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The Mental Health and Resilience Benefits of Being a Peer Mentor

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Abstract

The current study presents data from year two of a larger research project entitled "Smart, Healthy Campus" (SHC) in the Kinesiology department at Western University that aimed to use mentorship as a way to promote student mental health. Whereas the larger project was primarily focused on mental health of the mentees, the purpose of the present study was to explore the mental health and resilience outcomes of being a mentor in this year-long, university-based peer mentorship program. Using a mixed methods design, mentors completed quantitative assessments of mental health and resilience pre- and post-mentorship program. Mentors also wrote qualitative self-reflections at the end of the program. Quantitatively, the only statistically significant change was in mentors' Positive Affect, which increased over time. Qualitatively, mentors reported that being a mentor positively influenced their overall mental health. Despite the mixed findings, the qualitative results of this study show that mentors experience mental health and resilience benefits from their roles. Future mentorship programs should consider these findings and attempt to foster an environment conducive to the improvement of mental health and resilience.

Keywords

Mentorship, Peer Mentor, Mental Health, Resilience, Physical Activity, University Students, Mixed Methods

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1 Introduction

1.1 Context

The current study was part of a larger research project entitled "Smart, Healthy Campus" (SHC) in the Kinesiology department at Western University. The primary aim of this three-year initiative is to increase students' resilience to the stresses that challenge their mental health, primarily through physical activity and mentorship, as exercise and physical activity have been shown to increase emotional resilience to acute stress (Childs & Wit, 2014). With the recent rise in student mental health concerns, more proactive and preventative measures are needed to improve student mental health (Flatt, 2013). The Health Promotion approach, via peer mentorship, taken by the SHC Initiative to improve undergraduate student mental health and resilience could reduce the strain on the healthcare system at Western University (Mental Health Commission of Canada, 2016) and provide students with essential life skills to thrive in university.

The current study builds upon last year's pilot study of mentors in the SHC mentorship program (e.g. Fried, Karmali, Irwin, Gable, & Salmoni, 2018). Whereas the first-year work focused on broad experiences of the mentors in a one-to-one relationship with their protégé, the present study focused exclusively on the mental health and resilience of the mentors in a group mentoring setting. There were major differences in context between the two years of the program and was therefore worthy of being studied in year two of the mentorship program. Some of the contextual differences were as follows: a) In Year 2, all first-year students were required to

participate in the mentorship program, whereas in Year 1 first-year students volunteered, and b) In Year 2, each mentor had between six and eight protégés, whereas Year 1 mentors had between one and three protégés (a majority of mentors had only one protégé in Year 1). This difference in mentor to protégé ratio significantly affected the scope of mentors' roles. Year 2 mentors, with many more protégés to manage, needed to take on more of a group leadership role along with their mentor role. Furthermore, because of the larger number of protégés, mentors in Year 2 had a larger workload and needed to manage their protégés in a different way than Year 1 mentors to accommodate for the larger group for whom they were responsible.

1.2 Introduction

There is a growing concern about the mental wellbeing of postsecondary students as the rates of mental health problems and psychological distress among university students continue to surpass that of the general population (Stallman, 2010; Robinson, Jubenville, Renny, & Cairns, 2016). Research also shows that mental health affects academic performance (Robinson et al., 2016). In 2016, data collected by the American College Health Association at the host institution, Western University, found that 67% of students rated their overall stress levels as 'more than average' or 'tremendous'. Western students reported that stress (48.5% of students) and anxiety (39.7% of students) were the most influential factors that impacted their academic performance, followed by sleep difficulties (30.4%) (ACHA, 2016).

Not only has there been a rise in student mental health concerns in recent years (Flatt, 2013; Gallagher, 2008), but the volume of students seeking help for their mental health has also increased (Flatt, 2013). It is concerning, however, that wait times for some mental health services in Ontario exceed six months, during which the mental health of the individual may further

deteriorate (Office of the Auditor General of Ontario, 2016) and, in some cases, lead to more chronic mental health conditions (Liptrap, 2018). Wait times for accessing mental health services is a concern for students (Richmond, 2018); therefore, increasing the accessibility and availability of mental health support is especially important for adolescents and young adults as roughly 75% of mental illnesses have their onset before age 24 (Parekh, 2015). In 2010, students under the age of 24 made up 75% of the full-time student population (Trends in Higher Education, 2011).

One way to improve student mental health is to develop and implement more peer mentorship programs since mentorship programs provide benefits for all participants and stakeholders involved, not just the mentees (Elliott, Beltman & Lynch, 2011). According to the Mental Health Commission of Canada (Peer Support, n.d.), peer support is an essential component of the mental health care system for two reasons: 1) it reduces the strain on the healthcare system, and 2) it helps people develop skills that allow them to take control of their own lives. Mentorship programs are beneficial in that they offer a range of benefits to both mentees and mentors (Elliott et al., 2011). The reciprocal nature of peer mentorship relationships suggests that mentors benefit equally, if not more, than mentees, in both similar and exclusive ways (Eby & Lockwood, 2005; Heirdsfield, Walker, Walsh & Wilss, 2008).

In accordance with the SHC Initiative objectives, mentors promote physical activity by directly engaging with their mentees in exercise or by facilitating access to health services (DuBois & Silverthorn, 2005). As a result, mentors' engagement in physical activity and healthy behaviours increases, which has a positive impact on mentors' mental health and resilience (Bray & Born, 2004; Ho, Louie, Chow, Wong & Ip, 2015; Taliaferro, Rienzo, Pigg, Miller, & Dodd,

2010). Findings in the literature suggest a strong link between engagement in physical activity and mental health and resilience (Penedo & Dahn, 2005).

Research shows that students who engage in higher levels of physical activity display significantly lower levels of anxiety and depression than their peers who engage in low or medium levels of physical activity (Tyson, Wilson, Crone, Brailsford, & Laws, 2010). Unfortunately, however, studies show that student levels of physical activity drop significantly from high school to university (Bray & Born, 2004; Leighton & Swerissen, 1995; Sallis, 2000), which can lead to inactivity in later life (Sallis, 2000). Physical inactivity increases risk factors for various mental and physical illnesses (Booth, Roberts & Laye, 2012; Humphreys, McLeod & Ruseski, 2014). Furthermore, the sedentary lifestyle of university students characterized by hours of sitting in class and sitting to study can be detrimental to both the physical and mental health of students (Kilpatrick, Sanderson, Blizzard, Teale & Venn, 2013; Warburton, Nicol, & Bredin, 2006).

A recent systematic review of studies evaluating the association between physical activity and mental health in university students found that students who met vigorous physical activity guidelines were less likely to report poor mental health and perceived stress (Dogra, MacIntosh, O'Neill, D'Silva, Shearer, Smith & Côté, 2017). Physical activity, especially aerobic activity, has been associated with lower rates, and reduced risk, of hopelessness, depression, and suicidal behaviour among university students (Taliaferro et al., 2010). Furthermore, vigorous physical activity is correlated with psychological well-being (Bray & Born, 2004) and reduction in depressive symptoms (Harbour, Behrens, Kim & Kitchens, 2008). Engagement in vigorous physical activity has also been associated with a more positive mood (Bray & Born, 2004) and a decrease in perceived stress in students (VanKim & Nelson, 2013).

A study conducted by Bray and Born (2004) of Canadian undergraduate students (n=145) compared the psychological well-being – via mood profiles – of first-year students who were sufficiently active and insufficiently active. It was concluded that students who participated in sufficient levels of vigorous physical activity showed more positive mood profiles. Specifically, they reported lower levels of tension and fatigue, and higher levels of vigour compared to their peers who were not sufficiently active (Bray & Born, 2004). Another study by VanKim and Nelson (2013) evaluated the associations between vigorous physical activity, perceived stress, mental health, and socializing of university students (n=14 804). They found that students who met the minimum requirement for vigorous physical activity were less likely to report poor mental health and perceived stress. Furthermore, the social aspect of physical activity contributed to the positive benefits of vigorous physical activity on mental health and perceived stress, suggesting that vigorous physical activity in conjunction with socializing offers benefits to mental health and perceived stress, although causality cannot be determined from the findings of this study. Finally, findings from this study suggest that interventions aimed at increasing physical activity and improving mental health should also incorporate a social component (VanKim & Nelson, 2013).

With the rise in mental health concerns among the student population, it is troubling that many Canadian undergraduate students show low probabilities of actively engaging in health-promoting behaviours (Kwan, Arbour-Nicitopoulos, Duku & Faulkner, 2016) such as engagement in physical activity, which has been proven to improve the mental health of students (Taliaferro et al., 2010; Tyson et al., 2010; VanKim & Nelson, 2013). However, there are protective factors that can aid students in overcoming some of the mental health challenges brought upon by university. Protective factors – personal qualities or contexts that predict

positive outcomes under high-risk conditions – can help students achieve success in university (Masten, 2002). One of the external protective factors is access to positive peer relationships (Masten, 2002), which have been shown to provide mental health support for students.

Mentorship relationships are reciprocal in nature, meaning that both the mentor and the mentee benefit (Hansford et al., 2004). The benefits of being mentored have been presented in numerous studies, such as the model of mentorship embedded in education systems that focus on the development of strong teachers and nurses (Andrews & Wallis, 1999; Vierstraete, 2005), but fewer studies have focused on the benefits for mentors. Furthermore, while very few studies examine the mental health gains for mentees (Hurd & Zimmerman, 2014), the mental health outcomes experienced by peer mentors in a postsecondary setting remains a topic to be explored.

The literature on mentorship programs suggests that mentors report numerous benefits to their skills and capabilities, including improved communication skills, social skills, self-confidence, employment skills, organizational skills, and identification with their school/faculty (Glaser, Hall & Halperin, 2006). There is no research, however, that has specifically assessed the mental health and resilience outcomes mentors experience from mentorship programs. The current study aims to fill this gap in the literature by using a mixed methods approach to explore mentors' mental health and resilience.

