100, with higher scores (i.e. above 50) indicating better health; and scores below 50 indicate worse health.

Qualitative. There were: (a) three GS focus groups (n = 9; 3 per group); (b) two UGS focus groups (n = 10; 5 per group); (c) five GS individual interviews; and (d) six UGS individual interviews. The Health Promotion Research Laboratory at the host institution housed the focus groups, which lasted between 77- and 112-minutes (average: ~88-minutes), and the interviews, which lasted between 12- to 72-minutes (average: ~40-minutes). Focus groups and interviews were audio-recorded and transcribed verbatim. All information and identities were kept confidential, and participants agreed to this verbally and in-writing. An experienced moderator and assistant moderator facilitated each focus group. *Honesty demands* were used to allay social desirability (i.e. participants were asked to be honest, as specific answers were not being solicited; Bates, 1992). Members of the research team were present during focus groups to record detailed notes, and were careful to omit discernible participant information (e.g. names).

GS. Regarding mental health- and resilience-related experiences, the following themes arose from the GS participants: (a) balance; (b) school stress; (c) need for more support; (d) importance of PA; and (e) relatively resilient. When describing the meaning of positive mental health and a healthy school experience, all participants discussed needing balance. GS verbalized the importance of being able to manage everything they had going on in their lives, which included school-related tasks as well as engaging in self-care, managing their mental health, and having time for family, friends, and fun. All participants verbalized school-related stress. Specifically, they noted the isolation associated with being a GS and the consequent difficulty in making friends and/or having a support system. Further, all participants expressed that graduate school was highly competitive, which created a negative and stressful environment where the norm includes comparing themselves to others. Many participants voiced vicarious stress; they felt anxious due to their experience of other students constantly talking about school. Many

participants felt that supervisors and/or faculty operated under antiquated notions based on their own experiences of graduate school. In turn, those faculty members perpetuated negative and unhealthy behaviours among current GS (e.g. a focus on schoolwork at the cost of lack of sleep, being overly anxious, not engaging in self-care). Further, all participants described their stress(ors) as being different than when they were UGS, in terms of now having other obligations in addition to schoolwork. With respect to mental health support/services on campus, all participants acknowledged that the host institution has many services, but felt that receiving help was still arduous. All participants voiced concerns about their personal difficulties accessing what they deemed to be appropriate services. Namely, they explained: (i) a desire for peer-programing when seeing a counsellor was not needed, but some support was required; (ii) waiting for prolonged periods (some reported up to four months) to see counsellors; (iii) not always being permitted to see a counsellor for more than one session or being turned away because they were not deemed as being in 'crisis'; (iv) the expense of off-campus services were high; and (v) needing services that are GS-specific, since GS often have different needs than UGS and some prefer to receive help away from the UGS whom they teach. The majority of participants lauded engagement in PA as beneficial for their mental health. However, some criticized the host institution for creating barriers, wherein students must pay per exercise class – with no little to no flexibility for missing classes or attending different ones – versus the previous on-campus system of free (i.e. tuition-included) drop-in classes. Several participants wished that recreational services were combined with mental health services. Although still a work in progress, the majority of GS participants described feeling more resilient compared to when they were an UGS and they attributed this to having successfully navigated hardships.

Table 4 contains quotations that illustrate the above-noted themes.

Table 4

GS' Mental Health- and Resilience-Related Experiences

Balance

"[Positive mental health at school means]…wanting to interact with people… Balance between work, exercise, play…just total welfare and giving my energy to all the facets that need giving to."

"…Being able to still go about your daily routine and functioning throughout the day with your responsibilities and being able to wake up and go to bed knowing that there were struggles you were able to face, but it didn't deter you from completing your tasks."

School Stress

"School adds stressors to everything that you do…"

Isolation

"…[Graduate school] can be very isolating. It feels like it is just me and my paper…"

"…It is much harder to make friends in grad school than it was undergrad…that's been a severe blow to my mental health…"

Peer Comparison

"…Comparing [myself] to peers and trying to impress [my] superiors was a large source of pressure for me."

Vicarious Stress

"…Everyone's stress feeds off of one another…all [students] talk about is tests…I really feed off of other people's stress – if someone is anxious, I feel anxious…"

Antiquated Notions

"…[Stress is a] whole culture because many faculty members went through [stress] when they were in grad school, so it's the idea of pushing yourself to extreme limits…a lot of students start working more than perhaps they should be, [which] isn't healthy."

GS. vs. US.

"There's always other pieces; [graduate school] is very diverse. At the graduate level, we are often researching, teaching, taking courses, maybe involved in a practicum component and having an RA-ship."

"…We have different struggles that we deal with. Not to say one is worse or lesser than the other, but [our issues as grads] are completely different sometimes."

Need More Support

Appropriate Services

"I would like to see more done…maybe a peer-to-peer matching program…there are so many issues that don't require formal counseling or therapeutic interventions. Some absolutely do, but often, you just want to hear that somebody else has gone through the same experience or understands the concerns you have."

Need more counsellors

"…[The school doesn't] have enough counsellors for the amount of students they have."

"…[Counsellors] are too far and few between. They're already overworked; it's a four-month wait to get in on a regular basis."

'Crisis'

"…[It's frustrating] when you're having a crisis, [but] not a 1-800-suicide-hotline-crisis, but a crisis none the less; and yet, you're given a six-week waiting time to see a psychiatrist."

Expensive

"…Access to psychologists and psychiatrists for free or subsidized prices [is needed] because our health plan doesn't cover it. …I had to make the decision to not get any treatment…because I need to eat."

GS-Specific Services

"…I went to Student Health Services [where] they have mental health [classes]…it wasn't adequate because I was in a room full of undergraduate students…'What if I [am a Teaching Assistant to] one of these people?' That is a huge conflict of interest that stressed me out."

Importance of PA

Benefits

"…If I'm not doing something physical, then my mental state is worse."

"…When I work out…I feel better throughout the day and sleep better… which [positively] affects my mood and my resiliency overall."

Barriers

"…Fitness classes, I've always loved, but I found that very difficult as a student because most of them you have to sign up for at a specific time…my schedule changes constantly so I can't sign up…"

"Now you have to pay for [fitness classes], you can't just drop in…that's ridiculous. …[Fitness classes are] a service the school should provide, especially [since the school] forces students to pay [for the gym]."

Integration

"…[The university is] doing so much with their mental health plan. But, one of the issues is that they don't tie other things into mental health…Physical health makes your mental health better… that's not reflected in the plan."

Relatively Resilient

"…School has a profound impact on my mental health. I experienced [high] levels of anxiety and depression in my undergrad…but, because of this bad episode…I was able to know who to talk to and know how to cope better in…graduate school…"

UGS. The following themes surfaced for UGS: (a) balance; (b) school stress; (c) need for more inclusive services; (d) importance of PA; and (e) moderately resilient. While discussing positive mental health, all participants verbalized the importance of balance, emphasizing a desire to engage in school work, their other activities, being able to have familial and peer relationships, while also being able to manage their health and wellbeing. With respect to stressors, all participants described various aspects of school causing stress, such as: (i) having too many deadlines – too many projects due at once and/or exams in a short time; (ii) difficulty receiving exam and/or project accommodations due to mental health-related illnesses – perceptions that faculty and staff sometimes make the process difficult, thus creating more stress; (iii) housing and environment – unsanitary conditions in on-campus housing causing students to get sick combined with difficult roommates and neighbors (in both on- or off-campus housing) who disrupt studying by being loud and not respecting boundaries; and (iv) vicarious stress – other students perpetuating the cycle of being stressed and anxious by regularly speaking about how much work they do, how many hours they study, and how they cannot make time for self-care. These vicarious stress messages are mostly heard outside of exam rooms and at the library, where others reportedly discuss topics such as: how many hours it took to complete a project or to study, spending an exorbitant amount of time at the library, and not having sufficient time or energy to engage in self-care. All participants highlighted that while the host institution has a plethora of mental health-related services, long wait times reduced accessibility – particularly with respect to seeing a counsellor – which led to the participants to describe their desire for the host institution to hire more counsellors instead of simply providing more workshop-type services (e.g. group workshops for managing stress/anxiety). Not being deemed as in 'crisis' was described as a reason for not being able to see a counsellor on a regular basis. All participants

described PA's benefits for both mental and physical health. They also discussed a barrier to engaging in PA due to the host institution's system of paying for classes (i.e. having to register and pay for a specific day/time and not being able to attend other days/times). Lastly, all participants discussed feeling moderately resilient, given what they had experienced, and gotten through so far in their lives; however, they all wished to learn more coping skills and become more resilient.

Table 5 showcases illustrative quotations.

Table 5

UGS' Mental Health- and Resilience-Related Experiences

Balance
"…Part of life is being stressed. Good mental health is being able to balance all of your priorities, and cope with things when they do happen."
"[Positive mental health at school means] navigating the tricky balance between your family and social life, your health, and your career or school."
School Stress
"…The stress from school is what initiated me being sick."
"The thing with school is that's your number one priority. You're not giving time for yourself or family…the lack of sleep really affects mental health…it really has a negative effect."
Deadlines
"…The work load, it felt like it was too much; there are too many deadlines too close together."
Accommodation Difficulty
"…I have three exams…one was one night before; the other[s] were two hours apart on one day…you can't go change that because [the academic counsellors say] that's what it is. They're not flexible…they don't understand the amount of stress we [endure]."
Housing and Environment
"…It's really not hygienic in the residence that I'm in. I've been sick five times since September."
"…The residence that I'm in has a [bad] reputation [for partying and noise]. …Once you're in this [housing] situation, then you have to deal with it…it's not fair."
Vicarious Stress
"…You go to [the library] during finals and…you feel the stress…become stressed. …you go home and your roommates are freaking out…you start to freak out. …People feed off of each other's negativity. …That definitely affects your mental health."
Need More Services
"…[The school is] giving us resources, but how are we supposed to use them if we can't access them when [needed]?"
"…There is a disconnect… [for] students to [access] resources…[because] the wait time is two months."
"I need a counsellor – not a massage."
Importance of PA
Benefits
"Exercise is like a stimulant for the brain – like taking an extra dose of medication every day…I can't skip it. …I need it to do well in school…"
Barriers
"…Something incredibly frustrating is that [the Rec Centre] is charging for classes. …You're going to teach the importance of exercise, but [there's an] additional hurdle juxtaposed on us? I'm not gonna pay five dollars a class. …I have [student loans]!"
Moderately Resilient
"…In terms of personal resilience, it's moderately high, but it's still a work in progress. …It's recognizing that it's a work in progress and every day comes with new challenges that present an opportunity to develop more resilience."

Discussion

The current study sought to assess the current state of UGS' and GS' mental health and resilience on a large Canadian campus. Most participants identified as female (80.43% for CA; 73.33% for CB). This finding was not surprising. Although only 55% of the host institution's GS (n = 3,244), and 55% of UGS (n = 13,223) identify as female, compared to men, women more often report their mental health issues (Bushnik, 2016; Office of Institutional Planning & Budgeting, 2018). The current study's demographics are consistent with other mental-health-related research, specifically studies concerning university students' mental health (Eaton et al., 2012; Fried, Atkins, & Irwin, 2019; Fried & Irwin, 2016; Fried, Karmali, Irwin, Gable, & Salmoni, 2018; Hjeltnes, Binder, Moltu, & Dundas, 2015).[48-52] More master's than doctoral students completed the questionnaires, which is likely because more master's students are enrolled at the host institution compared to doctoral students (n = 3,750 versus n = 2,185, respectively). Overall, more UGS participated in CA, which reflects the numbers of UGS and GS enrolled (n = 23,422 versus n = 5,935, respectively).

Quantitatively, the intention was to assess any similarities and/or differences between both cohorts' mental health and resiliency. However, as noted earlier, due to a technical challenge which prevented the use of unique and anonymous participant identification numbers via mass email, the questionnaire results were amalgamated. Although the quantitative data is not distinguishable between the two groups, the results from the BRS, MHI, and SF-36 are still useful, in that they indicate that students – as a whole – are moderately resilient, and while aspects of their mental health are more concerning than the general population, other components are consistent with or even better than what is considered 'normal'. On the BRS, participants demonstrated normal levels of resilience (3.05; normal = 3.00-4.30). The findings from the

current study are consistent with what was shared during interviews by both cohorts (i.e. moderate levels of resilience, but still a work in progress). These findings are also in line with other studies addressing UGS and GS mental health and resilience (Fried et al., 2019; Fried & Irwin, 2016; Fried et al., 2018). Likewise, the findings are congruous with – but slightly lower than – two separate groups of UGS assessed by the authors of the BRS (3.53 and 3.57, respectively; Smith et al., 2008). With respect to the norm-based MHI (i.e. scores ranging from 0 to 100, with higher scores indicating better health, and scores below 50 indicating worse health), the *total* score was just above the norm (52.20), but lower than a group of American UGS (n = 605; MHI total 73.15; Hartley, 2011). *Anxiety* for the sample in this current study was below the norm at 44.35 (i.e. evaluated as more problematic), which coincides with the feelings of anxiety/stress discussed during the focus groups/interviews. These findings suggest that anxiety is an issue among both cohorts of students, and this aligns with other studies that report anxiety to be high among both UGS and GS (ACHA, 2016; Canadian Federation of Students-Ontario [CFSO], 2018; Evans et al., 2018; Wyatt & Oswalt, 2013). Regarding the norm-based SF-36 (i.e. scores ranging from 0 to 100, with higher scores indicating better health, and scores below 50 indicate worse health), one subscale (*Physical Functioning*) was slightly higher than the presented norm for the general American population (90.86 compared to 84.15, respectively; Ware et al., 2003; Ware et al., 1993). This difference may be due to the fact that the population in the current study was younger than the population used to generate the presented norms, and thus, might be more active and free of injuries and other ailments that occur as individuals age (Netz, 2018). Interestingly, six subscales (*Role-Physical*, *Role-Emotional*, *Energy and Fatigue*, *Emotional Well-Being*, *Social Functioning*, and *General Health*) produced scores that were slightly-to-significantly lower than those produced by the general American population (76.76,

35.73, 36.29, 52.40, 61.55, and 59.80, respectively, compared to 80.96, 81.26, 60.86, 74.74, 83.28, and 71.95, respectively; Ware et al., 2003; Ware et al., 1993). The differences between the populations align with what participants of the current study voiced in the interviews/focus groups, such that they: (a) sometimes found it difficult to engage in PA due to barriers surrounding signing up for gym classes; (b) had a difficult time accessing a counsellor; (c) felt isolated: (d) had difficulty with their living environments; and (e) felt tired and unbalanced. It is possible that the differences between both groups may be due to a number of factors, such as: sample size (N = 2,474 compared to those in the current study, BRS, n = 598; MHI, n = 619; SF-36, n = 696); age range and stratification (i.e. the population of the current study was heavily in the 17-24 cohort, while those in the comparative norm group were more equally distributed between the ages of 25-75); and the years in which data collection took place (~1992 for the American general population versus 2018 for the current study). However, the authors speculate that these differences may, in fact, be related to the fact that the population of the current study – students – do, indeed, fare worse than the general population with respect to their (mental) health.