1.3 Literature Review

The goal of this literature review is to inform readers about the key concepts and constructs related to the current research study. The chapter begins with an overview of mental health as it pertains to the postsecondary student population, followed by a summary of resilience and its association with mental health. Next, the review shifts to the concept of

mentorship: reciprocal benefits for mentors and mentees, the outcomes for mentors, and the gap in the mentorship literature that is filled by the current research study. Finally, the purpose of this study is presented.

1.3.1 Mental Health

Mental health is a complex phenomenon because of the interplay between genetic, biological, personality and environmental factors (Mental Health Commission of Canada, 2013). The World Health Organization (2014) defines mental health as "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community" (World Health Organization, 2014, para.1). When some, or any, of these necessities are not met, there can be detrimental effects, especially for postsecondary students who face many challenges (Kadison & DiGeronimo, 2004).

The topic of student mental health has been prevalent in the news over the past few years as student mental health concerns continue to grow (Liptrap, 2018; Richmond, 2018). Research shows that young people between the ages of 15-24 have the highest rates of mood disorders (Statistics Canada, 2012), and 50% of those youth and young adults also have suicidal thoughts in their lifetime (Statistics Canada, 2012). This means that the university student population is highly vulnerable to mental illness and mental health concerns because nearly 75% of full-time university students are under the age of 24 (Trends in Higher Education, 2011). Postsecondary students face a unique set of challenges compared to the general population that further increase the complexity of their mental health concerns, making them especially vulnerable (Kadison & DiGeronimo, 2004).

The growing literature on student mental health suggests that young adults are experiencing increased stress and depressive symptoms compared to previous years (Alexander & Harrison, 2013; American College Health Association, 2016), yet many students who meet the criteria for psychological distress are not accessing counselling services because a) they don't think they are in distress (32.5%, or b) they don't have enough time (54.3%) (Robinson et al., 2016). Researchers at the University of Calgary studied psychological distress in the student population (n=400), assessing the academic and mental health needs of students on a Canadian campus. Results showed that the most prevalent concern among students was academics; 63.1% of the students in the study identified academics as the area of most concern. Students also reported mental health concerns about anxiety (36.1%) and depressive symptoms (31.9%) (Robinson et al., 2016). Further, less than 50% of youth who have depression or suicidal thoughts have sought professional help (Statistics Canada, 2018). The rapid increase in student mental illness over the last decade has led some researchers to deem it a 'crisis' (Flatt, 2013; Kadison & DiGeronimo, 2004; Liptrap, 2018; Richmond, 2018).

When students attend university, they are met with challenges that are difficult for students to overcome because of a variety of environmental, social, and individual factors (Kadison & DiGeronimo, 2004). Academic pressure and competition, minimal academic support compared to high school, potential social isolation and alienation, a culture of excessive alcohol and drug abuse, the pressure of long-term financial debt, cultural differences, peer pressure, and parental expectations (Kadison & DiGeronimo, 2004) are all factors that contribute to the stress of university life. The increase in student mental health problems is, in part, due to students' inabilities to cope with those stresses and manage those pressures. The potential for social isolation in a postsecondary education setting makes students particularly vulnerable to mental

health concerns. In 2016, 14% of young people had experienced at least one aspect of social isolation (A portrait of Canadian youth, 2018), which has been associated with depressive symptoms in young adults (Matthews, Danese, Wertz, Odgers, Ambler, Moffitt & Arseneault, 2016).

1.3.2 Resilience

Resilience, in its simplest form, is defined as the ability to 'bounce back' from stress or adversity. More specifically, resilience is "the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress" (American Psychological Association, 2017). Resilience is correlated with both academic success and mental health in university students (Hartley, 2013). Students who excel in their academic pursuits are better able to manage the social and emotional demands of university learning (Hartley, 2013).

As Fletcher and Sarkar (2013) describe in their review of resilience concepts, a number of definitions and conceptualizations of resilience have been developed over time. Some consider resilience a trait – fixed in nature, cannot be improved or changed. Others consider resilience to be an evolving process – a 'skill' that can be developed over time. Due to the wide range of definitions in the literature, the following definition of *psychological resilience* as described by Fletcher and Sarkar (2013) was used as it encompasses both trait, and process, conceptualizations of resilience:

> *"the role of mental processes and behaviour in promoting personal assets and protecting an individual from the potential negative effect of stressors."*

Resilience is a significant predictor of psychological well-being (Akbari & Khormaiee, 2015) and is strongly correlated with academic success in university students (Beauvais, Stewart, DeNisco & Beauvais, 2014). Students who are able to regulate their emotions and cope with stress display improved psychological well-being compared to their peers who struggle to cope (Akbari & Khormaiee, 2015; Jayalakshmi & Magdalin, 2015). Research also shows that students with greater resilience are better equipped to cope with the stressors associated with university life (DeRosier, Frank, Schwartz & Leary, 2013). More resilient students tend to have higher self-esteem and engage in more behaviours that promote their mental and emotional well-being (DeRosier et al., 2013), leading to an improvement in their overall mental health. A study of first-year students from seven different universities in the United States examined the interrelations between stress, resilience, and mental health of students using quantitative questionnaires over a one-month period. Results showed that greater overall stress was associated with lower resilience and more frequent maladaptive responses to stress. Conversely, students with higher resilience had greater well-being in all areas (DeRosier et al., 2013).

According to The American Psychological Association (2017), the primary factor contributing to resilience is having caring and supportive relationships with family and friends. Further, “Mak[ing] connections” is listed as one of ten ways to build resilience; being involved in groups and developing strong relationships provides social support that contributes to improved resilience to stress. In fact, helping others in their time of need is also beneficial for the helper. Mentorship provides strong social support for all parties involved, which can help build resilience in both mentors and mentees (Southwick, Vythilingam, & Charney, 2005).

1.3.3 Mentorship: What is it?

The Mental Health Commission of Canada describes mentoring as a supportive relationship between people who have common lived experience, where the mentor provides emotional and social support to mentees (Sunderland & Mishkin, 2013). Peer mentorship has been incorporated in models of mental health by both global and local organizations. Globally, peer support is an important step in an adapted model of the World Health Organization model of formal and informal mental health support for students (Brown, 2018). Nationally, the Framework for Post-Secondary Mental Health developed in 2013 by the Canadian Association of College & University Student Services incorporates mentorship in the second tier of the model as one component of a systemic approach to improving student mental health. From these sources, it is evident that peer mentorship is a widely-referenced method of supporting mental health.

In student populations, peer mentoring has been shown to have both positive social and academic outcomes (Dearlove, Farrell, Handa & Pastore, 2007). Specifically, peer mentorship programs provide social support that is strongly associated with improved mental health in students (Bovier, Chamot & Perneger, 2004; Hefner & Eisenberg, 2009). Research shows that peer relationships can help mitigate some of the difficulties that arise from the transition to university and contribute to resilience against the deleterious effects of university adjustment (Lenz, 2014). Mentees who make use of a mentoring program transition more easily and are more successful in adjusting to university life (Glaser, Hall, & Halperin, 2006; Hall, 2000). Although mentorship programs often focus on the needs of the mentees and the benefits they receive from the program, mentoring also confers benefits for the mentors (Dziczkowski, 2013).

1.3.4 Mentorship: Reciprocal Benefits

Mentoring 'works both ways' (Heirdsfield et al., 2008) in a two-way exchange (Haggard, Dougherty, Turban & Wilbanks, 2011), providing benefits for both mentors and mentees (Dziczkowski, 2013; Elliott et al., 2011; Glaser et al., 2006). Some of the common benefits include increased insight and awareness, self-esteem, stress reduction, professional development and reflection (Dziczkowski, 2013; Ehrich, Hansford & Tennent, 2004). In a study of first-year teacher education, mentorship provided academic and social benefits for both the mentors and mentees, suggesting that mentoring is a reciprocal process that allows for personal and cognitive growth in both groups (Heirdsfield et al., 2008). Similarly, Eby and Lockwood (2005) found that the most commonly reported benefit for both mentors and mentees in mentoring relationships was learning, albeit that the learning was of a different nature for each group. While there are overlapping benefits for both groups, some of the benefits of peer mentoring programs are different for mentors and mentees because of the differing roles played by each in the mentoring process.

While mentees benefit from the social/emotional support, skill development, and support in the transition to university provided by mentors (Glaser et al., 2006), mentors experience satisfaction from helping their mentees and benefit from the opportunity to practice and develop career-related and leadership skills (Beltman & Schaeben, 2012; Drew, Pike, Pooley, Young & Breen, 2000). Because of the reciprocal nature of mentorship relationships, mentors benefit significantly in a variety of ways from their roles.

1.3.5 Mentorship: Mentor Outcomes

The peer mentoring literature describes two main functions served by mentors: career-related and psychosocial, which are further categorized into peer mentor characteristics that are fundamental for fulfilling a mentoring role (Terrion & Leonard, 2007). In their roles, mentors report feeling a sense of achievement and satisfaction from assisting new students (Beltman & Schaeben, 2012; Drew et al., 2000; Gilles & Wilson, 2004; Ehrich et al., 2004) and helping them develop (Erickson, 1963, as cited in Eby et al., 2010). Mentors also express enjoyment in sharing expertise and gaining new personal insights (Gilles & Wilson, 2004; Ehrich et al., 2004). Furthermore, mentors gain confidence through the mentoring process as it provides an opportunity for emotional and personal growth as well as leadership experience and development (Beltman & Schaeben, 2012; Dennison, 2010).

Another positive outcome for mentors is the opportunity to develop lifelong professional attributes (Drew et al., 2000; Ehrich et al., 2004). In one study of 1200 mentors, mentors ranked ways in which the mentorship program was beneficial to them (Glaser et al., 2006). Six specific categories were ranked on a 1-5 scale to identify the greatest benefits reported by mentors. The top three benefits to mentors were improved communication skills, improved social skills, and improved self-confidence (Glaser et al., 2006).

Beltman and Schaeben (2012) conducted a qualitative study of 858 mentors to identify the major benefits they receive through mentoring. From the mentors' responses, four major categories were developed, and most of the responses fit into these themes. *Altruistic* benefits were the most frequently reported by mentors. Participants discussed their enjoyment and satisfaction from helping people. Next was *Cognitive* benefits, which included acquiring new

skills or information and gaining experience in skills they already possessed, thereby enhancing them (Calder, 2004). The third category was *Social*; mentors not only had the opportunity to interact and develop friendships with new students but also to develop relationships with fellow mentors. This expanded mentors' social networks. Finally, mentors benefitted from *Personal Growth*. Within this category, the most frequent sub-category was "developing self-awareness." Self-awareness has been cited in many studies of peer mentors as one of the main benefits mentors receive (Haggard et al., 2011; Heirdsfield et al., 2008). Mentors had the opportunity to reflect on their own experiences and grow by assisting the first-year students. Through this self-awareness and reflection process, mentors also gained confidence (Beltman & Schaeben, 2012; Drew et al., 2000). Reflection was also one of the most frequently cited positive outcomes for mentors in Ehrich et al. 's. (2004) review of mentoring programs in education. While many studies have assessed the career, social, and skill development benefits mentors receive, few mentoring studies have assessed the mental health and resilience outcomes of being a mentor in a university-based peer mentorship program. It is important to consider the outcomes for mentors as mentorship programs provide benefits for all parties involved (Elliott et al., 2011).

1.3.6 Mentorship: Gap in the Literature

The majority of studies conducted on peer mentorship programs solely evaluate the outcomes experienced by mentees. The most commonly studied mentorship programs focus on Nursing (Dennison, 2010; Jacobs, 2017; Jokelainen, Turunen, Tossavainen, Jamookeeah & Coco, 2011), Teacher Education (Gilles & Wilson, 2004; Hobson & Sharp, 2005; Heirdsfield, 2008), Corporate Settings/Career Development (Hunt & Michael, 1983; Underhill, 2006), At-risk Youth (Tolan et al., 2013), Career/Professional Development (Kashiwagi, Varkey & Cook,

2013), and Academic Success in Undergraduate Students (Jacobi, 1991; Rodger & Tremblay, 2003).

In a review conducted by Ehrich et al. (2004) on formal mentoring programs in education and other professions, the four most frequently cited positive mentor outcomes from Education studies were: collegiality/collaboration/networking/sharing ideas/knowledge; reflection; professional development; and personal satisfaction/reward/growth (Ehrich et al., 2004). The four most frequently cited problematic mentor outcomes were: lack of time; professional expertise/personality mismatch; lack of training/understanding problem/goals/expectations; and extra burden/responsibility (Ehrich et al., 2004).

Peer mentorship programs exist in higher education primarily to assist first-year students in their transition to university life and academia (Elliott et al., 2011), however, most of the research that looks at peer mentorship programs study the outcomes of only the mentees. Few studies seek opinions from mentors (Ehrich et al., 2004). Furthermore, the literature on the mental health and resilience outcomes of mentorship programs is sparse and remains an area to be explored. While there is some literature on mental health outcomes of peer mentorship programs, they focus predominantly on the views or experiences of the mentees (Ehrich et al., 2004), despite mentorship being a reciprocal process that confers benefits to all parties involved (Elliott et al., 2011).

1.4 Study Purpose

The literature on peer mentorship programs in postsecondary settings is sparse, especially studies evaluating the outcomes for mentors. While the academic, career, and personal benefits of mentorship programs for mentees are relatively well-documented (Dearlove et al., 2007;

Glaser et al., 2006; Milne, Keating, and Gabb, 2007), the perceived and objective outcomes for mentors remain areas to be explored and understood. Further, not many studies on university-based peer mentorship programs focus on mental health and resilience, which are important concepts to explore with the recent rise in student mental health concerns (American College Health Association, 2016). Research has shown that the social support provided by peer mentorship programs can help students build resilience (DeRosier et al., 2013), which is strongly correlated with mental health (DeRosier et al., 2013). Students who are more resilient typically exhibit better mental health than their peers who have lower resilience (DeRosier et al., 2013). Thus, peer mentorship might be an effective way to improve students' mental health and resilience.

The primary purpose of this study was to explore the mental health and resilience outcomes of being a mentor in a university-based peer mentorship program using a mixed methods approach. The quantitative component of the study provided objective pre-post data of student mental health and resilience, while the qualitative component delved deeper into the concepts of subjective mental health and resilience from the perspective of the mentors in the program. Gaining an understanding of the subjective mental health and resilience outcomes from mentors will aid in the development of future university-based mentorship programs to build on the notion that mentorship provides reciprocal benefits for both mentors and mentees.

Chapter 2

2 Methods

2.1 Study Context: Kinesiology Mentorship Program

The Kinesiology mentorship program was guided by a Health Promotion approach to improve mental health and resilience of undergraduate students. The mentorship program was developed as part of a research project called the Smart Healthy Campus (SHC) Initiative. The primary objective of the mentorship program was for mentors to guide their assigned first-year students (protégés) to become physically active by engaging in physical activity together and individually, in order to improve the protégés' mental health and resilience. It is also important and relevant to mention that while the mentorship program was strategically aimed at helping first-year students, all aspects of the program were also experienced by the mentors as well.

The mentors of the program were third or fourth-year Kinesiology students enrolled in the Kinesiology 3333Y class at Western University. The protégés were first-year students in Kinesiology whose participation in the program was not mandatory, though strongly encouraged. All mentors received course credit for engaging in the mentorship program; however, enrollment in the 3333Y class did not automatically equate to participation in the research study. Before the mentorship program began in September, mentors attended two full days of Leader Effectiveness Training (Gordon, 2001) and received a suicideTALK (LivingWorks, n.d.) training. Mentors were randomly assigned between 6 and 8 protégés to form mentoring “teams”. No attempt was made to match mentors and protégés.

Mentors met with the course instructor twice a week for one hour; one of these meetings included both protégés and mentor, and the second meeting was for mentors only. Mentors also interacted with their protégés outside of the classroom environment to provide academic guidance, emotional support, and engage in physical activity together. During their classes with Dr. Salmoni, mentors were introduced to different topics related to the course (e.g., living a balanced lifestyle), while the remaining class time (mentors only) was spent discussing their mentoring experiences and any issues that arose. Some lesson topics included the ethical conduct of mentorship, mental health and physical activity, effective self-management, building resilience, and conflict resolution, among others.

2.2 Participants and Research Design

This study employed a mixed methods design, combining data from quantitative questionnaires and qualitative written self-reflections, in order to gain a more nuanced understanding of the study purpose than would have been possible using only one approach (Creswell & Plano Clark, 2011). Using two methods of data collection also provides complementarity, such that the advantages of one complements the disadvantages of the other, and vice versa (Shannon-Baker, 2016). The quantitative data were collected at the beginning and end of the mentorship program using a pre/post, repeated measures design, while the qualitative data was collected solely during the post phase in a concurrent, parallel design (Creswell & Plano Clark, 2011).

Research participants (male and female student mentors) were recruited from the Kinesiology Mentorship Program at Western University. Mentors received course credit for being a mentor; however, students were given a letter of information (see Appendix B)

indicating that their enrollment in the class did not equate to participation in the research study. Only mentors who signed consent forms were considered the participants in the study. A total of 53 mentors were enrolled in the course and 43 consented to participate. Mentors were included in the study if they met the following criteria: a) they were a full-time undergraduate student, and b) they were a third, fourth, or fifth-year Kinesiology student enrolled in the Mentorship course. As part of the overall Smart Healthy Campus research project, ethics approval for the present study was received from the Western Research Ethics Board (see Appendix A).

2.3 Research Instruments

Two quantitative questionnaires (see Appendix C & D) were used pre- and post-mentorship program to measure the change in mental health and resilience of the mentors over time. A qualitative written self-reflection was used post-mentorship program to understand the broader mental health and resilience outcomes of being a mentor.

2.3.1 Brief Resilience Scale

The Brief Resilience Scale (BRS) (Smith et al., 2008) was used to measure mentors' resilience – the ability to bounce back or recover from stress – over the course of the mentorship program. The BRS is a 6-item questionnaire rated on a Likert scale ranging from 1 to 5 (1 = strongly disagree; 5 = strongly agree). Items 2, 4 and 6 are assigned a reverse score. The overall resilience score was determined by calculating the mean of all six items, with higher scores indicating greater resilience. The scale has been shown to have sound psychometric properties (Windle, Bennett & Noyes, 2011) and is a reliable measure of resilience in undergraduate student populations, with Cronbach's alphas ranging from .83 – .94 (Amat, Subhan, Jaafar, Mahmud & Johari, 2014; Smith et al., 2008).

2.3.2 Mental Health Inventory

The Mental Health Inventory (MHI) (Veit & Ware, 1983) was used to measure the psychological and emotional wellbeing of the mentors. The MHI consists of 18 items derived from the original 38-items rated on a Likert scale ranging from 1 to 6 (1 = all the time; 6 = none of the time), with items 1, 3, 5, 7, 8, 10, 13, and 15 assigned a reverse score. Participants answered each question based on how they felt and how things had been for them during the past four weeks. Each question began with "During the past 4 weeks, how much of the time…". The MHI contains five subscales measuring anxiety (4 items), depression (4 items), behavioural/emotional control (4 items), general positive affect (5 items) and emotional ties (1 item). Raw scores were calculated from the means of each subscale and then converted using the following formula: [(Mean Subscale Score – 1)*100]/5. Following conversion, the MHI total score and subscale scores ranged from 0-100; higher scores indicated better mental health. The inventory has been shown to have sound psychometric properties and has been used with university-aged participants (Ostroff, Woolverton, Berry, & Lesko, 1996; Veit & Ware, 1983). Ritvo, Fischer, Miller, Andrews, Paty and LaRocca (1997) Veit and Ware (1983) reported a Cronbach alpha level of .93.