With respect to the emergent themes from qualitative components of this research, it was clear that *both* GS and UGS: (a) feel they experience high levels of school-related stress; (b) identified as being moderately resilient; (c) agreed that PA has benefits for mental and physical health, and craved easier access to PA; (d) defined a healthy school experience as having balance; and (e) believe more counsellors are needed, as well as easier access to mental health-related services. Although research exists emphasizing that GS differ from UGS, the qualitative findings from this current study suggest that perhaps, both cohorts are more alike than different when it comes to *addressing* mental health issues (Arnold, 2014; Panger et al., 2014). While GS

expressed a desire for services separate from UGS due to differing stressors and not wanting to see their students, the fact remains that the same/similar themes were found between both groups – suggesting that although both groups experience different stressors, the same services may be needed with the point of delivery differing. Further research is warranted to address the most effective provision of mental-health- and resilience-related services for GS and UGS.

In addition to the aforementioned qualitative themes, GS noted the stressor pertaining to trying to impress supervisors/superiors. These findings seem to align with other research, such that approximately 51% of Ontario GS expressed not feeling supported by their academic institution, and 70% felt pressured to overwork (CFSO, 2018). Further, similar themes were found in a recent intervention addressing GS' mental health, wherein 11 GS participants described (a) school as a stressor (e.g. supervisors, deadlines, lack of school support); (b) peer-programing as beneficial for their mental health and resilience (e.g. mentorship and coaching); and (c) PA as being helpful for their mental health and resilience (Fried et al., 2019).

Limitations and Future Suggestions

This study was not without limitations. First, both study components were voluntary, leading to potential self-selection bias with no way to differentiate between individuals who participated and individuals who did not. As noted previously, for the quantitative data, UGS and GS data were analyzed together due to a technical challenge that precluded the connection between demographic information to any of the tools, as well the inability to link survey/questionnaire data. Resultantly, an original study objective to assess similarities and/or differences between GS and UGS was not met. Instead, quantitative data responses were amalgamated, leaving no way to differentiate between the groups. It is advised that future research attempt to collect separate data sets to obtain a more accurate reading of mental health

and resilience among each cohort. Further, the lack of IDs and inability to link surveys/questionnaires meant there was no way to discern the actual total number of participants in the study and consequent response rate. That is, it is possible – and assumed based on individual survey/questionnaire responses – that some participants only completed one or some of the surveys/questionnaires, versus completing all of them. Again, it is suggested that future research find a way to provide unique IDs for participants and/or to link data, so that a more accurate number of participants can be known. However, it should be noted that although the authors of this current paper feel that separating data by cohort would be useful and should be done in future studies – because each group is unique – amalgamating data from UGS and GS has been common practice in other university student mental health focused studies (ACHA, 2016; O'Neil, Lancee, & Freeman, 1984; Pledge, Lapan, Heppner, Kivlighan, & Roehlke, 1998; Westefeld & Furr, 1987). Additionally, participants were allowed to skip any/all questions; but, data was deemed unusable in instances where participants completed less than 50% of the questions (based on scoring guidelines).With respect to CB: (a) not all individuals who expressed interest in participating in the study felt comfortable doing so in a large focus-group-based setting; (b) not all interested participants felt comfortable participating in a focus group at all; and (c) due to scheduling conflicts, some participants were not able to participate in the focus groups, but instead opted to participate in an individual interview. While this could be considered a limitation – given that it is oft reported that six to ten participants are needed for a focus group – smaller focus groups have been reported as being more beneficial for topics, like mental health, that might be sensitive in nature and include strong feelings (Kitzinger, 1994; Toner, 2009). With respect to the number of focus groups needed to reach saturation, Guest and colleagues (2016) noted that 80% of themes tend to be found in two to three focus groups, and 90% within three to

six. There is also evidence suggesting that a combination of focus groups and interviews produces richer data than one approach alone and is useful in instances where participants are unwilling or unable to partake in focus groups (Lambert & Loiselle, 2008).

Conclusions

The results from the surveys/questionnaires present an interesting conclusion: Overall, and with a few exceptions, the mental health and resilience of the students in this current study are not terribly different than the general population or other groups of students. This, then, poses an intriguing question: Are the general population and university students in trouble? Or, are these findings indicative of the fact that students' qualitative perceptions of how they are doing do not always match what the quantitative tools are able to able to answer? More research is needed to pursue these queries. Findings from the current study, do however, echo what has been illustrated in other research. Namely, certain mental health issues (e.g. anxiety and emotional health) are prevalent among university students at all academic levels, and these issues are often directly related to school. While the majority of students discussed having moderate levels of resilience, they also expressed the desire to become more resilient. The findings underscore students' perceptions of the dire need for more counsellors and access to (mental health) services on campus, as well as easier access to PA. While more Canadian specific research assessing students' mental health and addressing the similarities/differences between GS and UGS is warranted, it is evident that regardless of academic level, there is an urgent and present need for increased services on campus for all students.

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Chapter V: Summary, Discussion of Limitations and Findings, and Future Implications and Conclusions

Summary

Given that mental health issues are considered to be at 'crisis' levels among the university student population (American College Health Association [ACHA], 2014; Arnold, 2014; Canadian Federation of Students-Ontario [CFSO], 2018; Clay, 2013; Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Panger, Tyron, & Smith, 2014; Wyatt & Oswalt, 2013), the intention of this dissertation was to assess and address mental health issues among this populace. To do this, the researcher (and her colleagues) sought to collect data pertaining to the current climate of mental health at a large, urban, Canadian university. Further, the researcher (and her colleagues) endeavoured to address common mental health issues among the university student population – specifically stress, anxiety, and resiliency – through offering unique interventions. An effort was made to not only mitigate the negative effects of stress and anxiety, but to do so by utilizing evidence-based interventions that also help build resiliency, such as those focused on physical activity (PA; Herring, O'Connor, & Dishamn, 2010; Stonerock, Hoffman, Smith, & Blumenthal, 2015), mentorship (Cyr, McKee, O'Hagan, & Priest, 2016; Mental Health Commission of Canada [MHCC], 2016), and motivational interviewing via Co-Active Life Coaching (MI-via-CALC)/peer coaching (Fried & Irwin, 2016; Mantler, Irwin, & Morrow, 2013; Pearson, Irwin, & Morrow, 2013). The interventions were intended to offer students tools to increase their overall health (i.e. a health promotion approach), as well their resilience – the latter of which is a key component of positive mental health (Tugade & Fredrickson, 2011). Another key element of this dissertation was to explore UGS' and GS' unique views with respect to their levels of mental health and resilience, as well as with respect

to what each cohort felt they needed to positively address their mental health- and resiliency-needs – which was done as a way to further investigate previous researchers' findings that indicate that GS are not 'just older students' but do, in fact, differ from their UGS counterparts when it comes to struggling with stress and anxiety, as well as what services are needed to manage both cohorts (Arnold, 2014; CFSO, 2018; Evans et al., 2018; Panger et al., 2014; Wyatt & Oswalt, 2013).

Discussion of Limitations and Findings

Limitations. Although each of the dissertation studies produced important findings, none of the studies were without limitations. Self-selection bias was a limitation of all three studies, given that it was not, and is not, possible to distinguish between individuals who decided to participate in the studies versus those who did not. Both Studies I and II were limited due to their small sample sizes. In Study I, not all of the quantitative data was fit for data analysis, given that when running ANOVAs, participants acted as their own controls (as per Kieffer, 2002) and thus, data from all time points were needed. But, because some of the participants did not complete all of their questionnaire data – and the tools' creators specify that more than half of the answers must be completed in order to provide sufficient data (i.e. the BRS [Smith et al., 2008; Smith, Epstein, Oritz, Christopher, & Tooley, 2013]; the MHI [Ritvo et al., 1997] and the SF-36 [RAND, 2018; Ware, Snow, Kosinski, & Gandek, 1993] – those participants and their data had to be removed. In Study II, the researchers were unable to recruit the desired number of participants to reach statistical power, which was due to only having a short window for recruitment (approximately two weeks), and participants not being able to attend the mandatory, full-day MI-via-CALC training. Specifically, the small sample sizes interfered with the researchers' ability to detect any statistical significance with respect to the peer mentorship's and

peer coaching's true impacts on the participants and their mental health and resiliency. Future research should endeavour to observe more participants. Finally, an important limitation arose during Study III. An original intention of this dissertation was to collect data that was specific to the GS population, so that it could be compared with that of the UGS population. However, due to technical challenges, separating the quantitative data between UGS and GS in Study III was not possible. Because previous researchers (Arnold, 2014; Evans et al., 2018; Panger et al., 2014) have identified GS as being different than UGS, it is worth mentioning that future researchers of this subject matter should be sure they can separate the data by student type.

Strengths. While it is important to discuss the limitations of the studies presented in this dissertation, it is equally important to highlight the strengths. All three studies were designed utilizing a mixed methods research (MMR) approach, allowing both quantitative (deductive) and qualitative (inductive) data to be collected and assessed. In this regard, both data sets were invaluable, as they were able to complement each other: Both pieces of data helped to tell a more complete 'story' of what was transpiring among the participants. To clarify, the quantitative and qualitative data complemented and supplemented each other, such that the qualitative data was able to help put the quantitative data into context (e.g. with respect to Study III – and from a quantitative lens – the one sub-scale on the MHI and six sub-scales on the SF-36 illustrated that stress and anxiety were issues among the participants, which was put into greater context through the participants explaining the same feelings and experiences in the qualitative component of the study). And, in instances where the sample sizes were too small to detect any statistical significance (with respect to the efficacy of the interventions being assessed), the qualitative information provided the participants' first-hand experiences, permitting the researchers to know whether or not the interventions being offered were beneficial. The opposite is also true, wherein

the quantitative data was able to contextualize the qualitative data (e.g. participants consistently scored within the normal range on the BRS across all three studies, and qualitatively, this was expressed when participants described feeling 'moderately' and 'relatively' resilient).

Another positive aspect of all three studies was with respect to the participants. Given the lack of available data on Canadian populations, the studies in this dissertation were able to provide more insight on the mental health and resilience of Canadian students, adding to the small – but growing – body of previously existing literature.

Although the sample sizes were small for Studies I and II – leading to the potential inability to detect statistical significance – the small number of participants permitted the researchers to work closely with participants, which allowed for greater feedback about what parts of the interventions were working well and which pieces were challenging. This feedback was important to glean, as it will be taken into account and utilized when putting together future research programs; and it is also important for academic institutions to consider when creating and implementing new student policies and practices, with respect to student mental health.

Another strength of the study – and perhaps the most important, in the opinion of the researcher – lies within the concept of health promotion. The pillar of this dissertation was/is health promotion, such that one of the objectives of Studies I and II were to provide students with tools and methods to manage and alleviate their stress and anxiety, while building resiliency. In both Studies I and II, all participants described: (a) increases in their resilience; (b) decreases in stress and anxiety; and (c) learning new skills and tools that greatly aided in their management of their mental health. Of further importance, not only did the participants on the receiving end of the interventions receive benefits, but the providers of the interventions (i.e. the

mentors in Study I and the peer coaches in Study II) also experienced benefits through their provision of help.

Findings. Each of the three studies in this dissertation has the ability to stand on its own – with each offering unique insights – but, together, the findings from this compendium of studies contribute to understanding and influencing the larger puzzle that is mental health. An interesting finding from all three studies – but not highly surprising – was with respect to the participant demographics. When looking at all three studies, the researcher observed that more females participated than males. This was not shocking, given that women tend to report their mental health issues more often than men (Bushnik, 2016); and this phenomenon is consistent with other mental-health-related research, specifically those addressing university students' mental health (Eaton et al., 2012; Hjeltnes, Binder, Moltu, & Dundas, 2015).

It is becoming common knowledge that mental health issues are prevalent among university campuses for both UGS and GS (ACHA 2016, 2013; Arnold, 2014; Clay, 2013; Evans et al, 2018; Panger et al., 2014; Wyatt & Oswalt, 2013). Pursuant to these previous findings, the findings from the three studies in this dissertation provide further evidence that mental health is a topic of importance to students, as well as offering more current and up-to-date Canadian data, which is not abundantly available. Unique findings from Study III were the several notable results that truly underscored that mental health issues – with specific regard to stress and anxiety – are ubiquitous among the university population (i.e. one subscale on the MHI and six subscales of the SF-36 produced scores slightly-to-significantly lower than those of the general American population; Ware et al., 2003; Ware, Snow, Kosinski, & Gandek, 1993). Even though some of the survey/questionnaire results suggested that participants were exhibiting normal rates of mental health and resilience compared to other populations, the one subscale from the MHI

and the six subscales of the SF-36 were indicative of stress and anxiety issues among both cohorts of the university population. Moreover, these quantitative findings were in alignment with the qualitative findings from the focus groups/interviews, and were the same for both UGS and GS.

Lastly, and perhaps the most interesting of the findings (in the researcher's opinion), was the consistency of what was reported by UGS and GS. With respect to quantitative findings, both Studies I and II demonstrated that while each cohort is indeed struggling with stress and anxiety, the results from the BRS, MHI, and SF-36 appeared to be fairly similar, although any statistical comparison of the findings would be inappropriate given interventions for UGS and GS were unique and conducted separately. Inspecting the qualitative findings from all three studies, it is apparent that, thematically, both UGS and GS experience and struggle with their stress and anxiety and wish to become more resilient individuals. Despite the groups having some different stressors, a key finding from the studies was that both UGS and GS are interested in the same mental health- and resilience-based services; and that they benefitted from the same types of interventions, namely PA and peer coaching/mentorship. Both groups also voiced a need for better integration of mental health services with PA-based services, easier access to PA, and raised their concern about the university needing to hire more counsellors. However, GS expressed a desire to receive their services away from their UGS peers, given that GS often teach and/or mentor UGS.

Future Implications and Conclusions

Future research on the subject of UGS and GS stress, anxiety, and resiliency should take into account the limitations noted above (as well as throughout this dissertation), such that larger sample sizes are needed. Further, researchers should also consider assessing and collecting data

by cohort. Additionally, it could be of use to conduct studies that focus on biological (i.e. sex) differences, in an effort to understand the mental health needs of male students; and perhaps to identify why more female students tend to participate and report their mental health issues compared to male students. Despite any limitations, the findings from all three studies are indicative – and in alignment with other research – that PA, MI-via-CALC, and peer mentorship and coaching are conducive to assuaging the negative effects of stress and anxiety, while helping to build resilience. More importantly, all of the findings speak to the very core of this dissertation, being that health promotion is about enabling individuals to increase control over their health and to ultimately improve it (WHO, 1986). Academic institutions possess the unique ability to create policies, programs, and practices that prioritize student mental health. Ideally, the findings from this dissertation will aid future policies and practices at these institutions, so that students may be given not only the gift of education, but the building blocks to better (mental) health and resilience.

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Appendix A

Copyright Information for International Journal of Evidence Based Coaching and Mentoring

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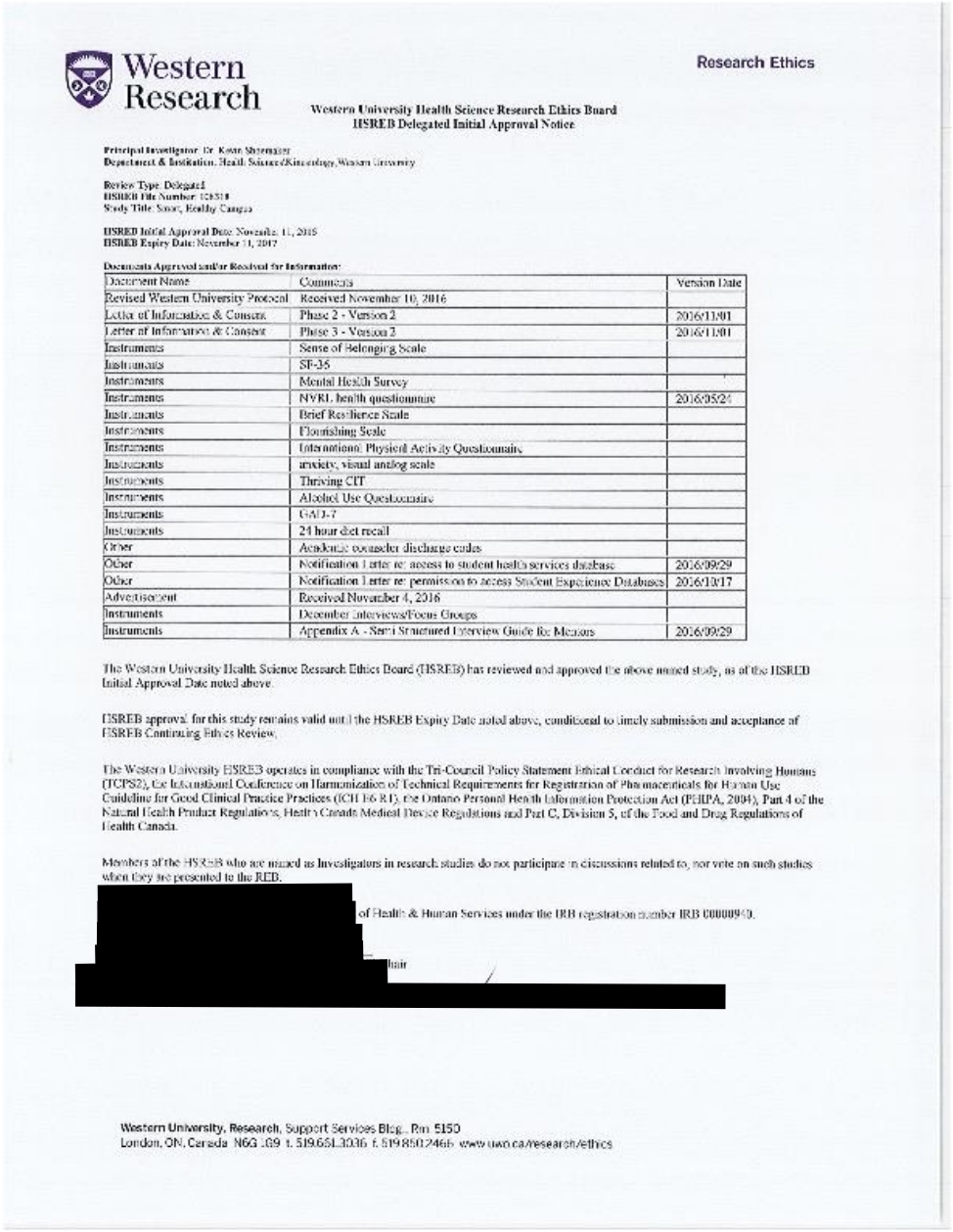
Appendix B

Ethics Approval – Study I



Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Kristi Sherrington
Department & Institution: Health Sciences/Kinesiology, Western University

Review Type: Delegated
HSREB File Number: 108518
Study Title: Sense, Healthy Campus

HSREB Initial Approval Date: November 11, 2016
HSREB Expiry Date: November 11, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Revised Western University Protocol	Received November 10, 2016	
Letter of Information & Consent	Phase 2 - Version 2	2016/11/01
Letter of Information & Consent	Phase 3 - Version 2	2016/11/01
Instruments	Sense of Belonging Scale	
Instruments	SF-36	
Instruments	Mental Health Survey	
Instruments	NYRI health questionnaire	2016/05/24
Instruments	Brief Resilience Scale	
Instruments	Flourishing Scale	
Instruments	International Physical Activity Questionnaire	
Instruments	anxiety, visual analog scale	
Instruments	Thriving CIT	
Instruments	Alcohol Use Questionnaire	
Instruments	GAD-7	
Instruments	24 hour diet recall	
Other	Academic counselor discharge codes	
Other	Notification Letter re: access to student health services database	2016/09/29
Other	Notification Letter re: permission to access Student Experience Databases	2016/10/17
Advertisement	Received November 4, 2016	
Instruments	December Interviews/Focus Groups	
Instruments	Appendix A - Semi Structured Interview Guide Re Measures	2016/09/29

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

[redacted] of Health & Human Services under the IRB registration number IRB 00000940.

[redacted] Chair

[redacted]

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6G 1G9 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/ethics

Appendix C

Letter of Information and Consent – Study I

TITLE: Smart, Healthy Campus: Phase 2
Principal Investigator: Dr. Kevin Shoemaker
Research Staff: Arlene Fleischhauer, Bradley Matushewski, Jen Vording, Dan Lizotte, Paulina Bond, Kaitlyn Jacobs, Rachel Knetsch, Francesca Gable, Jen Irwin, Laura Misener, Rebecca Fried, Shazya Karmali.

Sponsor: Western's Interdisciplinary Development Initiative

INTRODUCTION AND PURPOSE

You are being invited to participate in a research study that will examine the relationship between levels of physical activity and mental health outcomes amongst Western University students. You are asked for permission to access information about yourself from several data bases on Western's campus. You also will be asked to fill out several questionnaires which may take about one hour to complete. Approximately 2500 participants will be recruited in this study.

Before agreeing to participate, please read this LETTER OF INFORMATION and ask any questions you wish.

Participant Inclusion/Exclusion Criteria

Inclusion Criteria:
- Any full-time student at Western University.

Exclusion Criteria:
- Unable to provide written informed consent, or to complete questionnaires or health history forms due to language or cognitive difficulties; Students in graduate or professional programs; Any part-time student.

STUDY DESIGN and PROCEDURE

This study will include the gathering of historical data about you from several different existing data bases on campus, de-identify the data (so no-one can link any data to you), and generate a new data base for analysis. The data bases to be accessed at Western include the following:

a) Registrar's office: We wish to study the relationship between your physical activity patterns as a student and the grades you attain (only the term average grades will be used).

b) Sport and Recreation Services: To examine the dates you entered the Student Recreation Centre.
c) Student Experience Co-Curricular Activities: These records relate to the activities you pursue to enhance your educational and personal development. We wish to include these data in order to examine the relationships between your academic, non-academic personal improvement, and physical activity patterns.
d) Student Health Services: To examine the dates you accessed Western-based medical assistance.
e) Psychological Services: To examine the dates you accessed Western-based medical assistance.

In each case, the information obtained from your records will not be linked to you.

In addition to the existing data, you are asked to fill in a number of questionnaires that assess physical and psychological health. These questionnaires are outlined below and may take about one hour to complete: you may take a break as needed.

Physical Health Monitoring:

1. Heart rate and physical activity monitoring: Heart rate and physical activity monitoring: You will be asked to wear a small device that records your heart rate and movement patterns. This device may be worn continuously, or in repeated shorter-periods, for up to 72 hours. The device will be an elastic chest strap around your chest or fixed to your chest by 2 adhesive electrodes. You will receive the device, and return it, to the laboratory located in the Labatt Health Sciences Building Room 402 or 417.
2. Health and Activity Questionnaires: You will be asked to provide information regarding their general health (The NVRL General Health Questionnaire), your diet over the past 24 hours, your general levels of physical activity (the International Physical Activity Questionnaire (IPAQ)). In addition, the SF-36 is a 36-question survey evaluating individual perception of physical, emotional and mental health.

Psychological Health and Well-Being

1. Anxiety Questionnaires:
    a. GAD-7 is a 7 question survey which assesses one's anxiety over the preceding week and will be used on a few times during your involvement in this study.
    b. Visual Analog Scale (VAS): using a 0-100 scale, you will indicate your overall level of anxiety at that moment in time. This test will be used frequently but takes only a few seconds to complete.
2. The Alcohol Use Disorders Identification Questionnaire (AUDIT): You are asked to complete this 10-question that asks questions about the frequency and volume of alcohol consumption.
3. Mental Health Inventory (MHI): You are asked to complete the Mental Health Inventory (MHI) to quantify mental health status and psychological wellbeing.
4. Psychological Resilience, Thriving and Flourishing:

a. Brief Resilience Scale: A six-item questionnaire to assess how individuals bounce back or recover from stress.
b. The Comprehensive Inventory of Thriving and the Flourishing Scale to obtain a more comprehensive view of coping strategies and psychological well-being.
c. The Sense of Belonging scale assesses the ways in which you interact with others on campus.

f) Groningen Sleep Quality Scale (GSQA): The quality of your sleep provides information regarding both your physical and psychological health. Sleep quality will be measured using the heart rate monitors outlined above, but also through this simple 15-question survey.

In each case, the information obtained from your records will not be linked to you.

STUDY BENEFITS
The expected benefits include improved understanding of the relationship between their choices regarding physical activity and nutrition and their overall health, particularly mental health.

STUDY RISKS
There are no physical risks. Many steps of encryption are taken to protect the data and no identifiable data leave the source data bases. Also, we are studying the entire group of individuals rather than individuals. Therefore, the risk of linking any information to an individual is extremely low.

YOUR PARTICIPATION
Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future care, academic status, or employment. If you withdraw from the study before its completion then you may decide whether to also withdraw your data.

All other study data (e.g., paper files, digital files) will be kept for a minimum of 20 years.

If you are participating in another study at this time, please inform the study coordinator right away to determine if it is appropriate for you to participate in this study.

Whether you agree to participate in this study or not, you will be asked if you consent to having your name and contact information added to a master database of individuals who would be willing to be contacted in the future regarding your interest in other research studies.

Representatives of the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Confidentiality
In addition to the study data, we will also be collecting data that may identify who you are, including your name, postal code, telephone number (to stay in contact with you throughout the study), date of birth (to establish your age), your family Physician (to keep them informed if you consent), and health card number (in case we wish to explore health care records for additional measurements). To protect your confidentiality, your name will be replaced with a participant ID number on all documents. The master list linking your identity and participant ID number and your contact information will be stored separately in a secure and encrypted data file at Western

University. Your contact information will be maintained securely at Western University to allow for setting up follow up visits. Your research records will be stored in a secure office at Western University. Use of your personal health information may also be done through the Institute for Clinical Evaluative Sciences (ICES). Since some medical tests are performed at outside labs or other institutions and local medical records may be incomplete, linkage will allow a more comprehensive and complete data collection. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published. No information that could reveal your identity will be released to anyone with the exception of your Family Doctor if you give permission for this. Your data will be retained for at least 20 years.

ALTERNATIVES TO STUDY PARTICIPATION
You may choose not to participate in this study.

Reimbursement
You will not be reimbursed for your involvement in this study.