2.3.3 Qualitative Self-Reflections

To investigate the broader mental health and resilience outcomes of being a mentor, mentors also completed written self-reflections during the final month of the mentorship program in March. Mentors were asked to write a response to the following question:

1. What impact has being a mentor had on your mental health? Please provide specific examples to describe the positive and/or negative impact.

2.4 Procedure

Quantitative data were collected on two occasions: at the beginning of the program in September 2017 and near the end of the program in March 2018. Data were collected using a secure online research and data platform called *Qualtrics*. Each mentor was assigned a unique participant ID code during the first round of data collection in September that was used for each subsequent data collection to identify participants. Mentors logged into the system, inputted their participant ID code, and completed the questionnaires during the allotted class time for data collection. Reverse coding was built into the data collection process so that the appropriate scores were automatically reversed in Qualtrics. Data was downloaded from Qualtrics into an excel spreadsheet, after which it was embedded in SPSS and analyzed.

Qualitative data were collected in March 2018, approximately at the same time as the final (post) quantitative data. Mentors arrived in class and were given 1 hour to answer the self-reflection questions. Mentors were then given the option of submitting their reflection at the end of class or taking it home to complete and submit the following day. Mentors were asked to submit hard-copies of their self-reflections without their names to protect their identities.

2.5 Data Analysis

Quantitative and qualitative data were analyzed separately and integrated during the production of the report (Creswell, & Plano Clark, 2011).

2.5.1 Quantitative Analysis

Quantitative data analysis was conducted using IBM SPSS (Statistical Package for the Social Sciences) version 25.0. First, all descriptive statistics and frequencies were assessed to

ensure there were no missing data, all variables fell within the appropriate ranges, and there were no outliers. Then, pre-post analyses using the total scores from the MHI and BRS were performed using Paired Samples t-tests to determine whether there were pre/post differences in mental health and resilience. An alpha level of ≤ 0.05 was used.

2.5.2 Qualitative Analysis

The disclosure of underlying biases is important in qualitative research. The present researcher comes from a Kinesiology background, where physical activity is considered to be beneficial to health in general, including mental health. The researcher's background in mental health education and training may also have biased the findings. However, extensive measures were taken to reduce biases in the research, using Guba and Lincoln's (1989) criteria for trustworthiness of data.

Inductive thematic analysis, as described by Braun & Clarke (2006), was utilized to code and analyze the mentor self-reflections for meaningful extracts of data, search for common themes within the codes, and develop a thematic map to show the relationship between codes and between themes. Thematic analysis was conducted on all mentor self-reflections in a six-stage process (Braun & Clarke, 2006) (see Table 1). In addition, four steps to assure the quality and trustworthiness of the data, as described by Guba & Lincoln (1989), were utilized throughout data collection and analysis of the qualitative data: a) credibility, b) confirmability, c) dependability, and d) transferability (see Table 2).

Qualitative data were analyzed manually. Prior to initiating the first stage of thematic analysis, the researcher and her supervisor each independently read 15 randomly-selected self-reflections and coded them using line-by-line analysis, identifying key ideas and extracts of data

that seemed meaningful. The researchers then met to discuss their findings and devise a coding system to guide the next round of coding. During the discussion, each self-reflection was analyzed individually and specific codes to describe each key phrase were chosen only after agreement from both researchers. A coding template was developed using agreed upon keywords and examples from the self-reflections. The researcher and her supervisor then used this coding template to independently code another random selection of 10 mentor self-reflections, discuss the similarities and differences, and come to an agreement. The chosen codes and definitions were compiled into a comprehensive coding guide. Finally, all self-reflections were coded by the researcher according to the coding template and following the steps of inductive thematic analysis.

Following the development of the preliminary thematic map, the researcher re-read all the self-reflections to ensure the themes were representative of the coded extracts and enhanced the confirmability and dependability of the data. The researcher and her supervisor met to discuss and scrutinize the thematic map for any discrepancies, overlap in themes, or disagreements in general about the themes or thematic map. Once the thematic map was agreed upon by both researchers, the researcher defined the themes using sample extracts from each code as a guide. Next, the researcher corroborated the thematic map and theme definitions by performing member checks with a convenience sample of participants to improve the credibility of the qualitative data. Five mentors were contacted for member checking and four responded. Mentors were asked a) if they believed the thematic map was an accurate representation/interpretation of their experiences as a mentor, and b) if there were any major flaws with the map that they believed should be either i) redefined, ii) moved to a different location, or iii) omitted altogether. The four

mentors all agreed with the validity and accuracy of the thematic map and definitions, with few edits incorporated to create the final version.

Table 1

Phases of Thematic Analysis

Phase	*Description of the process*
1. Familiarizing yourself with your data	Reading and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

(Braun & Clarke, 2006)

Table 2

Steps Undertaken to Establish Trustworthiness of Data Throughout Data Collection and Analysis

Criteria	*Description*
Credibility	Member checking was done with individual participants prior to producing a report of the analysis to ensure the identified themes were an accurate reflection of the mental health and resilience outcomes of the mentorship program and congruent with the ideas of the participants. Peer debriefing was also performed throughout the data analysis phases to challenge the assumptions of the researcher. The researcher performed peer debriefing with a PhD student external to the Kinesiology department to enhance the credibility of the qualitative findings. The peer debriefer asked questions to challenge the researcher's biases and assumptions. For example, one peer debriefing session centered around the idea of past experiences and how they could potentially influence the data coding and analysis process. The researcher then attempted to eliminate those biases and assumptions from the research. Peer debriefing was conducted throughout the entire qualitative coding process, through conversations and review of the written codes. The peer debriefer asked questions about the interpretation of the self-reflections, the definitions of the themes, and the overall thematic map to help the researcher be more clear and concise in her written report of the qualitative themes.
Confirmability	To reduce researcher bias, the researcher and her supervisor independently and simultaneously performed inductive thematic analysis on the written self-reflections. The codes were then compared and discussed for similarities and differences. The agreed-upon codes were established as criteria for the second round of inductive thematic analysis, which the researcher used to re-code the entire data set. The researcher engaged in reflexive practices throughout qualitative data analysis and reporting of the results to

	reduce bias in the research. The researcher kept a journal of thoughts, ideas, assumptions and interpretations and referred to the notes often. She used her reflexive notes as talking points with her supervisor to deconstruct her thoughts. The researcher attempted to reduce her biases within the research process by having these discussions. Peer debriefing was also used as a method of reflexivity. Discussing her assumptions with a PhD student who was removed from the research was another way of reducing bias.
Dependability	The methods utilized to conduct data collection and analysis were documented in detail to provide thorough description of the process so that the study may be replicated. The researcher and her supervisor coded half of the self-reflections independently and met to discuss their findings to establish agreement about the codes. The researcher then re-coded all of the self-reflections.
Transferability	All elements of the research process were extensively documented, allowing for thick description that enables readers to determine whether results are transferable to other contexts.

Note: Adapted from Guba & Lincoln (1989)

Chapter 3

3 Results

3.1 Quantitative Results

Prior to performing paired samples t-tests, descriptive statistics from both the Brief Resilience Scale and the Mental Health Inventory were examined for outliers and to ensure the data was representative of a normal distribution. Once it was verified that the data did not contain any major outliers and followed a pattern of normal distribution, paired t-tests were performed.

3.1.1 Brief Resilience Scale

Results from the Brief Resilience Scale paired sample t-test showed that, over time, there was no statistically significant difference in participants' perceived level of resilience [$t(42) = 0.25$, $p > 0.05$], suggesting that being a mentor did not lead to an improvement in resilience over the 8-month program. As shown in Table 3, mean resilience scores decreased slightly from pre ($M = 3.45$, $SD = 0.66$) to post ($M = 3.43$, $SD = 0.66$).

Table 3

Descriptive Statistics of Brief Resilience Scale Repeated Measures

	Score	***Mean***	***N***	***Std. Deviation***	***Range (Min-Max)***
Resilience Score	Mean Pre	3.4457	43	.66440	1.67-4.83
	Mean Post	3.4264	43	.65597	2.00-4.83

3.1.2 Mental Health Inventory

Results from the Mental Health Inventory Total Score (see Tables 4 & 5) paired samples t-test showed that, over time, there was no statistically significant difference in participants' overall mental health [$t(42) = -1.146$, $p > 0.05$], suggesting that being a mentor did not lead to a significant improvement in overall mental health. No statistically significant differences were found between pre-intervention ($M = 52.01$, $SD = 5.62$) and post-intervention ($M = 53.23$, $SD = 6.27$). Repeated measures t-tests of three out of the four subscales also showed no statistically significant difference over time. Although few statistically significant changes were present, the Mental Health Total, Anxiety, Behavioural Control, and Positive Affect scores all increased over time from pre- to post-test, pointing to a trend in improved mental health in those categories over time. The only subscale that showed a statistically significant change over time was the Positive Affect subscale. Mentors' Positive Affect seemed to improve from pre- ($M = 27.56$, $SD = 14.12$) to post-intervention ($M = 32.56$, $SD = 19.25$), [$t(42) = -2.10$, $p < 0.05$].

Table 4

Descriptive Statistics of Mental Health Inventory Repeated Measures

	Score	***Mean***	***n***	***Std. Deviation***	***Range (Min-Max)***
Mental Health Total Score (MHI)	*MHI Total Pre*	52.0155	43	5.62003	32.22-58.89
	MHI Total Post	53.2300	43	6.27516	37.78-62.22
Anxiety Subscale (MHA)	*MHA Pre*	55.2558	43	13.18746	24.00-76.00
	MHA Post	57.3953	43	15.29105	20.00-84.00
Behavioural Control Subscale (MHC)	*MHC Pre*	56.7442	43	12.09505	10.00-85.00
	MHC Post	56.8605	43	9.69924	25.00-75.00
Positive Affect Subscale (MHP)	*MHP Pre*	27.5581	43	14.11568	0.00-65.00
	MHP Post	32.5581	43	19.25308	0.00-85.00
Depression Subscale (MHD)	*MHD Pre*	75.2326	43	14.43184	45.00-100.00
	MHD Post	72.4419	43	19.37635	20.00-100.00

Table 5

Mental Health Inventory Paired Samples t-Test Results

	Paired Differences							
Subscale Paired Samples ***(pre vs. post)***	**Mean**	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**		**t**	**df**	**Sig. (2-tailed)**
				Lower	Upper			
Mental Health Total	-1.21447	6.94657	1.05934	-3.35231	.92337	-1.146	42	.258
Anxiety	-2.13953	14.69302	2.24066	-6.66138	2.38231	-.955	42	.345
Behavioural Control	-.11628	12.55883	1.91520	-3.98132	3.74876	-.061	42	.952
Positive Affect	-5.00000	15.54563	2.37069	-9.78424	-.21576	-2.109	42	.041
Depression	2.72487	12.93488	1.99590	-1.30593	6.75566	1.365	42	.256

3.2 Qualitative Findings

When analyzing mentors' written responses to the self-reflection question, "What impact has being a mentor had on your mental health? Please provide specific examples to describe the positive and/or negative impact," five major themes were identified: (1) Responsibility; (2) Physical Activity; (3) Social Support; (4) Leadership; and (5) Personal Growth. Each major theme is further broken down into subthemes. The thematic map that was developed during data analysis is a complete representation of the qualitative findings (See Figure 1). In this section, themes and subthemes are first defined. Next, sample quotations from mentor responses are presented. The chosen quotations are provided to give a global sense of the mentor's thoughts about the impact of mentoring on their mental health.

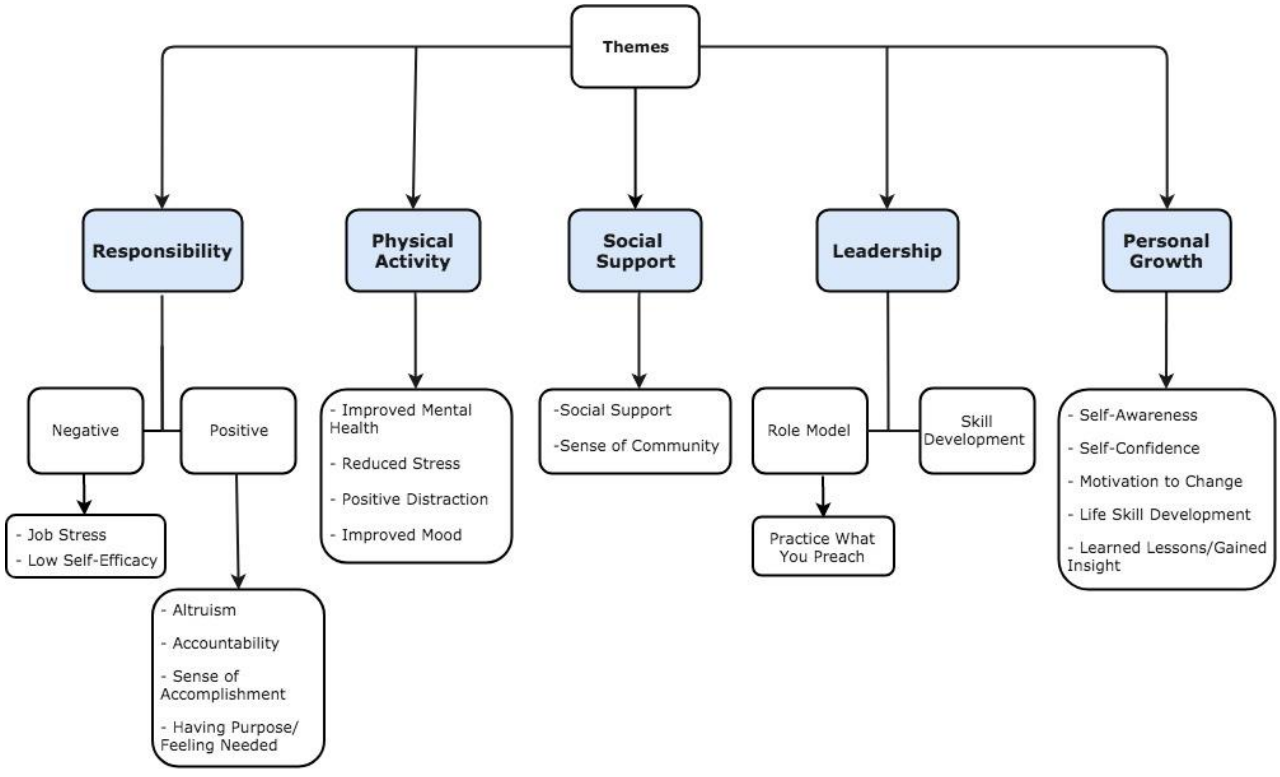

Figure 1 *Thematic Map of Qualitative Themes*

3.2.1 Responsibility

All mentors reported a strong sense of responsibility to both the mentorship program as well as their protégés. Mentors described that responsibility had both a positive and negative impact on their mental health. Positive subthemes reported were: (1) Having purpose/feeling needed; (2) Accountability; (3) Altruism; and (4) Sense of Accomplishment. Responsibility elicited negative outcomes including: (1) Job Stress; and (2) Low Self-Efficacy.

Positive outcomes:

- *Having purpose/feeling needed:* Mentors explained that being a mentor gave them a sense of purpose and made them feel needed. They described that the job of being a mentor made them feel like their effort was valued.
- *Accountability:* Mentors described a feeling of obligation, as though their presence and their roles as mentors and leaders helped them maintain their commitment to the program and to themselves.
- *Altruism:* Mentors discussed a strong desire to help their protégés grow and watch them develop. Helping their protégés made mentors feel good.
- *Sense of Accomplishment:* Mentors described feeling proud and successful watching their protégés grow and flourish. Mentors felt they had achieved success through helping their protégés.

Negative outcomes:

- *Job Stress:* At times, mentors were unable to cope with the demands of their roles as mentors. However, it is important to note that all accounts of job stress in the self-reflections were described as only being prevalent near the beginning half of the

mentorship program. As a whole, mentors reported that the job stress they experienced was very short-lived.

- *Low Self-Efficacy:* Mentors described a feeling of inadequacy, self-doubt, or self-induced pressure resulting from their experiences. This led to a feeling of low self-efficacy as a mentor. However, mentors described that the low self-efficacy they experienced quickly dissipated as they gained coping skills to manage those feelings of low self-efficacy. Mentors reported that the low self-efficacy they felt was short-lived.

3.2.2 Physical Activity

All mentors reported significant mental health benefits from engaging in physical activity, both with their protégés and independently. Four sub-themes were identified within Physical Activity: (1) Improved Mental Health; (2) Reduced Stress; (3) Improved Mood; and (3) Positive Distraction.

- *Improved Mental Health:* Mentors explained that their engagement in physical activity through the mentorship program improved their subjective mental health. Having the requirement to exercise as part of the mentorship class and find new ways to become physically active with their protégés was beneficial to mentors' mental health.
- *Reduced Stress:* Mentors felt that the course requirement to be physically active positively impacted their perception of stress and reduced their overall stress levels, especially during typical high-stress periods such as exam season.

- *Improved Mood:* Mentors stated that their engagement in physical activity boosted their overall mood over the course of the year. Mentors reported feeling happier and more refreshed when they participated in physical activity.
- *Positive Distraction:* Mentors described that their active participation in physical activity resulted in their minds being distracted for a period of time. Mentors explained that physical activity helped them take their minds off the stresses of everyday life or particular things that were bothering them, for a period of time. Thus, physical activity acted as a positive distraction from daily stressors and responsibilities. Physical activity was also a break from the routine of going to class, taking notes, and studying.

3.2.3 Social Support

Through the social interactions of the mentorship program and building connections with their protégés, mentors felt a sense of (1) Social Support; and (2) Sense of Community.

- *Social Support:* Mentors felt that they were cared for by both their cohort of fellow mentors and their protégés, they had a network of people who helped and encouraged them, and they had emotional support available to them. This feeling of social support improved mentors' mental health.
- *Sense of Community:* Mentors explained that being a mentor gave them a sense of belonging and connectedness to both the mentorship program, the Kinesiology program, and the broader Western University community. Mentors perceived this sense of community to be beneficial for their mental health.

3.2.4 Leadership

As leaders in the mentorship program, mentors described two themes that encompass their leadership experiences: (1) Leadership Skills Development; and (2) Role Model. Within the Role Model sub-theme is another sub-sub theme that mentors actively described: Practice What You Preach.

- *Leadership Skills Development:* Mentors believed that their leadership roles in the mentorship program led to the development of new leadership skills and the opportunity to practice existing ones. All mentors described their growth in leadership skills and the resultant sense of self-confidence.
- *Role Model:* Mentors described that being a good mentor required being a role model for the first-year students. Mentors wanted to set a good example for their protégés and described that being a role model made them feel valued and important because their protégés looked up to them.
    - *Practice What You Preach:* Being a role model helped mentors practice what they were preaching to their protégés, which in turn helped them adopt the teachings of the program and improve their mental health.

3.2.5 Personal Growth

Being a mentor led to significant personal growth in many forms. Sub-themes in this theme of personal growth include: (1) Learned Lessons/Gained Insight; (2) Self-awareness; (3) Self-confidence; (4) Motivation to Change; and (5) Life Skills Development.

- *Learned Lessons/Gained Insight:* Mentors learned many lessons from their mentoring experiences, which led to mentors gaining insight about themselves, the world, and

their relationships with others. Mentors described that the lessons they learned and insight they gained improved their mental health.