CONTACT PERSONS
If you have any questions about the study please contact:
Smart, Healthy Campus Research Staff: Bradley Matushewski [redacted]
Research Nurse: Arlene Fleischhauer [redacted]
Principal Investigator: Dr. Kevin Shoemaker, [redacted]
If you have any questions about the your rights as a research participant or the conduct of this study, you may contact the Office of Human Research Ethics [redacted] email: [redacted]

Or send an email to [redacted]
Please note that email is not considered a secure method of communication and you should not send any personal health information via email.

You will receive a copy of the fully signed informed consent document for your records. You do not waive any legal rights by signing the consent.

Title: Smart, Healthy Campus, Phase 2: Retrospective Analysis
Principal Investigator: Dr. Kevin Shoemaker
Research Staff: Laura Misener, Dan Lizotte, Elham Harirpoush, Miriam Capretz, Katarina Grolinger, Alan Salmoni, Trish Tucker, Shauna Burke, Angie Mandich, Harry Prapavessis, Mark Daley, Arlene Fleischhauer, Bradley Matushewski, Jen Vording.

CONSENT
I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

☐ I consent to contact with my family physician about my involvement in this study
☐ I consent to be contacted for future research

SIGNATURES

Signature of Participant	Date
Print	
Signature of Person Obtaining Informed Consent	Date
Print	

Letter of Information

TITLE: Smart, Healthy Campus: Phase 3

Principal Investigator: Dr. Kevin Shoemaker
Research Staff: Arlene Fleischhauer, Bradley Matushewski, Jen Vording, Dan Lizotte, Paulina Bond, Jen Irwin, Rachel Knetsch, Kaitlyn Jacobs, Francesca Gable, Rebecca Fried, Shazya Karmali,
Sponsor: Western's Interdisciplinary Development Initiative

INTRODUCTION AND PURPOSE

You are being invited to participate in a research study that will examine the relationship between levels of physical activity and mental health outcomes amongst Western University students. The study requests a commitment for a minimum of two consecutive academic terms with a possibility for follow-up in the years to come while you are a Western student. Periodic experiments will include a series of questionnaires (that will take about one hour to complete) and/or the use of wearable devices to track your heart and activity levels for up to 24 hours. You also are asked to make frequent comments in an on-line log book. In addition, you will be asked to participate in any one or more of several interventions. A total of 2500 participants will be recruited in this study.

Before agreeing to participate, please read this LETTER OF INFORMATION and ask any questions you wish.

Participant Inclusion/Exclusion Criteria

Inclusion Criteria:

- Any full-time student at Western University.

Exclusion Criteria:

- Unable to provide written informed consent, or to complete questionnaires or health history forms due to language or cognitive difficulties; Students in graduate or professional programs; Any part-time student.
- If you are, or think you might be, pregnant. A routine pregnancy test may be performed on women of child-bearing potential. If you are a woman of child-bearing potential you must be using an effective method of contraception.

MEASUREMENTS

This study will examine two types of information. First, we wish to evaluate data that continuously collects in various data bases at Western regarding your student activities. Second, information regarding your physical and psychological health will be obtained periodically

throughout the academic years while you are a student at Western. The various types of information are listed below.

The data bases to be accessed at Western include the following:

g) Registrar's office: We wish to study the relationship between your physical activity patterns as a student and the grades you attain (only the term average grades will be used).
h) Sport and Recreation Services: To examine the dates you entered the Student Recreation Centre.
i) Student Experience Co-Curricular Activities: To examine the relationships between your academic, non-academic personal improvement efforts, and physical activity patterns.
j) Student Health Services: To examine the dates you accessed medical assistance at Western and the type of assistance you required.
k) Psychological Services: To examine the dates you accessed medical assistance at Western and the type of assistance you required
l) Academic Counsellor Records: To examine the nature and timing of counseling you achieved through your Departmental or School programs.
m) Laboratory database containing the records of your heart rate monitors and questionnaires outlined below.

Physical Health Monitoring:

3. Heart rate and physical activity monitoring: For each data collection session you will be asked to wear a small device that records your heart rate and movement patterns. This device may be worn continuously, or in repeated shorter-periods, for up to 72 hours. The device will be an elastic chest strap around your chest or fixed to your chest by 2 adhesive electrodes. You will receive the device, and return it, to the laboratory located in the Labatt Health Sciences Building Room 402 or 417.
4. Health and Activity Questionnaires: You will be asked to provide information regarding their general health (The NVRL General Health Questionnaire), your diet over the past 24 hours, your general levels of physical activity (the International Physical Activity Questionnaire (IPAQ)). In addition, the SF-36 is a 36-question survey evaluating individual perception of physical, emotional and mental health.

Psychological Health and Well-Being

5. Anxiety Questionnaires:
    a. GAD-7 is a 7 question survey which assesses one's anxiety over the preceding week and will be used on a few times during your involvement in this study.
    b. Visual Analog Scale (VAS): using a 0-100 scale, you will indicate your overall level of anxiety at that moment in time. This test will be used frequently but takes only a few seconds to complete.
6. The Alcohol Use Disorders Identification Questionnaire (AUDIT): You are asked to complete this 10-question that asks questions about the frequency and volume of alcohol consumption.

7. Mental Health Inventory (MHI): You are asked to complete the Mental Health Inventory (MHI) to quantify mental health status and psychological wellbeing.
8. Psychological Resilience, Thriving and Flourishing:
    a. Brief Resilience Scale: A six-item questionnaire to assess how individuals bounce back or recover from stress.
    b. The Comprehensive Inventory of Thriving and the Flourishing Scale to obtain a more comprehensive view of coping strategies and psychological well-being.
    c. The Sense of Belonging scale assesses the ways in which you interact with others on campus.

n) Groningen Sleep Quality Scale (GSQA): The quality of your sleep provides information regarding both your physical and psychological health. Sleep quality will be measured using the heart rate monitors outlined above, but also through this simple 15-question survey.

o) Weekly updates on the activities and actions you performed related to this mentor program. The log book will either be filled out on-line or on a paper version.

p) Reflections: Your overall impressions of your experience in this program, as well as your thoughts about the experience (such as how it has affected you, what did you learn), using both group discussions and documents you provide, will be requested periodically.

In each case, the information obtained from your records will not be linked to you.

STUDY DESIGN

This project takes a long-term look at how physical activity patterns relate to your overall health and we ask that you consider participating for at least two academic terms. During this time you will be asked to participate in any one or more of several possible interventions. These interventions include one or more of the following:

1. No requirements from you except permission to access the various data bases of information, outlined above;
2. Periodic use of the heart rate and activity monitors
3. Period filling in of the questionnaires (perhaps two times per term);
4. Participating in program as either a mentor (3rd and 4th year students), or a protégé (1st and 2nd year students). Both of these positions are real-world training scenarios for which you will receive course credit or co-curricular credit, as per the requirements set out in Experiential Learning criteria. Thus, the details of this option are detailed in the course outlines. In brief, the Mentor will work with 2-3 Protégé's for the purpose of leading and teaching challenging, and novel, physically active experiences, as well as learning how to lead a small group for two academic terms. The Protégé will learn from the Mentor but also contribute to the process of learning how physical activity affects health outcomes, and how to succeed as a student. Periodically, we will supplement the learning experience with the physiologic or psychologic measures outlined above and detailed below.
5. A combination of the mentoring program and the heart rate monitors and questionnaires.

The requested level of involvement may be determined by how many years you have been at Western as a student and, of course, your willingness to provide the varying types of commitment.

The questionnaires to completed include any or all of the following:

Physical Health Monitoring:

1) Heart rate and physical activity monitoring: You will be asked to wear a small device that is fixed to your chest using electrodes that are similar to those used to measure the electrocardiogram in a physician's office. This device records your heart rate and movement patterns and may be worn continuously, or in repeated shorter-periods, for up to 72 hours. The HR monitor will be connected to the participant either via an elastic chest strap or 2 adhesive electrodes. When the prescribed data collection session has finished, you will return the device to the laboratory located in the Labatt Health Sciences Building Room 402 or 417.
2) Health and Activity Questionnaires: You will be asked to provide information regarding their general health (The NVRL General Health Questionnaire), your diet over the past 24 hours, your general levels of physical activity (the International Physical Activity Questionnaire (IPAQ)). In addition, the SF-36 is a 36-question survey evaluating individual perception of physical, emotional and mental health.

Psychological Health and Well-Being

3) Anxiety Questionnaires:
    a. GAD-7 is a 7 question survey which assesses one's anxiety over the preceding week and will be used on a few times during your involvement in this study.
    b. Visual Analog Scale (VAS): using a 0-100 scale, you will indicate your overall level of anxiety at that moment in time. This test will be used frequently but takes only a few seconds to complete.
4) The Alcohol Use Disorders Identification Questionnaire (AUDIT): You are asked to complete this 10-question that asks questions about the frequency and volume of alcohol consumption.
5) Mental Health Inventory (MHI): You are asked to complete the Mental Health Inventory (MHI) to quantify mental health status and psychological wellbeing.
6) Psychological Resilience, Thriving and Flourishing:
    a. Brief Resilience Scale: A six-item questionnaire to assess how individuals bounce back or recover from stress.
    b. The Comprehensive Inventory of Thriving and the Flourishing Scale to obtain a more comprehensive view of coping strategies and psychological well-being.
    c. The Sense of Belonging scale assesses the ways in which you interact with others on campus.
7) Groningen Sleep Quality Scale (GSQA): The quality of your sleep provides information regarding both your physical and psychological health. Sleep quality will be measured using the heart rate monitors outlined above, but also through this simple 15-question survey.
8) Interviews**:** You will be asked to answer questions regarding leadership and motivation. You will be asked to participate in either a one-on-one interviews or a focus group interview. If you participate in a one-on-one interview, you and a member of the research team will arrange for a 20-40 minute in-person or over-the-phone conversation during which you will be asked about experiences as a mentor. If you participate in a focus group, you will be asked to discuss your overall experiences of being a

mentor with 4-8 other mentors. Both a moderator and co-moderator will be present. This session will last approximately 60 minutes in length. All responses for the individual and focus group discussions will be digitally recorded (so that no comments are missed) and then transcribed into written form.

Individuals may express views during focus groups that may be considered confidential; therefore, participants must not discuss what is said during the focus group outside of the focus group session, nor talk about any of the information revealed during this focus group to any outside person. Member-checking which involves ensuring the research team has understood participants' comments correctly, will be used throughout the focus group. This will be done by one of the researchers, who will verify participants' comments between questions, and then at the end of the focus group, by repeating participants' general thoughts and suggestions.

In each case, the information obtained from your records will not be linked to you.

STUDY BENEFITS

The expected benefits to students are two-fold: 1) improved understanding of the relationship between their choices regarding physical activity and nutrition and their overall health, particularly mental health, and 2) a direct improvement of their own health as they participate in the program.

STUDY RISKS

It is possible that the electrode paste and/or chest strap could cause skin irritation or a small rash. However, this irritation/rash should disappear in a day or two.

The mentorship experiential learning model will focus on creative ways to be physically active in a challenging but safe and enjoyable way. There is always the risk of injury when one is physically active. This risk is minimized because the mentors are trained in safe procedures. We believe the benefits of a physically active lifestyle far outweigh the risk of physical injury. If you are concerned, participants should obtain their family physician's signed permission to participate in exercise.

YOUR PARTICIPATION

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future care, academic status, or employment. If you withdraw from the study before its completion then you may decide whether to also withdraw your data.

All other study data (e.g., paper files, digital files) will be kept for a minimum of 20 years.

If you are participating in another study at this time, please inform the study coordinator right away to determine if it is appropriate for you to participate in this study.

Whether you agree to participate in this study or not, you will be asked if you consent to having your name and contact information added to a master database of individuals who would be willing to be contacted in the future regarding your interest in other research studies.

Representatives of the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Confidentiality

In addition to the study data, we will also be collecting data that may identify who you are, including your name, postal code, telephone number (to stay in contact with you throughout the study), date of birth (to establish your age), your family Physician (to keep them informed if you consent), and health card number (in case we wish to explore health care records for additional measurements). To protect your confidentiality, your name will be replaced with a participant ID number on all documents. The master list linking your identity and participant ID number and your contact information will be stored separately in a secure and encrypted data file at Western University. Your contact information will be maintained securely at Western University to allow for setting up follow up visits. Your research records will be stored in a secure office at Western University. Use of your personal health information may also be done through the Institute for Clinical Evaluative Sciences (ICES). Since some medical tests are performed at outside labs or other institutions and local medical records may be incomplete, linkage will allow a more comprehensive and complete data collection. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published. No information that could reveal your identity will be released to anyone with the exception of your Family Doctor if you give permission for this. Your data will be retained for at least 20 years.

If we find information we are required by law to disclose, we cannot guarantee confidentiality.

ALTERNATIVES TO STUDY PARTICIPATION

You may choose not to participate in this study.

Reimbursement

There is no reimbursement for your participation in this study.

CONTACT PERSONS

If you have any questions about the study please contact:

IHD Research Staff: Bradley Matushewski, Jen Vording [redacted]
Research Nurse: Arlene Fleischhauer [redacted]
Principal Investigator: Dr. Kevin Shoemaker, [redacted]

If you have any questions about the your rights as a research participant or the conduct of this study, you may contact the Office of Human Research Ethics [redacted] email: [redacted]

Or send an email to [redacted]
Please note that email is not considered a secure method of communication and you should not send any personal health information via email.

You will receive a copy of the fully signed informed consent document for your records. You do not waive any legal rights by signing the consent.