- *Self-Awareness:* Mentors described that frequent self-reflection through the mentorship program and the experiences they had as mentors allowed them to become more self-aware and learn about themselves in a unique way.
- *Self-Confidence:* Being a leader and role model in the mentorship program helped mentors gain a sense of self-confidence and mastery. Mentors explained that they became more sure of themselves and confident in their abilities.
- *Motivation to Change:* Mentors expressed that mentoring gave them motivation to bring to fruition certain habits and/or behaviours that they had previously been unable to.
- *Life Skill Development:* Mentors described learning and developing a variety of practical and invaluable life skills (e.g. time management, self-care, coping, etc.).

3.2.6 Quotes from Mentor Self-Reflections

Table 6

Examples of Themes and Sub-Themes Identified in Mentor Self-Reflections

Mentor Quotes
Responsibility (Positive)
Having Purpose/Feeling Needed
(Female, mentor 9) “Knowing that I am a role model and somebody that my protégés look up to has had both positive and negative impacts on my mental health. In terms of this positively affecting my mental health, it made me feel like I had a purposeful responsibility and that I was important and making a positive contribution.”
(Male, mentor 37) “When you feel like a leader, when you're given more of purpose and are given more responsibility it can affect your mental health in a positive way.”
Accountability
(Female, mentor 9) "When school became stressful, and I thought about missing class, my protégés were my motivation to attend class, because I could not expect them to show up each week if I did not."
(Female, mentor 28) "In some ways it was good because I couldn't skip class anymore. My protégés needed me to be there. There were no excuses to skip."
Altruism
(Female, mentor 10) “I guess I was really invested on making my protégés work and make sure that they were reaping as many benefits as possible that I was surprised it had such a positive effect on me.”
(Female, mentor 26) “Helping others made me feel good about myself which helped eliminate my anxiety.”
(Female, mentor 1) “I had to manage putting their mental health concerns before my own. In the end, it was extremely rewarding for my mental health to see all of my protégés thrive academically and personally. I enjoy seeing them attend the rec centre on their own time and I am confident that they will be great future leaders of Kinesiology at Western.”

Sense of Accomplishment

> (Female, mentor 17) "Whether it was from having all my mentees come to an event that I planned or seeing them come together as a team, some events have allowed me to feel proud of what our team has become. A specific positive event that boosted my confidence as a mentor was when we played volleyball with a few other mentor teams in the Rec Center. This day my team and I were supposed to play 3v3 basketball, however, the courts were full, so we had to switch over to volleyball. Approximately 8 other mentor/mentee teams were also on the volleyball courts, so we had decided to play King's Court in order to get a quick rotation of all teams. This system was highly successful because everyone was involved and everyone on the courts were smiling and having fun. This all made me feel very happy because all my mentees were interacting with each other, as well as other groups. I felt like they were finally getting along and becoming friends, so it showed that I had succeeded as a mentor because I was able to bring them together."

Responsibility (Negative)

Job Stress

> (Male, mentor 12) "Negatively, being responsible for and motivating 6 first years was a huge challenge to do alone. Trying to get them to like you by adapting to fit 6 different personalities took a lot of effort and a lot of failure at times. Failure, although mostly just occurring in the beginning, doesn't feel good in any form. It was stressful thinking that it would continue throughout the year and the possibility of never forming the relationship that eventually formed as the year went on. Even though the negative impacts on mental health were brief, they existed. As the year continued, the negatives began to fade, and the positives were displayed."

> (Male, mentor 39) "Being a mentor has had a substantial impact on my mental health, originally, I thought that it was having a negative impact because it was stressing me out and making me anxious having to help my 7 protégés with their lives. I found myself asking why am I mentoring these younger students when I can't even seem to grab a handle on my own life? After the first few weeks of feeling this way and working through the negativity I realized that I started to have my own life more in check, I was more organized with my school work and studying and I realized that I had started attending more of my classes."

> (Female, mentor 1) "However, it is important to note that being a mentor is not always easy. I feel extremely exhausted and emotionally drained at times. In first semester, I had to meet one on one with my

protégés when they were settling into university. Moreover, sometimes I missed class to speak to them while other times I had to book appointments for them with their academic counselors… I had to manage putting their mental health concerns before my own."

Low Self-Efficacy

(Female, mentor 9) "…it also had the reverse impact and decreased my confidence sometimes. I was always worried about what my protégés thought of me and if they liked me or thought I was doing a good enough job. This sense of worry was especially present the first time I met my protégés and it lasted for about the first month. However, I would have to say that this negative aspect was, overall, short-lived because as time went on, I had many more positive days and experiences than negative."

(Female, mentor 15) "At times it has been quite disheartening to see how little interest some of them have in the program. It can feel like nothing I do is good enough to be a good mentor. None of my protégés have opened up with me, and there are some that I really struggle to get involved in activities. This includes getting them to come out the activities in the first place, but also getting them to participate once they are there. All of this makes me feel inadequate, thus decreasing my mood and impression of myself."

(Female, mentor 22) "There were also a few moments that it negatively impacted my mental health especially at the beginning of the year. At the start of the course, I set a really high bar of expectations for myself as a leader. As soon as I wasn't meeting that bar, I was highly critical of myself, and this feeling of disappointed dragged down my enthusiasm. I wasn't enjoying much of the course at all since everything I tried ended up with me being disappointed with myself."

(Female, mentor 40) "Although mainly positive, at times there was a slightly negative impact/it was upsetting to me at times when the protégés would not show up or would not answer my texts. This made me feel as though I was not liked and lowered my self-esteem at times. However, it also created an opportunity for good conversation between my protégés and I about how to improve our meetings."

(Female, mentor 43) "As a leader, there are many times where I sometimes doubt myself."

Physical Activity

Improved Mental Health

> (Female, mentor 30) "It has positively impacted my mental health because this course encourages me to stay physically active and promoting a healthy lifestyle. During the class, I find myself thinking of new ways to re-energize, which inspired to join a hot yoga class and cycle to class instead of taking the bus. In addition, the class times with my protégés remind me to take a few hours out of my week to abide by the course requirements of being physically active. As a result, these experiences improved my mental health."

Reduced Stress

> (Female, mentor 20) "This mentorship has forced me to be more physically active which in turn decreases my stress levels temporarily, giving me a break from exam and life stress. It makes me feel more rejuvenated and fresh and as though I can accomplish anything."

> (Female, mentor 41) "Taking on this role actually helped me be active almost every day this year when I could. This positively impacted my mental health throughout the entire year. More specifically, during periods of high stress (exams, assignments), having the responsibility to meet my first years at the gym helped me cope with my stress through engagement in physical activity."

> (Female, mentor 18) "I think having the physical activity component to the course was also beneficial because it made me engage in physical activity which reduced my stress levels in school and in class. It also had a social component to it since we were involved in different games and activities as a group. Having the social component was very beneficial to my mental health because it offered a change from the usual lecture class where we just sit and take notes with no real interaction with other classmates."

Improved Mood

> (Female, mentor 26) "As I started implementing physical activity in my life daily, I realized how much I missed it and how much it can impact my happiness/mood. Now I can truly say that my anxiety and sadness is gone. I have stopped taking the medication I was on and I get up every morning ready to start my day."

(Male, mentor 36) “With this course, it is guaranteed that every Tuesday I will partake in some form of group physical activity which immediately brightens my mood.”

Positive Distraction

(Female, mentor 8) “Additionally, the fun, light-hearted activities that we participated in on Tuesdays also made me forget about my problems, even if it was just for an hour.”

(Female, mentor 34) “Since September, I realized that I could no longer just be passive in this process and let myself go through the depressive episodes especially as a mentor. I was pushed to use physical activity as something that took my mind off matters, by doing so I ended a lot of depressive episodes before they truly started.”

Social Support

Social Support

(Male, mentor 35) “I think a huge factor why people overcome mental health barriers is having a strong support system. Having protégés as a part of my daily life has allowed me to create another social support system I can depend on and also provide a source of support for them as well. A specific example that describes the positive impact it had was simply communicating every day about upcoming assignments and tests. I think that talking about school stress calms my nerves and allows me to relax better knowing that there are always individuals who are interested in your successes and even failures, not only as a student but a developing person as well.”

(Female, mentor 18) “My mentor protégé group all get along great, and I feel as though I have made four new friends which has positively affected my mental health. Every class when we met throughout the week we would all talk about how their school life and how their out-of-school life was going which was nice since we all care about each other."

(Female, mentor 8) “However, I think that having a group of other mentors in the class acted as an indirect support system for me. In September I was very unsure if I was going to be able to balance this course, but throughout this year I have felt supported and at ease being able to work and collaborate with the other mentors in this course. It was encouraging to learn about how everyone was balancing the course and interacting with their protégés on Tuesdays.”

Sense of Community

> (Male, mentor 37) "Another element being a mentor gives you is the sense of belonging. I was just like any other kin student before I became mentor and now I feel like I should be more involved, and there's more of a purpose of me being here versus other years."
>
> (Female, mentor 40) "Over the course of the year, I have had a few instances when I was so stressed about school, familial relationships and friendships that I felt as if I did not want to socialize with anyone. During these times I would go to my Tuesday activity and realize I did have people I wanted to socialize with, my protégés. For me, my protégés provided me with an escape from my daily stressors. Being with my protégés was a time to forget about things that were stressing me out, and it was a time to have fun with new people. Prior to this year, I did not get a chance to make friends within my program, so this gave me an opportunity to meet people in Kinesiology, this boosted my confidence and has made my University experience more enjoyable because I now have friends in most of my classes and see more familiar faces on campus."