Title: Smart, Healthy Campus: Phase 3

Principal Investigator: Dr. Kevin Shoemaker
Research Staff: Arlene Fleischhauer, Bradley Matushewski, Jen Vording, Jen Irwin, Rachel Knetsch, Kaitlyn Jacobs, Francesca Gable, Rebecca Fried, Shazya Karmali

CONSENT
I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

- ☐ I consent to contact with my family physician about my involvement in this study
- ☐ I consent to access to various data bases of my information at Western University
- ☐ I consent to be contacted to schedule tests outlined in this letter of information
- ☐ I consent to be involved in the Mentor – Protégé program
- ☐ I consent to be contacted for future research

SIGNATURES

Signature of Participant	Date
Print	
Signature of Person Obtaining Informed Consent	Date
Print	

Appendix D

Demographic Questionnaire for Study I

Contact Information

Start of Block: Default Question Block

Participant ID

_____

Student number

_____

Last name

_____

First name

_____

Middle initial

_____

Date of Birth (dd/mm/yyyy)

_____

Sex

- ○ Male
- ○ Female

Street address

_____

City

_____

*

Province (2 letter abbreviation)

_____

*

Postal code

_____

*

Phone number

_____

Email

_____

<span style="font-size:12.0pt;font-family: "Arial Narrow",sans-serif;mso-fareast-font-family:"Times New Roman";mso-fareast-theme-font: minor-fareast;mso-bidi-font-family:Arial;mso-ansi-language:EN-US;mso-fareast-language: EN-US;mso-bidi-language:AR-SA" lang="EN-US">I consent to be contacted for future research opportunities.

- Yes
- No

Consent Date (This is the date you signed a consent form). Please leave this blank if you have not yet done so.

_____

Were you previously involved in this protege - mentorship program?

- Yes
- No

What was your role last time?

- ○ Protege
- ○ Mentor

End of Block: Default Question Block

Appendix E

Brief Resilience Scale (BRS)

Phase 4, Smart, Healthy Campus **Health and Rehabilitation Sciences**

BRIEF RESILIENCE SCALE

Please respond to each item by marking one box per row:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I tend to bounce back quickly after hard times					
I have a hard time making it through stressful events					
It does not take me long to recover from a stressful event					
It is hard for me to snap back when something bad happens					
I usually come through difficult times with little trouble					
I tend to take a long time to get over set-backs in my life					

01/10/2017

Western HealthSciences

Appendix F

Mental Health Inventory (MHI)

Phase 4, Smart, Healthy Campus **Health and Rehabilitation Sciences**

The next set of questions are about how you feel, and how things have been for you during the past 4 weeks. If you are marking your own answers, please circle the appropriate response (0, 1, 2,...). If you need help in marking your responses, tell the interviewer the number of the best response. Please answer every question. If you are not sure which answer to select, please choose the one answer that comes closest to describing you. The interviewer can explain any words or phrases that you do not understand.

During the past 4 weeks, how much of the time...

	All of the time	Most of the time	A good bit of the time	Some of the time	A little bit of the time	None of the time
1. has your daily life been full of things that were interesting to you?	1	2	3	4	5	6
2. did you feel depressed?	1	2	3	4	5	6
3. have you felt loved and wanted?	1	2	3	4	5	6
4. have you been a very nervous person?	1	2	3	4	5	6
5. have you been in firm control of your behavior, thoughts, emotions, feelings?	1	2	3	4	5	6

During the past 4 weeks, how much of the time...

	All of the time	Most of the time	A good bit of the time	Some of the time	A little bit of the time	None of the time
6. have you felt tense or high-strung?	1	2	3	4	5	6
7. have you felt calm and peaceful?	1	2	3	4	5	6
8. have you felt emotionally stable?	1	2	3	4	5	6
9. have you felt downhearted and blue?	1	2	3	4	5	6
10. were you able to relax without difficulty?	1	2	3	4	5	6
11. have you felt restless, fidgety, or impatient?	1	2	3	4	5	6
12. have you been moody, or brooded about things?	1	2	3	4	5	6
13. have you felt cheerful, light-hearted?	1	2	3	4	5	6
14. have you been in low or very low spirits?	1	2	3	4	5	6
15. were you a happy person?	1	2	3	4	5	6

During the past 4 weeks, how much of the time...	All of the time	Most of the time	A good bit of the time	Some of the time	A little bit of the time	None of the time
16. did you feel you had nothing to look forward to?	1	2	3	4	5	6
17. have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
18. have you been anxious or worried?	1	2	3	4	5	6

01/10/2017

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Appendix G

Short Form (36) Health Survey (SF-36)

Phase 4, Smart, Healthy Campus **Health and Rehabilitation Sciences**

1. In general, would you say your health is: (circle one)

   Excellent Very good Good Fair Poor

2. Compared to one year ago, how would you rate your health in general now? (circle one)

   Much better now than one year ago.

   Somewhat better now than one year ago.

   About the same as one year ago.

   Somewhat worse than one year ago.

   Much worse than one year ago.

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? (Mark each answer with an **X**)

ACTIVITIES	**Yes, Limited A Lot**	**Yes, Limited A Little**	**No, Not Limited At All**
a. **Vigorous activities,** such as running, lifting heavy objects, participating in strenuous sports			
b. **Moderate activities,** such as moving a table, pushing a vacuum cleaner, bowling, or playing golf			
c. Lifting or carrying groceries			
d. Climbing **several** flights of stairs			
e. Climbing **one** flight of stairs			
f. Bending, kneeling or stooping			
g. Walking **more than a mile**			
h. Walking **several blocks**			
i. Walking **one block**			
j. Bathing or dressing yourself			

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? (Mark each answer with an **X**)

	YES	**NO**
a. Cut down on the **amount of time** you spent on work or other activites		
b. **Accomplished less** than you would like		
c. Were limited in the **kind** of work or other activities		
d. Had **difficulty** performing the work or other activities (for example, it took extra effort)		

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)? (Mark each answer with an **X**)

	YES	**NO**
a. Cut down the **amount of time** you spent on work or other activities		
b. **Accomplished less** than you would like		
c. Didn't do work or other activities as **carefully** as usual		

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors or groups? (circle one)

Not at all Slightly Moderately Quite a bit Extremely

7. How much bodily pain have you had during the past 4 weeks? (circle one)

None Very mild Mild Moderate Severe Very severe

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all A little bit Moderately Quite a bit Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks – (Mark each answer with an **X**)

	All of the Time	**Most of the Time**	**A Good Bit of the Time**	**Some of the Time**	**A Little of the Time**	**None of the Time**
a. Did you feel full of pep?						
b. Have you been a very nervous person?						
c. Have you felt so down in the dumps that nothing could cheer you up?						
d. Have you felt calm and peaceful?						
e. Did you have a lot of energy?						
f. Have you felt downhearted and blue?						
g. Did you feel worn out?						
h. Have you been a happy person?						
i. Did you feel tired?						

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)? (circle one)

All of the time Most of the time Some of the time A little of the time None of the time

11. How TRUE or FALSE is each of the following statements for you?

	Definitely True	**Mostly True**	**Don't Know**	**Mostly False**	**Definitely False**
a. I seem to get sick a little easier than other people					
b. I am as healthy as anybody I know					
c. I expect my health to get worse					
d. My health is excellent					

Appendix H

Ethics Approval – Study II

Western Research

Research Ethics

Western University Non-Medical Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Jennifer Irwin
Department & Institution: Health Sciences, Western University

NMREB File Number: 109517
Study Title: Breaking Grad: A Motivational Interviewing via On-Active Life Coaching (MI-vaCALC) Intervention to Address Stress and Anxiety, and Build Resiliency Among the Western University Graduate Student Population

NMREB Initial Approval Date: August 16, 2017
NMREB Expiry Date: August 16, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Instruments	BRS: Brief Resilience Scale	2017/03/18
Western University Protocol	Received July 27, 2017	
Letter of Information & Consent		2017/07/27
Instruments	MHI: Mental Health Inventory. Received July 10, 2017	
Instruments	SF-36. Received July 10, 2017	
Other	Research Assistant Confidentiality Form. Received July 10, 2017	
Other	Semi-Structured Interview Guide	2017/06/30
Recruitment Items	Mass Email Recruitment Script	2017/06/30
Data Collection Form/Case Report Form	Demographic Questionnaire	2017/06/30

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted] Delegated board member

Appendix I

Recruitment Email – Study II

Mass Email Recruitment

Subject Line: Stress, Anxiety, & Resiliency for Graduate Students: An Invite to Participate in Research

Dear Graduate Student,

You are being invited to participate in a research study to assess the value of training Western University graduate students to help each other manage stress and anxiety, and build resiliency. The aim of this study is to provide 30 full-time, English-speaking graduate students with skills and tools (i.e. Motivational Interviewing applied via Co-Active Life Coaching, or MI-via-CALC) to assist them in coping with stress and anxiety, as well as using these tools to build resiliency. The proposed study will involve having two Certified Professional Co-Active Coaches (CPCCs) with experience/training in Motivational Interviewing provide a one-day workshop to a group of graduate students. Participants will then work with each other in pairs and/or groups over the course of the academic year (September 2017 to April 2018) to coach each other. Participants will also meet with the coach-researchers throughout the year to work on skills and provide feedback about the program. Participants' progress and experiences will be quantitatively measured via questionnaires/surveys (e.g. Brief Resilience Scale [BRS], Mental Health Inventory [MHI], Short Form Health Survey [SF-36]). Qualitative data will be gathered via one-on-one semi-structured interviews with the researchers, as well as through group meetings between the participants and the researchers. If you are currently suffering from **stress and are not currently receiving any counselling or treatment (such as medication)**, then the researchers would be interested in your participation.

Before agreeing to participate, please read the attached LETTER OF INFORMATION, and ask any questions you wish.

If you are interested in taking part in this study or would like to know more about it, you are welcome to contact Rebecca Fried [redacted] Dr. Melanie-Anne Atkins [redacted], or Dr. Jennifer Irwin [redacted]. Thank you for your consideration.

Warmly,
--
Rebecca Fried, BHSc, MSc, CPCC
PhD Student - Health Promotion
Health & Rehabilitation Sciences
Health Promotion Research Laboratory, Room 417
Arthur & Sonia Labatt Health Sciences Building,
Western University
London, Ontario, Canada
[redacted]

Appendix J

Letter of Information and Consent – Study II

Western HealthSciences

Health and Rehabilitation Sciences

TITLE: Breaking Grad: A Motivational Interviewing via Co-Active Life Coaching Intervention to Address Stress and Anxiety, and Build Resiliency Among the Western University Graduate Student Population
Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Rebecca Fried, PhD Student, Dr. Melanie-Anne Atkins

INTRODUCTION AND PURPOSE

You are being invited to participate in a research study to assess the value of training Western University graduate students to help each other manage stress and anxiety, and build resiliency. The aim of this study is to provide 30 full-time, English-speaking graduate students with skills and tools (i.e. Motivational Interviewing applied via Co-Active Life Coaching, or MI-via-CALC) to assist them in coping with mental stress and anxiety, as well as using these tools to build resiliency. The proposed study will involve having two Certified Professional Co-Active Coaches (CPCCs) with experience/training in Motivational Interviewing provide a one-day workshop to a group of graduate students. Participants will then work with each other in pairs and/or groups over the course of the academic year (September 2017 to April 2018) to coach each other. Participants will also meet with the coach-researchers throughout the year to work on skills and provide feedback about the program. The researchers and participants will meet up to three times a month so that participants will have the opportunity to ask questions about the MI-via-CALC tools, receive additional training, practice, and skills, if needed; as well as have the opportunity to provide their thoughts, feelings, and experiences with the intervention thus far. Participants' progress and experiences will be quantitatively measured via questionnaires/surveys (e.g. BRS, MHI, SF-36; see below). Qualitative data will be gathered via one-on-one semi-structured interviews with the researchers, as well as through group discussions between the participants and the researchers. If you are currently suffering from **stress and are not currently receiving any counselling or treatment (such as medication)**, then the researchers would be interested in your participation.

Before agreeing to participate, please read this LETTER OF INFORMATION and ask any questions you wish.

Participant Inclusion/Exclusion Criteria

Inclusion Criteria:

- Full-time graduate student at Western University
- English-speaking
- Enrolled in a graduate or professional program (i.e. Master's or Doctoral)
- Not currently receiving any counselling, therapy, etc.
- Not currently taking medications that could be considered as mind- or mood-altering
- Interested in participating in the intervention described above

Exclusion Criteria:

- Unable to provide (written or electronic) informed consent, or to complete questionnaires or interviews, or forms due to language or cognitive difficulties
- Any part-time student
- Currently receiving counselling, therapy, etc.
- Currently taking medications that could be considered as mind- or mood-altering

MEASUREMENTS

This study will examine the following types of information:

Semi-Structured Interviews:

You will be asked to participate in three semi-structured interviews, during which you will be asked to answer questions regarding stress and anxiety, and resiliency, as well as your thoughts, feelings, and experiences with the intervention. The interview will last between 60- to 90-minutes. All responses from the interviews will be digitally recorded (so that no comments are missed) and then transcribed into written form. Individuals may express views during interviews that may be considered confidential and sensitive in nature; therefore, both the participants and the researcher must not discuss what is said during the interviews outside of the interview session, nor talk about any of the information revealed during this interview to any outside person. Member-checking, which involves ensuring the researcher has understood participants' comments correctly, will be used throughout the interviews. This will be done by the researchers, who will verify participants' comments between questions.

The information obtained from your records will not be linked to you.

Physical Health Monitoring:

5. Health and Activity Questionnaires: The SF-36 is a 36-question survey evaluating individual perception of physical, emotional and mental health

Psychological Health and Well-Being:

9. Mental Health Inventory (MHI): You are asked to complete the Mental Health Inventory (MHI) to quantify mental health status and psychological wellbeing
10. Psychological Resilience, Thriving and Flourishing: Brief Resilience Scale: A six-item questionnaire to assess how individuals bounce back or recover from stress

Demographic Questionnaire:

You will be asked to complete a questionnaire including information about: (a) sex; (b) age; (c) ethnicity; (d) employment status; (e) enrollment status; (f) place of residence and living arrangement; and (g) faculty and year of study.

In each case, the information obtained from your records will not be linked to you.