Leadership

Leadership Skill Development

> (Male, mentor 37) "As far as the positives go I think one important positive thing about being a mentor has to be with the duty of being a leader. When the first years first arrived in September and were meeting all the mentors in Alumni Hall, it must have been hard for them just like it was hard for me sometimes to open up, talk and be enthusiastic of meeting new people. So, when we first met our protégés, all the onus was on myself to facilitate conversation and act as a leader."
>
> (Female, mentor 43) "A beneficial impact that mentoring has had on my mental health is the fact that I was able to try new things and learn to step outside of my box, in terms of my leadership skills. As a leader, there are many times where I sometimes doubt myself. I became more comfortable with being a leader and I developed more confidence in myself. This class taught me that I do have the abilities to be a good and successful leader, which helped me have more self-confidence in myself. Being a mentor gave me more opportunities to try and learn new leadership styles with my protégés. This taught me that I do not need to over think, stress out, or become overly anxious when I am given the opportunities to be a leader."

Role Model

(Female, mentor 1) "Having a group of first years who openly discuss their academic and social battles with me has been beneficial, and it has been nice to be the person others turn to for advice. Overall, being a mentor has helped shape me into more of the person that I want to be. This has happened because of the younger mentees looking up to me and requirement to show them the best role model possible."

(Female, mentor 26) When I came to school in September I knew I had to put my feelings aside and be an example for my eight protégés. I started forcing myself to wake up early and go to the gym. I thought that I had to lead by example since I am the mentor telling eight first-year students that physical activity is good for your mental health.

(Female, mentor 34) In the back of my mind, I kept reminding myself that there are 6 people, if not more, that look up to me and how I deal with this. I couldn't just give in to the pressures of stopping physical activity I needed to keep pushing. In the end, I avoided the episode for the most part and in retrospect, I can see how much being a mentor helped me deal with my own mental health.

Practice What You Preach

(Male, mentor 7) "Constantly giving positive advice to my protégés has had a positive impact on my mental health. Giving constant guidance to my protégés regarding physical activity and mental health has rubbed off on myself. I have certainly struggled being physically active at stressful moments in the past, but telling my protégés every day to be active actually got me to be more active as well."

(Female, mentor 11) "Personally, I am a student that tends to ignore the importance of physical activity and mental health when I am stressed with exams and assignments. However, during first semester's final exam season, I was able to practice what I was preaching to my protégés. I was able to remind them and myself to take breaks while studying and to focus on myself by getting up and moving. This has positively impacted how I deal with stress and anxiety before exams."

Personal Growth

Learned Lessons/Gained Insight

(Male, mentor 36) "Therefore, it is not simply being a mentor that has improved my mental health but the lessons I have learned as a result of this course that have been impactful on the steady incline of my mental health throughout the duration of the semester."

> (Female, mentor 17) “There are things you cannot change and there are things you can change, what matters is that you do what you can to change things for the better and help others in every way you can. Helping others, especially emotionally or mentally, and truly being there for them is something that I learned in this course and has changed me forever.”
>
> (Female, mentor 20) “Overall, being a mentor has helped to shape me as an individual. It has given me insight and changed my perspectives of certain aspects of my life.”
>
> (Female, mentor 41) “Over the past year, I have learned that to be mentally healthy does not mean the absence of a mental disorder, but rather it's the presence of healthy characteristics such as being able to enjoy everyday life and being able to cope with stressors in life. I have learned that the best medicine for our mental health is exercise. What becomes challenging is to maintain these exercise habits during busy and stressful times.”

Self-Awareness

> (Female, mentor 11) “Having the constant reminders and discussions during Thursday's class about how to manage stress and where to find resources to cope with it, has made me more aware of my own mental health.”
>
> (Female, mentor 43) “From this, I learned to only get worked up about things that are in my control. I am only able to control so much in term of the protégés coming to class. I tried really hard and put 100% in keeping a positive attitude and creating an environment where they would enjoy coming, but sometimes they still wouldn't come. This example began as a negative influence on my mental health, but I think it taught me something that I will be able to use in other situations outside of my life.”
>
> (Female, mentor 17) “Whether it was viewing things from a new perspective, realizing certain things about past experiences that I didn't see at the time, or seeing that I had helped someone in a time of need, is a feeling that is hard to put into words. Being a mentor allowed me to continuously reflect on my first year because of the similar experiences my protégés are going through that I also went through two years ago such as kinesiology classes, residence, etc. and allowed me to see how much I have grown as a student and a person. This is something I don't think I would have realized had I not continuously going through the

> reflective process, something I aim to do more regularly going forward."

Self-Confidence

> (Female, mentor 27) "In the end, these positive experiences have allowed me to grow as a mentor and see that I am capable of being an effective leader, which has boosted my self-confidence."

> (Female, mentor 43) "I became more comfortable with being a leader and I developed more confidence in myself. This class taught me that I do have the abilities to be a good and successful leader, which helped me have more self-confidence in myself."

Life Skill Development

> (Male, mentor 2) However, as the year went on, I was able to adjust to the pressures and develop coping strategies."

> (Male, mentor 5) "As someone who has a history of anxiety, I specifically benefitted from the grounding techniques we learned. The techniques and advice I've gained through the course have helped me in times of need and will continue to help further in life."

> (Female, mentor 3) "I began to manage my time better, which reduced my stress and improved my mental health."

> (Male, mentor 2) "I think the mentorship program this year has been a key element of my responsibilities that have helped me to develop strategies and monitor my mental health on a more compassionate and proactive level."

Motivation to Change

> (Male, mentor 7) "Acting as a mentor resulted in me taking steps to improve my mental health that I knew were best but had never been able to successfully implement into my life."

> (Female, mentor 42) "I have used this program as an opportunity to get myself back in the habit of making every single day, an active one. In high school, I was a competitive track and field and cross-country runner, but due to injury my runner career ended before university and I never got back into it. If it hadn't been for this program, I don't believe I would've ever started running again, but now 8 months later, I am running 6 days per week."

Chapter 4

4 Discussion

The purpose of this study was to explore the impact of being a mentor in a university-based peer mentorship program on mental health and resilience outcomes. Using a mixed methods approach, qualitative and quantitative data were analyzed independently, and findings were synthesized by drawing insights from both. In this section, quantitative and qualitative results are discussed separately, followed by a discussion of the findings as a whole.

The results of this mixed methods study were disparate. The quantitative results from the Brief Resilience Scale did not show any statistically significant changes over time, while only one subscale – Positive Affect – from the Mental Health Inventory changed significantly over time. Conversely, the qualitative findings from the mentor self-reflections indicated that mentors reported that their mental health and resilience was positively influenced over the course of the mentorship program. Five major themes were identified: Responsibility, Physical Activity, Social Support, Leadership, and Personal Growth. Within these themes, several subthemes were present.

4.1 Quantitative Questionnaires

The quantitative measure of resilience, the Brief Resilience Scale (BRS), produced no statistically significant results using repeated measures t-tests pre- and post-mentorship program. Data, while not significantly different, produced scores that were consistent with reported undergraduate norms (Smith et al., 2008).

Similarly, the Mental Health Inventory (MHI) that was used to measure the mental health of mentors over the course of the mentorship program did not show any significant changes in mentors' overall mental health, or any of the subscales (Anxiety, Depression, Behavioural Control) aside from the Positive Affect subscale, over time. The Positive Affect subscale was the only quantitative measure that showed statistically significant change from pre- to post-mentorship program. In the study of last year's mentors, researchers also found a statistically significant change in mentors' Positive Affect, although the direction of the change was opposite; they found a decrease (Fried et al., 2018), while the results from the present study found an improvement in mentors' Positive affect from the beginning to the end of the mentorship program.

Positive Affect, as defined and measured by the MHI, is an interesting construct that asks the following questions of participants: a) Has your daily life been full of things that were interesting to you? b) Have you felt calm and peaceful? c) Have you felt cheerful, light-hearted? d) Were you a happy person? The statistically significant positive change in Positive Affect over time suggests that following their participation in the mentorship program, mentors found more interest in their lives and were overall more calm, peaceful, cheerful, lighthearted and happy. Research shows that students who report higher positive affect tend to be less stressed (Wang et al., 2014).

Research Instrument Limitations

There could be several reasons for the statistically non-significant results produced in both the BRS and MHI. First, the BRS and MHI may not be sensitive enough to detect changes in resilience and mental health over such a short time span of seven months. Furthermore, the

scales used ask questions about life in general; they are not specific to the context of mentorship. Third, the MHI specifically asks participants to answer the questions based on how they feel and how they have been during the past 4 weeks. In examining the distribution of coursework and assignments over the course of two semesters, March appears to be the month that most assignments are due, group projects are wrapping up, and exam preparation begins. Data collection using the quantitative questionnaires during that busy time for participants may have resulted in skewed data. Also, research using smartphone sensing of university students' mobile devices found that more students experience moderate or severe depression symptoms and increased stress than at the beginning of the term (Wang et al., 2014), suggesting that the mental health of students is expected to decrease from the beginning of the semester to the end of the semester.

It is difficult to conclude from the analysis of the quantitative questionnaires whether results were skewed because of the timing of the data collection, the general nature of the questionnaires, or the short time period of pre-post data collection. Furthermore, being a mentor may have also provided a buffer to protect against the stress-related and other mental health concerns of being a university student; being a mentor may have protected mentors from experiencing drastic declines in their mental health and resilience over time.

4.2 Qualitative Self-Reflections: Discussion of Themes

Qualitative results from this study were consistent with those of other studies on peer mentor experiences. Although this was the first study to explore the mental health and resilience outcomes of being a peer mentor, some of the themes identified from the mentor self-reflections were similar to themes from other studies that evaluated broader mentor experiences and

outcomes (not restricted to mental health) (Beltman & Schaeben, 2012; Dennison, 2010; Drew et al., 2000; Fried et al., 2018; Gilles & Wilson, 2004; Glaser et al., 2006; Ehrich et al., 2004).