STUDY BENEFITS

By participating in this study, you will be providing information about the utility of an MI-via-CALC intervention for coping with stress and anxiety, and building resiliency, among a self-selected sample of Western University graduate students. The results from this study may inform the needs of other Western graduate students, with respect to improving health and building resiliency, and may, therefore, inform future on-campus services and programs that benefit students. The results from this study may inform other institutions with respect to services and programs for graduate students.

STUDY RISKS

While there are no known risks to completing these questionnaires or interviews, it is possible that some of the questions may trigger a negative emotional or psychological response. Should you feel you need assistance at any point, please access Western's Mental Health Resource Guide: https://uwo.ca/health/mental_wellbeing/resources.html or http://studentexperience.uwo.ca/student_experience/wellness_initiatives/mental_health_resource_guide.html

YOUR PARTICIPATION

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future care, academic status, or employment. If you withdraw from the study before its completion, then you may decide whether to also withdraw your data.

All other study data (e.g. paper files, digital files) will be kept for a minimum of 5 years.

If you are participating in another study at this time, please inform the study coordinator right away to determine if it is appropriate for you to participate in this study.

Representatives of the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Confidentiality

In addition to the study data, we will also be collecting data that may identify who you are, including your name, postal code, telephone number (to stay in contact with you throughout the study), date of birth (to establish your age), your faculty, year of enrollment, and type of degree (i.e. undergraduate or graduate). To protect your confidentiality, your name will be replaced with a participant ID number on all documents. The master list linking your identity and participant ID number and your contact information will be stored separately in a secure and encrypted data file at Western University. Your contact information will be maintained securely at Western University to allow for setting up follow up visits. Your research records will be stored in a secure office at Western University. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published. No information that could reveal your identity will be released to anyone. Your data will be retained for a minimum of 5 years.

If we find information we are required by law to disclose, we cannot guarantee confidentiality. Therefore, should the researchers feel that you are a danger to yourself or others, the appropriate authorities will be contacted.

As one of your roles in the study is to coach another participant, it is also your duty to report any information, in the event that the individual you are working with is a danger to themselves or others. In this event, please contact the appropriate authorities, as well as the research team.

ALTERNATIVES TO STUDY PARTICIPATION
You may choose not to participate in this study. Should you agree to participate, you may also

choose to not answer certain questions on the questionnaires.

Reimbursement/COMPENSATION
There is no reimbursement or compensation for your participation in this study.

CONTACT INFORMATION
If you have any questions about the study please contact:

Principal Investigator: Dr. Jennifer Irwin [redacted], [redacted]
Co-Investigator: Rebecca Fried, PhD Student [redacted]
Co-Investigator: Dr. Melanie-Anne Atkins [redacted]

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Office of Human Research Ethics at: [redacted], or via email: [redacted]

You will receive a copy of the fully signed informed consent document for your records. You do not waive any legal rights by signing the consent.

Title: Breaking Grad: A Motivational Interviewing via Co-Active Life Coaching Intervention to Address Stress and Anxiety, and Build Resiliency Among the Western University Graduate Student Population
Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Rebecca Fried, PhD Student, Dr. Melanie-Anne Atkins

CONSENT

☐ I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

☐ I understand and agree to keep all information shared with me during the study confidential (i.e. I will not disclose information shared with me by the other participants in this study)

☐ I consent to be contacted for future research

SIGNATURES

_____ _____
Signature of Participant Date

_____
Print

_____ _____
Signature of Person Obtaining Informed Consent Date

_____
Print

Breaking Grad – 27/07/2017
Initials: _____

Appendix K

Demographic Questionnaire – Study II

Western HealthSciences

Health and Rehabilitation Sciences

Instructions: This survey contains questions about your background and personal information. There are no right or wrong answers. Please select the most appropriate answer relevant for you, personally, for each response. Thank you for taking the time to complete this survey.

1. Sex/How Do You Identify?

   ☐Male ☐Female ☐Other, please specify: _____ ☐Prefer not to say

2. Age: dd/mm/yyyy

   _____

3. Ethnicity:

   ☐Aboriginal ☐Hispanic ☐Prefer not to say
   ☐African Heritage ☐Middle Eastern
   ☐Caucasian ☐South Asian
   ☐East Asian ☐Other, please specify: _____

4. Employment status:

   ☐Not employed ☐Part-time ☐Full-time

5. Student's current enrollment status at Western University:

   ☐Part-time ☐Full-time

6. With regard to your place of residence:

   ☐I live in London, Ontario during the Fall and Winter semesters
   ☐I live in London, Ontario during the Fall, Winter, and Summer semesters
   ☐I do not live in London, Ontario

7. My living arrangement is:

   ☐On campus (i.e. residence) ☐Off-campus with roommates
   ☐Off-campus by myself ☐Off-campus with family or relatives

8. Program of registration:

☐Faculty of Arts and Humanities
☐Faculty of Education
☐Faculty of Engineering
☐Faculty of Health & Rehabilitation Sciences
☐Faculty of Information and Media Studies
☐Huron University College
☐Other, please specify: _____

☐Faculty of Law
☐Faculty of Music
☐Faculty of Science
☐Faculty of Social Science
☐Brescia University College
☐King's University College

9. Current year of enrollment:

☐First
☐Second
☐Third
☐Fourth
☐Other, please specify: _____

This is the end of the survey. Thank you for participating.

30/06/2017

Appendix L

Copyright Information for Journal of American College Health

Information available from: https://authorservices.taylorandfrancis.com/sharing-your-work/

Author's Original Manuscript (AOM)/Preprint

"Any version of a journal article that is considered by the author to be of sufficient quality to be submitted for formal peer review."

The AOM is your original manuscript (sometimes called a "preprint") before you submitted it to a journal for peer review.

You can share this version as much as you like, including via social media, on a scholarly collaboration network, your own personal website, or on a preprint server intended for non-commercial use (for example arXiv, bioRxiv, SocArXiv, etc.). Posting on a preprint server is not considered to be duplicate publication and this will not jeopardize consideration for publication in a Taylor & Francis or Routledge journal.

If you do decide to post your AOM anywhere, we ask that, upon acceptance, you acknowledge that the article has been accepted for publication as follows:

"This article has been accepted for publication in [JOURNAL TITLE], published by Taylor & Francis."

After publication please update your AOM / preprint, adding the following text to encourage others to read and cite the final published version of your article (the "Version of Record"):

"This is an original manuscript / preprint of an article published by Taylor & Francis in [JOURNAL TITLE] on [date of publication], available online: http://www.tandfonline.com/[Article DOI]."

Accepted Manuscript (AM)

"The version of a journal article that has been accepted for publication in a journal."

As a Taylor & Francis author, you can post your Accepted Manuscript (AM) on your personal website at any point after publication of your article (this includes posting to Facebook, Google groups, and LinkedIn plus linking from Twitter). To encourage citation of your work (and be able to monitor and understand who is reading it using article metrics), we recommend that you insert a link from your posted AM to the published article on Taylor & Francis Online with the following text:

"This is an Accepted Manuscript of an article published by Taylor & Francis in [JOURNAL TITLE] on [date of publication], available online: http://www.tandfonline.com/[Article DOI]."

Appendix M

Demographic Questionnaire – Study III

Western HealthSciences **Health and Rehabilitation Sciences**

Instructions: This survey contains questions about your background and personal information. There are no right or wrong answers. Please select the most appropriate answer relevant for you, personally, for each response. Thank you for taking the time to complete this survey.

1. Current enrollment status at Western University:
   ☐Part-time ☐Full-time
2. Are you:
   ☐An international student ☐Local/Domestic ☐Out-of-Province ☐Other (please, explain): _____

3. Are you a/an:
   ☐Graduate Student ☐Undergraduate Student

4. Sex/How Do You Identify?
   ☐Male ☐Female ☐Other, please specify: _____ ☐Prefer not to say

5. Age: dd/mm/yyyy

   _____

6. Ethnicity:
   ☐Aboriginal ☐Hispanic ☐Prefer not to say
   ☐African Heritage ☐Middle Eastern
   ☐Caucasian ☐South Asian
   ☐East Asian ☐Other, please specify: _____

7. Employment status:
   ☐Not employed ☐Part-time ☐Full-time ☐Other, please specify: _____

8. With regard to your place of residence:
   ☐I live in London, Ontario during the Fall and Winter semesters
   ☐I live in London, Ontario during the Fall, Winter, and Summer semesters
   ☐I do not live in London, Ontario

9. My living arrangement is:
   ☐On campus (i.e., residence) ☐Off-campus with roommates
   ☐Off-campus by myself ☐Off-campus with family or relatives

10. Program of registration:
    - ☐Faculty of Arts and Humanities
    - ☐Faculty of Education
    - ☐Faculty of Engineering
    - ☐Faculty of Health Sciences
    - ☐Faculty of Information and Media Studies
    - ☐Huron University College
    - ☐Other, please specify:_____
    - ☐Faculty of Law
    - ☐Faculty of Music
    - ☐Faculty of Science
    - ☐Faculty of Social Science
    - ☐Brescia University College
    - ☐King's University College

11. Current year of enrollment:
    - ☐First
    - ☐Second
    - ☐Third
    - ☐Fourth
    - ☐Other, please specify: _____

12. Are you involved in any other resiliency interventions on campus?
    ☐No ☐Yes (Please explain: _____)

This is the end of the survey. Thank you for participating.

01/10/2017

Appendix N

Ethics Approval – Study III

Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Jennifer Irwin
Department & Institution: Health Sciences, Western University

Review Type: Delegated
HSREB File Number: 109399
Study Title: SHC: Phase 4 - A Survey and Focus Group, Campus-Wide Assessment of Mental Health and Resiliency Among The Western Undergraduate and Graduate Student Population - A Smart, Healthy Campus Project

HSREB Initial Approval Date: November 02, 2017
HSREB Expiry Date: November 02, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol		2017/10/26
Instruments	Appendix A - Interview Guide	2017/10/01
Recruitment Items	Appendix B - Mass Email (Questionnaires)	2017/10/01
Recruitment Items	Appendix C - Mass Email (Focus Groups/Interviews)	2017/10/01
Letter of Information & Consent	Appendix D (Questionnaires)	2017/10/26
Letter of Information & Consent	Appendix E (Focus Groups)	2017/10/26
Data Collection Form/Case Report Form	Appendix F - Demographic Questionnaire	2017/10/01
Letter of Information & Consent	Appendix G (Individual Interviews)	2017/10/26
Instruments	Mental Health Inventory	2017/10/01
Instruments	SF-36	2017/10/01
Instruments	Brief Resilience Scale	2017/10/01

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number [redacted]

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6G 1G9 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/ethics

Appendix O

Recruitment Email – Study III – Component A

Subject Line: Mass Email Recruitment: Mental Health & Resiliency – A Smart, Healthy Campus Project: Invite to Complete Research Questionnaires

Dear Student,

You are being invited to participate in a research study assessing mental health and resiliency among the Western University student population. We are interested in gathering information about the current state of mental health/wellness and resiliency on Western's campus. For this study, you will be asked to complete a series of questionnaires (that will take no longer than 30-minutes to complete). You will also be required to fill out a short demographic questionnaire, which should take no longer than 5-minutes to complete. These questionnaires are being distributed to all full-time Western University undergraduate and graduate students. You may complete the questionnaires online via the provided links below. The information you provide will be anonymous (i.e. you will be not be required to provide your Student ID, or any other personally identifying information). You will, however, be asked to complete a demographic questionnaire that asks about: (a) sex; (b) age; (c) ethnicity; (d) employment status; (e) enrollment status; (f) place of residence and living arrangement; and (g) faculty and year of study. All of the information and data will be presented in aggregate form, ensuring confidentiality and anonymity. This study is part of a larger initiative, the Smart, Healthy Campus project, about which more information may be found by contacting the Co-Investigator (Dr. Kevin Shoemaker). As a result, the information gathered from this study will also be analyzed alongside data from the Smart Healthy Campus study, in order to provide additional information about how students across campus compare to students in the associated study.

Before agreeing to participate, please read the attached LETTER OF INFORMATION/CONSENT FORM, and ask any questions you wish. Should you wish to participate in this study, but do not feel comfortable doing so online and instead would like to complete a paper copy in person, please contact one of the researchers (Rebecca Fried: [redacted]) to set this up.

If you are interested in taking part in this study or would like to know more about it, you are welcome to contact Dr. Kevin Shoemaker ([redacted]), Dr. Jennifer Irwin ([redacted]), or Rebecca Fried ([redacted]). Thank you for your consideration.

Warmly,
The Smart, Healthy Campus research team.

Demographic Questionnaire Link:

[redacted]

Survey Questionnaire Links:

1.) SF-36:

[redacted]

2.) Brief Resilience Scale (BRS):

[redacted]

--
Rebecca Fried, BHSc, MSc, CPCC
PhD Student - Health Promotion
Health & Rehabilitation Sciences
Health Promotion Research Laboratory, Room 417
Arthur & Sonia Labatt Health Sciences Building,
Western University
London, Ontario, Canada
[redacted]

Appendix P

Recruitment Email – Study III – Component B

Subject Line: Mass Email Recruitment: Mental Health & Resiliency Focus Groups – A Smart, Healthy Campus Project: Invite to Participate in Research Focus Groups

Dear Student,

You are being invited to participate in a research study assessing mental health and resiliency among the Western University student population. We are interested in understanding Western University students' perceptions of their mental health/wellness and resiliency, as well as students' experiences with respect to: (a) what they find works best to promote their resilience and healthy mental health; (b) what challenges they face in promoting their own resilience and healthy mental health; (c) what they perceive would help them to overcome these challenges; and (d) their views on physical activity's role in their personal resilience and positive mental health. For this study, you are being invited to participate in a focus group. A maximum of 264 students (132 undergraduate students, and 132 graduate students) will be invited to participate in the focus groups, and each session will contain 6-10 participants, which will last between approximately 60-90 minutes in length. We are looking to hold separate focus groups for undergraduate and graduate students. All responses will be audio-recorded (so that no comments are missed) and then transcribed into written form. All information collected in this study is confidential. Focus groups will be conducted on campus in the Labatt Health Sciences Building. You will also be required to fill out a brief demographic questionnaire. This study is part of a larger initiative, the Smart, Healthy Campus project, of which more information may be found by contacting the Co-Investigator (Dr. Kevin Shoemaker). As a result, the information gathered from this study will also be analyzed alongside data from the Smart Healthy Campus study, in order to provide additional information about how students across campus compare to students in the associated study.

Should you wish to participate in the study, but would feel more comfortable doing so one-on-one (i.e. not in a focus group setting, but with a researcher and/or research assistant), please contact Rebecca Fried ([redacted]). If so, the procedures for the interviews will be the same as the focus groups (i.e. location, duration, interview questions, demographic questionnaire, recording of interview).

If you are interested in taking part in this study or would like to know more about it, you are welcome to contact Rebecca Fried ([redacted]), or Dr. Jennifer Irwin ([redacted]). Thank you for your consideration.

For further information about the Smart, Healthy Campus project, please contact Dr. Kevin Shoemaker ([redacted]).

Warmly,
The Smart, Healthy Campus research team.
--
Rebecca Fried, BHSc, MSc, CPCC
PhD Student - Health Promotion

Health & Rehabilitation Sciences
Health Promotion Research Laboratory, Room 417
Arthur & Sonia Labatt Health Sciences Building,
Western University
London, Ontario, Canada
[redacted]

Appendix Q

Letter of Information and Consent – Study III – Component A

Western HealthSciences — **Health and Rehabilitation Sciences**

TITLE: Smart, Healthy Campus: Phase 4

Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Dr. Kevin Shoemaker, Rebecca Fried, Shazya Karmali
Research Staff: Arlene Fleischhauer, Brad Matushewski
Sponsor: Western's Interdisciplinary Development Initiative

INTRODUCTION AND PURPOSE

You are being invited to participate in a research study assessing mental health and resiliency among the Western University student population. We are interested in gathering information about the current state of mental health/wellness and resiliency on Western's campus. For this study, you will be asked to complete a series of questionnaires (that will take no longer than 30-minutes to complete). These questionnaires are being distributed to all full-time Western University undergraduate and graduate students. You may complete the questionnaires online via the provided link. Should you wish to participate in this study, but would feel more comfortable doing so in person via paper, please contact Rebecca Fried ([redacted]). The information you provide will be anonymous (i.e. you will be not be required to provide your Student ID, or any other personally identifying information). You will, however, be asked to complete a demographic questionnaire that asks about: (a) sex; (b) age; (c) ethnicity; (d) employment status; (e) enrollment status; (f) place of residence and living arrangement; and (g) faculty and year of study. All information and data will be presented in aggregate form, ensuring confidentiality and anonymity. This study is part of a larger initiative, the Smart, Healthy Campus project, about which more information may be found by contacting the Co-Investigator (Dr. Kevin Shoemaker). As a result, the information gathered from this study will also be analyzed alongside data from the Smart Healthy Campus study, in order to provide additional information about how students across campus compare to students in the associated study. However, no data from this study will be directly linked with data sets from other studies, nor will any data be directly linked back to you, personally.

Before agreeing to participate, please read this LETTER OF INFORMATION and ask any questions you wish.

Participant Inclusion/Exclusion Criteria

Inclusion Criteria:

- Full-time student at Western University
- English-speaking
- Enrolled in (a) a graduate or professional program (i.e. Master's or Doctoral); or (b) an undergraduate program

Exclusion Criteria:

- Unable to provide (written or electronic) informed consent, or to complete questionnaires or health history forms due to language or cognitive difficulties
- Any part-time student

MEASUREMENTS

This study will examine several types of information:

Physical Health Monitoring:

6. Health and Activity Questionnaires: The SF-36 is a 36-question survey evaluating individual perception of physical, emotional and mental health

Psychological Health and Well-Being

11. Mental Health Inventory (MHI): You are asked to complete the Mental Health Inventory (MHI) to quantify mental health status and psychological wellbeing

12. Psychological Resilience, Thriving and Flourishing: Brief Resilience Scale: A six-item questionnaire to assess how individuals bounce back or recover from stress

In each case, the information obtained from your records will not be linked to you.

Demographic Questionnaire:

You will be asked to complete a questionnaire including information about: (a) sex; (b) age; (c) ethnicity; (d) employment status; (e) enrollment status; (f) place of residence and living arrangement; and (g) faculty and year of study.

In each case, the information obtained from your records will not be linked to you.

STUDY BENEFITS

By participating in this study, you will be providing information about the current state of mental health and resiliency among Western University students. The results from this study may inform the needs of Western students, with respect to improving health and building resiliency, and may therefore inform future on-campus services and programs that benefit students.

STUDY RISKS

While there are no known risks to completing these questionnaires, it is possible that some of the questions may trigger a negative or emotional or psychological response. Should you feel you need assistance at any point, please access Western's Mental Health Resource Guide: https://uwo.ca/health/mental_wellbeing/resources.html or http://studentexperience.uwo.ca/student_experience/wellness_initiatives/mental_health_resource_guide.html

YOUR PARTICIPATION

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future care, academic status, or employment. Due the anonymous nature of the questionnaires, you will not be able to withdraw any of your responses and/or data after they have been submitted.

All other study data (e.g. paper files, digital files, etc.) will be kept for a minimum of 20 years.

If you are participating in another study at this time and feel that it might conflict with your participation in the current study, please inform the study coordinator right away to determine if it is appropriate for you to participate in this study.

Representatives of the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Confidentiality

The nature of this study is anonymous, and no Student or Participant ID will be collected. The links that you will use to complete the questionnaires/surveys are anonymous, and will not trace back to you. However, we will be collecting personal data including, date of birth (to establish your age), your faculty, year of enrollment, and type of degree (i.e. undergraduate or graduate). All information will be stored in a secure and encrypted data file at Western University. Your research records will be stored in a secure office at Western University. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published. No information that could reveal your identity will be released to anyone. Your data will be retained for at least 20 years.

If we find information we are required by law to disclose, we cannot guarantee confidentiality. Therefore, should the researchers feel that you are a danger to yourself or others, the appropriate authorities will be contacted.

CONSENT

Should you decide to participate in this study, you will need to provide electronic and/or written consent. If you complete the study online via the provided links, you must provide electronic consent by hitting the NEXT button at the beginning of the survey/questionnaire. Should you decide to complete this study in person via paper, you will be required to sign a paper copy of the consent form (see below). Regardless of you how complete the study (i.e. online or in person), please retain a copy of this letter and the consent form for your records.

ALTERNATIVES TO STUDY PARTICIPATION

You may choose not to participate in this study. Should you agree to participate, you may also

choose to not answer certain questions on the questionnaires/surveys.

Reimbursement/COMPENSATION

There is no reimbursement or compensation for your participation in this study.

CONTACT INFORMATION

If you have any questions about the study please contact:

Principal Investigator: Dr. Jennifer Irwin ([redacted]),
Co-Investigator: Rebecca Fried, PhD Student ([redacted])
Co-Investigator: Dr. Kevin Shoemaker ([redacted]),

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Office of Human Research Ethics at: [redacted], or via email:

[redacted]. Please note that email is not considered a secure method of communication and you should not send any personal health information via email.

You will receive a copy of the fully signed informed consent document for your records. You do not waive any legal rights by signing the consent.

Title: Smart, Healthy Campus: Phase 4

Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Dr. Kevin Shoemaker, Rebecca Fried, Shazya Karmali
Research Staff: Arlene Fleischhauer, Brad Matushewski

CONSENT

☐ I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

SIGNATURES

Signature of Participant	Date
Print	
Signature of Person Obtaining Informed Consent	Date
Print	

SHC Phase 4 – 26/10/2017
Initials: _____

Appendix R

Letter of Information and Consent – Study III – Component B

Western HealthSciences

Health and Rehabilitation Sciences

TITLE: Smart, Healthy Campus: Phase 4
Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Dr. Kevin Shoemaker, Rebecca Fried, Shazya Karmali
Research Staff: Arlene Fleischhauer, Brad Matushewski
Sponsor: Western's Interdisciplinary Development Initiative

INTRODUCTION AND PURPOSE

You are being invited to participate in a research study assessing mental health and resiliency among the Western University population. We are interested in gathering data about the current state of mental health/wellness and resiliency on Western's campus, as well as students' experiences with respect to: (a) what they find works best to promote their resilience and healthy mental health; (b) what challenges they face in promoting their own resilience and positive mental health; (c) what they perceive would help them to overcome these challenges; and (d) their views on physical activity's role in their personal resilience and positive mental health. For this study, you are being invited to participate in a focus group. A maximum of 264 students (132 undergraduate students, and 132 graduate students) will be invited to participate in the focus groups, and each session will contain 6-10 participants, which will last between approximately 60-90 minutes in length. We will be holding separate focus groups for undergraduate and graduate students. All responses will be audio-recorded (so that no comments are missed) and then transcribed into written form. All information collected in this study is confidential. Focus groups will be conducted on campus in the Labatt Health Sciences Building. You will also be required to fill out a brief demographic questionnaire. This study is part of a larger initiative, the Smart, Healthy Campus project, about which more information may be found by contacting the Co-Investigator (Dr. Kevin Shoemaker). As a result, the information gathered from this study will also be analyzed alongside data from the Smart Healthy Campus study, in order to provide additional information about how students across campus compare to students in the associated study.

Before agreeing to participate, please read this LETTER OF INFORMATION and ask any questions you wish.

Participant Inclusion/Exclusion Criteria
Inclusion Criteria:

- Full-time student at Western University
- English-speaking
- Enrolled in (a) a graduate or professional program (i.e. Master's or Doctoral); or (b) an undergraduate program

Exclusion Criteria:

- Unable to provide (written or electronic) informed consent, or to complete questionnaires or health history forms due to language or cognitive difficulties

- Any part-time student

MEASUREMENTS

This study will examine the following types of information:

Focus Groups:

You will be asked to participate in a focus group, during which you will be asked to answer questions regarding mental health and resiliency. You will be asked to participate in a focus group interview. If you participate in a focus group, you will be asked to discuss your overall experiences and thoughts with a group of 6-10 other participants. A moderator and co-moderator(s) will be present. This session will last between 60- to 90-minutes in length. All responses from the focus group discussions will be digitally recorded (so that no comments are missed) and then transcribed into written form. Individuals may express views during focus groups that may be considered confidential; therefore, participants must not discuss what is said during the focus group outside of the focus group session, nor talk about any of the information revealed during this focus group to any outside person. Member-checking, which involves ensuring the research team has understood participants' comments correctly, will be used throughout the focus group. This will be done by one of the researchers, who will verify participants' comments between questions, and then at the end of the focus group, by repeating participants' general thoughts and suggestions.

The information obtained from your records will not be linked to you.

Demographic Questionnaire:

You will be asked to complete a questionnaire including information about: (a) sex; (b) age; (c) ethnicity; (d) employment status; (e) enrollment status; (f) place of residence and living arrangement; and (g) faculty and year of study.

In each case, the information obtained from your records will not be linked to you.

STUDY BENEFITS

By participating in this study, you will be providing information about the current state of mental health and resiliency among Western University students. The results from this study may inform the needs of Western students, with respect to improving health and building resiliency, and may therefore inform future on-campus services and programs that benefit students.

STUDY RISKS

While there are no known risks to completing these questionnaires, it is possible that some of the questions may trigger a negative or emotional or psychological response. Should you feel you need assistance at any point, please access Western's Mental Health Resource Guide: https://uwo.ca/health/mental_wellbeing/resources.html or http://studentexperience.uwo.ca/student_experience/wellness_initiatives/mental_health_resource_guide.html

YOUR PARTICIPATION

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future care, academic

status, or employment. If you withdraw from the study before its completion, then you may decide whether to also withdraw your data. However, once you complete the focus group, your data will no longer be able to be withdrawn; because, due to the nature of focus groups, it will not be possible for the researchers to determine what information you presented.

All other study data (e.g. paper files, digital files) will be kept for a minimum of 20 years.

If you are participating in another study at this time, please inform the study coordinator right away to determine if it is appropriate for you to participate in this study.

Representatives of the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Confidentiality

The nature of this study is confidential. Your participation will only be known to the researchers, as well as the other individuals participating in the focus groups. The researchers are asking that all participants not discuss what is said during the focus group outside of the focus group session, nor talk about any of the information revealed during this focus group to any outside person; and this includes disclosing personal identities and/or identifiers. Therefore, your participation in this study will be kept confidential, and your data will not be linked to any personal identifiers. Further, no Student or Participant ID will be collected. You will only need to provide your name, email, and a phone number, so that the researcher may contact you to set up the focus group; and to provide you with any information about the focus groups that you may need (i.e. time, location, cancellations/re-scheduling). This information will not be kept for data analysis, nor will it be linked with any of the information that you provide in the focus groups. We will, however, be collecting personally identifying information such as date of birth (to establish your age), your faculty, year of enrollment, and type of degree (i.e. undergraduate or graduate). All information will be stored separately in a secure and encrypted data file at Western University, and all personal identifiers will be removed, so that your data will be anonymous. Your research records will be stored in a secure office at Western University. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published. No information that could reveal your identity will be released to anyone. Your data will be retained for at least 20 years.

If we find information we are required by law to disclose, we cannot guarantee confidentiality. Therefore, should the researchers feel that you are a danger to yourself or others, the appropriate authorities will be contacted. Further, please be advised that although the researchers will take every precaution to maintain confidentiality and anonymity of the data, the inherent nature of focus groups prevents the researchers from guaranteeing confidentiality and anonymity. The researchers will remind participants to respect the privacy of their fellow participants and to not repeat what is said in the focus group to others.

ALTERNATIVES TO STUDY PARTICIPATION

You may choose not to participate in this study. Should you agree to participate, you may also choose to not answer certain questions on the questionnaires and/or during the focus group.

Further, should you wish to participate in the study, but would feel more comfortable doing so one-on-one (i.e. not in a focus group setting, but with a researcher and/or research assistant), please contact Rebecca Fried ([redacted]).

Reimbursement/COMPENSATION

There is no reimbursement or compensation for your participation in this study.

CONTACT INFORMATION

If you have any questions about the study please contact:
Principal Investigator: Dr. Jennifer Irwin ([redacted]),
Co-Investigator: Rebecca Fried, PhD Student [redacted])
Co-Investigator: Dr. Kevin Shoemaker ([redacted]),

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Office of Human Research Ethics at: [redacted], or via email: [redacted]. Please note that email is not considered a secure method of communication and you should not send any personal health information via email.

You will receive a copy of the fully signed informed consent document for your records. You do not waive any legal rights by signing the consent.

Title: Smart, Healthy Campus: Phase 4
Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Dr. Kevin Shoemaker, Rebecca Fried, Shazya Karmali
Research Staff: Arlene Fleischhauer, Brad Matushewski

CONSENT

☐ I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

SIGNATURES

_____ _____
Signature of Participant Date

_____
Print

_____ _____
Signature of Person Obtaining Informed Consent Date

_____
Print

SHC Phase 4 – 26/10/2017
Initials: _____

Western HealthSciences

Health and Rehabilitation Sciences

TITLE: Smart, Healthy Campus: Phase 4
Principal Investigator: Dr. Jennifer Irwin
Co-Investigators: Dr. Kevin Shoemaker, Rebecca Fried, Shazya Karmali
Research Staff: Arlene Fleischhauer, Brad Matushewski
Sponsor: Western's Interdisciplinary Development Initiative

INTRODUCTION AND PURPOSE

You are being invited to participate in a research study assessing mental health and resiliency among the Western University population. We are interested in gathering data about the current state of mental health/wellness and resiliency on Western's campus, as well as students' experiences with respect to: (a) what they find works best to promote their resilience and healthy mental health; (b) what challenges they face in promoting their own resilience and positive mental health; (c) what they perceive would help them to overcome these challenges; and (d) their views on physical activity's role in their personal resilience and positive mental health. For this study, you are being invited to participate in an individual interview, which will last between approximately 60-90 minutes in length. This interview will take place with the researcher (Rebecca Fried; and a research assistant may or may not be present, should you feel comfortable). All responses will be audio-recorded (so that no comments are missed) and then transcribed into written form. All information collected in this study is confidential. Individual interviews will be conducted on campus in the Labatt Health Sciences Building. You will also be required to fill out a brief demographic questionnaire. This study is part of a larger initiative, the Smart, Healthy Campus project, about which more information may be found by contacting the Co-Investigator (Dr. Kevin Shoemaker). As a result, the information gathered from this study will also be analyzed alongside data from the Smart Healthy Campus study, in order to provide additional information about how students across campus compare to students in the associated study.

Before agreeing to participate, please read this LETTER OF INFORMATION and ask any questions you wish.

Participant Inclusion/Exclusion Criteria

Inclusion Criteria:

- Full-time student at Western University
- English-speaking
- Enrolled in (a) a graduate or professional program (i.e. Master's or Doctoral); or (b) an undergraduate program

Exclusion Criteria:

- Unable to provide (written or electronic) informed consent, or to complete questionnaires or health history forms due to language or cognitive difficulties
- Any part-time student

MEASUREMENTS

This study will examine the following types of information:

Individual Interview:

If you participate in an individual interview, you will be asked to discuss your overall experiences and thoughts with the researcher. All responses from the individual interviews will be digitally recorded (so that no comments are missed) and then transcribed into written form. Member-checking, which involves ensuring the research team has understood participants' comments correctly, will be used throughout the interview. This will be done by the researcher, who will verify participant comments between questions, and then at the end of the interview, by repeating participants' general thoughts and suggestions.

The information obtained from your records will not be linked to you.

Demographic Questionnaire:

You will be asked to complete a questionnaire including information about: (a) sex; (b) age; (c) ethnicity; (d) employment status; (e) enrollment status; (f) place of residence and living arrangement; and (g) faculty and year of study.

In each case, the information obtained from your records will not be linked to you.

STUDY BENEFITS

By participating in this study, you will be providing information about the current state of mental health and resiliency among Western University students. The results from this study may inform the needs of Western students, with respect to improving health and building resiliency, and may therefore inform future on-campus services and programs that benefit students.

STUDY RISKS

While there are no known risks to completing these questionnaires, it is possible that some of the questions may trigger a negative or emotional or psychological response. Should you feel you need assistance at any point, please access Western's Mental Health Resource Guide: https://uwo.ca/health/mental_wellbeing/resources.html or http://studentexperience.uwo.ca/student_experience/wellness_initiatives/mental_health_resource_guide.html

YOUR PARTICIPATION

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your future care, academic status, or employment. If you withdraw from the study before its completion, then you may decide whether to also withdraw your data. If you complete an individual interview, your data may be withdrawn, and the recording and transcription of your interview will not be included in the data analysis. In order to withdraw data from this portion of the study, a master list will be created, consisting only of individuals that have completed individual interviews. A unique study ID will be created for participants that take part in the individual interviews. This unique ID will be linked with the master list, such that the researchers will be able to find your data/interview and withdraw it from the study.

All other study data (e.g. paper files, digital files) will be kept for a minimum of 20 years.

If you are participating in another study at this time, please inform the study coordinator right away to determine if it is appropriate for you to participate in this study.

Representatives of the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

Confidentiality

The nature of this study is confidential. Your participation will only be known to the researchers. The researchers will not disclose your participation in this study, nor will the researchers discuss what is said during the interview, including personal information, personal identities, and/or personal identifiers. Therefore, your participation in this study will be kept confidential, and your data will not be linked to any personal identifiers – the exception being a master list (consisting only of individuals that have completed individual interviews, as well a unique study ID that will be created for participants) which will only be utilized in the event that a participant wishes to withdraw data. Further, no Student ID will be collected. You will only need to provide your name, email, and a phone number, so that the researcher may contact you to set up the individual interview; and to provide you with any information about the interview that you may need (i.e. time, location, cancellation/re-scheduling). This information will not be kept for data analysis, nor will it be linked with any of the information that you provide in the interview. We will, however, be collecting personally identifying information such as date of birth (to establish your age), your faculty, year of enrollment, and type of degree (i.e. undergraduate or graduate). All information will be stored separately in a secure and encrypted data file at Western University, and all personal identifiers will be removed, so that your data will be anonymous. Your research records will be stored in a secure office at Western University. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published. No information that could reveal your identity will be released to anyone. Your data will be retained for at least 20 years.

If we find information we are required by law to disclose, we cannot guarantee confidentiality. Therefore, should the researchers feel that you are a danger to yourself or others, the appropriate authorities will be contacted.

ALTERNATIVES TO STUDY PARTICIPATION

You may choose not to participate in this study. Should you agree to participate, you may also choose to not answer certain questions on the questionnaires and/or during the interview.

Reimbursement/COMPENSATION

There is no reimbursement or compensation for your participation in this study.

CONTACT INFORMATION

If you have any questions about the study please contact:
Principal Investigator: Dr. Jennifer Irwin ([redacted]),
Co-Investigator: Rebecca Fried, PhD Student ([redacted])
Co-Investigator: Dr. Kevin Shoemaker ([redacted]),

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Office of Human Research Ethics at: [redacted], or via email:

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Title: Smart, Healthy Campus: Phase 4

Principal Investigator: Dr. Jennifer Irwin
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CONSENT

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SIGNATURES

Signature of Participant	Date
Print	
Signature of Person Obtaining Informed Consent	Date
Print	

SHC Phase 4 – 26/10/2017
Initials: _____

Curriculum Vitae

Name **Rebecca R. Fried**

Post-Secondary Education and Degrees

Doctor of Philosophy (PhD) – Health and Rehabilitation Sciences 2014-2019
Field: Health Promotion
Western University, London, ON

Dissertation: *Breaking Under/Grad – Assessing and Addressing Stress, Anxiety, and Resiliency Among Undergraduate and Graduate Students via Motivational Interviewing and a Smart, Healthy Campus Intervention*

Comprehensive Examination: *School Daze: Exploring Mental Health and Resilience Interventions, and Research, for Graduate Students – A Scoping Review*

Master of Science (MSc) – Health and Rehabilitation Sciences 2012-2014
Field: Health Promotion
Western University, London, ON

Thesis: *Calmly Coping: A Motivational Interviewing via Co-Active Life Coaching (MI-via-CALC) Intervention for University Students Suffering from Stress*

Bachelor of Health Sciences (BHSc) 2008-2012
Specialization in Health Sciences
Western University, London, ON

Additional Education and Training

Western Certificate in University Teaching and Learning 2016-2018

safeTALK (Suicide-Alertness) 2018

Leadership Effectiveness Training (L.E.T.) 2016

Mental Health First Aid 2016

Co-Active Training Institute (CTI) – Certified Professional Co-Active Coach (CPCC) Program 2015-2016

Co-Active Training Institute (CTI) – Professional Coach Training Program 2013

Motivational Interviewing and Coaching Skills – Level I 2013

Teaching Assistant Training Program 2012

Honours, Awards, and Nominations	**Graduate Student Teaching Assistant Award** Nominated	2019
	Faculty of Health Sciences Graduate Student Conference Award Competitive Value: $125 CDN	2018
	The Leadership in Wellness Award of Recognition Nominated	2018
	Canadian Alliance on Mental Illness and Mental Health (CAMIMH) Champions of Mental Health Award Nominated	2018
	Western Graduate Research Scholarship Non-Competitive Value: $93,000 (CDN)	2014-2019
	Health and Rehabilitation Sciences Travel Award Competitive Value: $500 (CDN)	
	Faculty of Health Sciences Graduate Student Conference Travel Award Competitive Value: $500 (CDN)	2014
	Western Graduate Research Scholarship Non-Competitive Value: $21,345	2012-2014
Related Work and Research Experience	**Graduate Research Assistant** Supervisor: Dr. Jennifer Irwin	2016-2019
	Graduate Student Teaching Assistant **HS 2250 A - Health Promotion in Canada**	2012-2018
	Health Promotion Ontario Network (HPO) Working Group	2015-2016
	The Resiliency Project: Employee Wellness Program At Halton Healthcare (Oakville Hospital)	2015
	Graduate Student Teaching Assistant	2015

HS 4200 G – Advanced Health Promotion

Graduate Research Assistant 2014
Supervisor: Dr. Angie Mandich

Selected Publications

• Fried, R. R., Atkins, M. P., & Irwin, J. D. (2019). Breaking grad: Building resilience among a sample of graduate students struggling with stress and anxiety utilizing a peer coaching model derived from mentoring, and motivational interviewing via Co-Active Life Coaching (MI-via-CALC) – A pilot study. *International Journal of Evidence Based Coaching*, *17*(2), in press.

• Fried, R., R., Karmali, S., Irwin, J. D., Gable, F. L., & Salmoni, A. (2018). Making the grade: Mentors' perspectives of a course-based, Smart, Healthy Campus pilot project for building mental health resiliency through mentorship and physical activity. *International Journal of Evidence Based Coaching and Mentoring, 16*(2), 84-98.

• Fried, R. R., & Irwin, J. D. (2016). Calmly coping: A motivational interviewing via Co-Active Life Coaching (MI-VIA-CALC) pilot intervention for university students suffering from stress. *International Journal of Evidence Based Coaching and Mentoring, 14*(1), 16-33.

• Fried, R. R. (2014). Coping through coaching: Co-active Life Coaching as a method for managing stress and anxiety. *Health Science Inquiry, 5*(1), 87-88.

Selected Presentations and Workshops

• Breaking Grad: A peer-to-peer resilience-based coaching intervention among a sample of graduate students struggling with stress and anxiety. 2018 Health Promotion Ontario Conference. Toronto, Ontario, November 22, 2018. Poster Presentation. Presented on behalf of Fried, R. R., Atkins, M. P., & Irwin, J. D.

• Making the grade: Mentors' perspectives of a course-based, smart, healthy campus pilot project for building mental health resiliency through mentorship and physical activity. 2018 Health Promotion Ontario Conference. Toronto, Ontario, November 22, 2018. Poster Presentation. Presented on behalf of Fried, R. R., Karmali, S., Irwin, J. D., Gable, F. L., & Salmoni, A.

• Making the grade: Mentors' perspectives of a course-based, smart, healthy campus pilot project for building mental health resiliency through mentorship and physical activity. London Health Research Day. London, Ontario, May 10, 2018. Poster Presentation. Presented on behalf of Fried, R. R., Karmali, S., Irwin, J. D., Gable, F. L., & Salmoni, A.

• Breaking Grad: A Motivational Interviewing via Co-Active Life Coaching (MI-via-CALC) intervention to address mental health and build resiliency among the Western University graduate student population. Western Wellness Week, Graduate Wellness Week – Wellness Research Forum. London, Ontario, October 4, 2017. Presented on behalf of Fried, R.R., Irwin, J.D., & Atkins, M.P. (Invited to present by Madison Bettle, Vice President of Student Services of the Society of Graduate Students

[SOGS]).

• Testing, testing! The importance of evaluating health promotion programs. Invited by Meghan Unick, on behalf of the Wellness Education Centre, to lecture to staff and volunteers at Western University's Wellness Education Centre, London, Ontario, March 9, 2017. [Offered Workshop].

• Calmly coping: A motivational interviewing via Co-Active Life Coaching (MI-via-CALC) intervention for university students suffering from stress. Institute of Coaching (IOC), McLean Hospital, a Harvard Medical School Affiliate, Coaching in Leadership and Healthcare Conference. Boston, Massachusetts, September 12, 2014, to September 13, 2014. Abstract and Poster Presentation. Presented on behalf of Fried, R. R., & Irwin, J. D. *Winner of Honorable Mention Award.