4.2.1 Responsibility

Mentors wrote about having a sense of responsibility in many ways, both positive and negative. Mentors felt that their roles gave them a *sense of purpose* – that their efforts and contributions were recognized. They described that being mentors made them feel important and that they had an obligation to their protégés — so much so that mentors felt their protégés 'needed' them. Mentors felt that the guidance they provided their protégés and the insight they shared were highly valued. Mentors also explained that being a mentor made them feel a sense of *accountability* to their protégés and to themselves. Commitment to protégés, attending class and completing activity logs resulted in mentors feeling more driven, motivated to do and be their best, and ultimately led to mentors feeling that their mental health had improved.

Further, mentors explained that being in a role to help others made them feel good. Their *altruism* stemmed from many different motivations: a) Some mentors enjoyed helping others because it made them feel good about themselves, b) Some wanted to help because it took their mind off their own troubles, c) Others wanted to share their experiences to help protégés better prepare for university, and finally c) Some felt that watching their protégés succeed was rewarding. All mentors felt a strong desire to help their protégés as much as they could.

Mentors also gained a *sense of accomplishment* from the responsibility they were given. They described that seeing the fruits of their labour manifest in front of them was a rewarding experience; they felt that they had achieved success from being a mentor and helping their

protégés grow. Overall, mentors believed that having a sense of responsibility in these four ways improved their mental health.

In contrast, mentors also expressed challenges with the responsibility of mentoring that negatively impacted their mental health for a short period of time. At the beginning of the program, all mentors reported experiencing job stress for a variety of reasons including, but not limited to, a) Not knowing what to expect from mentoring, b) Trying to navigate their roles and finding what works, c) The time commitment, d) Their protégés not being as interested in the class as they were, e) A lack of coping strategies and life skills that are essential for mentorship, and f) Trying to balance the responsibility of helping their protégés with taking care of themselves. Although job stress was prevalent among all mentors, it was limited to the first half of the mentorship program. Mentors described that the job stress they experienced did not last very long. In fact, most mentors expressed that the job stress dissipated within the first few weeks of the program as they learned what was required of their roles, adapted to the demands and duties, and developed skills to be effective mentors. At times, mentors also reported *low self-efficacy*. Mentors expressed that feelings of low self-efficacy were due to self-induced pressure and inability to achieve the unrealistic expectations they had set for themselves. Similar to the theme of job-stress, mentors described that the feelings of low self-efficacy were often restricted to the first few months of the mentorship program. Once mentors adapted to their roles, understood what to expect from their protégés and learned to set realistic expectations for themselves, low self-efficacy was no longer an influence on their mental health.

Mentors repeatedly mentioned that helping their protégés made them feel good and improved their mental health. This idea of altruism is widely supported in the literature as being beneficial for mental health and well-being (Mental Health Foundation, n.d.). Research suggests

that altruism, or selflessly helping others and acting in their best interest, confers many physical and mental health benefits to the person giving the care/help. According to Dr. Kathleen Hall, the founder of The Stress Institute, "altruism creates a physiological response, or 'helpers high' that makes people feel stronger and more energetic and counters harmful effects of stress" (Hall, 2005). Altruism is associated with less depressive symptoms, a decreased sense of hopelessness, and enhanced self-esteem (Mills, Reiss & Dombeck, 2008a).

Researchers at the University of Massachusetts Medical School find that "the act of giving to someone else may have mental health benefits because the very nature of focusing outside the self counters the self-focused nature of anxiety or depression" (Schwartz, Meisenhelder, Ma, and Reed, 2003, p. 783), as well as stress (Mills et al., 2008a). A study of churchgoers found that people who care for and support others have better mental health than people who solely receive help (Schwartz et al., 2003). Participants in the Schwartz et al. study answered the following two Likert-scaled questions to quantify 'giving help': 1) how often they helped others by making others feel loved and cared for, and 2) how often they listened to other people's concerns. They were also asked questions about their mental and physical health. The researchers found that giving help was a better predictor of mental health than receiving help; however, giving too much beyond one's resources can result in the opposite effect.

The job stress and low self-efficacy that mentors experienced near the beginning of their time as mentors is consistent with qualitative accounts from mentors in other peer mentorship programs. Colvin & Ashman (2010) conducted a study on the roles, risks and benefits of peer mentoring relationships in higher education. Over time, 400 mentors were involved in the program, and both mentors' insights as well as those of mentees and instructors were included in the study. More than half of the mentors in the study commented that trying to balance the

specific requirements and personal desire to do well as mentors with time and other commitments was challenging. One mentor said that “the biggest risk of being a mentor is people who are trying to do too much and people who are trying to be perfect in everything, and I think some of the times they can suffer from anxiety.” The risks identified in this study were very similar to the themes of “Job Stress” and “Low Self-Efficacy identified in the present study.

Psychologist Albert Bandura defines self-efficacy as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1995). At the beginning of the mentorship program, mentors were not confident in their abilities to lead their protégés, which led them to feel a sense of low self-efficacy. However, as the program continued, and mentors developed skills and gained confidence in themselves, their feelings of low self-efficacy quickly dissipated. According to Albert Bandura, the most effective way to build a strong sense of self-efficacy is through mastery experiences – sense of accomplishment from performing a task or controlling an environment successfully (Bandura, 2008). Sense of mastery is also important in building personal resilience (Prince-Embury, 2011). However, it is important to recognize that if people experience only easy successes, they will be easily discouraged by failure because they will expect quick results. Bandura describes that “resilient efficacy requires experience in overcoming obstacles through perseverant effort. Success is achieved by learning from failed efforts. Hence, resilience is also built by training in how to manage failure so it is instructive rather than demoralizing” (Bandura, 2008). Being faced with challenges and forced to find solutions gave mentors the opportunity to develop their resilience and experience mastery in their roles.

Furthermore, self-directed mastery experiences reduce personal vulnerability to stress by providing opportunities to practice and perfect coping skills (Bandura, 1977). This may have

been an explanation as to why mentors' low self-efficacy did not persist for a long period of time. While mentors experienced low self-efficacy at the beginning of the mentorship program because of their lack of self-confidence in their abilities to perform their duties effectively, the challenges they faced allowed them to face failure, problem solve, and overcome the challenges to develop resilience to stress and an overall sense of mastery as the program continued. Bandura says that "people who experience setbacks but detect relative progress will raise their perceived efficacy" (1977).

4.2.2 Physical Activity

Physical activity was a strong theme present in every mentor's self-reflection as a vessel for improving their mental health. Within this theme, mentors felt that their active engagement in physical activity *improved their overall mental health*. Mentors also felt *less stressed* because they were required to become more physically active as it was an essential component of the mentorship program. Further, mentors described feeling happier and more refreshed because they were engaging in more physical activity than they previously had, which *improved their overall mood*. One mentor expressed she became happier and her mood, stress, and anxiety improved because she started implementing physical activity in her daily life — so much so that she was able to stop taking the medication she was on. It is not surprising that this theme was prevalent across all mentor self-reflections as it was mandatory in the mentorship class; a considerable emphasis was placed on the importance of physical activity for mental health and well-being throughout the year-long program.

An interesting finding is the sub-theme of *positive distraction*. Many mentors described that being engaged in physical activity, both independently and with others, acted as a positive

distraction from daily stressors including academic stress. This short-term distraction seemed to provide temporary relief from the stresses of university allowing students to feel better for a short period of time following exercise.

Although there have been mixed findings in the literature, a strong body of evidence suggests that exercise, both aerobic and resistance training, is positively correlated with mental health (Flatt, 2013; Paluska & Schwenk, 2000; Ströhle, 2009). Physical activity has been proven to be effective in improving psychological well-being through reduced anxiety, stress and depression (Mikkelsen, Stojanovska, Polenakovic, Bosevski & Apostolopoulos, 2017; Warburton et al., 2006). Studies have shown that physical activity can positively influence mental health both through changes in the brain as well as through psychosocial variables (Biddle & Mutrie, 2007; Carmack et al., 1999; Peluso & Andrade, 2005). Physical activity has been shown to positively influence mental health, mood, and self-esteem (Biddle & Mutrie, 2007; Peluso & Andrade, 2005). A study of female adolescents over a 6-year period found that physical activity significantly reduced their risk for onset of major/minor depression symptoms (Jerstad, Boutelle, Ness & Stice, 2010). It is no surprise that mentors reported physical activity to be beneficial for their mental health.

A number of different hypotheses regarding the mechanism by which physical activity benefits mental health exist including the Distraction Hypothesis. The Distraction Hypothesis in the physical activity literature suggests that physical activity may provide a distraction from stress, a diversion from unpleasant stimuli, and/or a ‘time out’ period from negative emotions or feelings (Bahrke & Morgan, 1978; Blumenthal & McCubbin, 1987; Morgan, 1985). This alleviation or escape from stressful thoughts or challenges appeared to partially contribute to the mental and emotional benefits of physical activity.

4.2.3 Social Support

Social support was another theme present in most self-reflections. Within this theme, *social support* and *sense of community* are considered two distinct sub-themes by definition. Mentors felt they had other people they could rely on for emotional support and to validate their feelings. Mentors described social support in two ways: support from their fellow mentors and support from their protégés. Some mentors expressed that the ability to share and discuss their experiences with the other mentors was helpful because it gave them the sense that they were not alone in their struggle and allowed them to share strategies with each other. Other mentors described a mutual feeling of care from and for their protégés; mentors were pleasantly surprised how reciprocal the nature of the relationship was between them and their protégés.

The theme of Social Support also encompassed the general social aspect of the mentorship program. Some mentors expressed that it was pleasant to socially engage with their peers and other students in the same faculty because they were unable to do so in other classes. The social component of the mentorship program was beneficial to many mentors' mental health.

An extensive body of literature supports the positive association between social support and mental health. Social support is important for buffering the negative impacts of stress (Mills, Reiss & Dombeck, 2008). Along with the mental health benefits, being part of a supportive social group can decrease a sense of loneliness and promote feelings of safety, security, belonging and enjoyment (Mills et al., 2008a). This is important as research shows that loneliness is a strong predictor of mental distress in university students (Hefner & Eisenberg, 2009; McIntyre et al., 2018).

According to Dr. David McMillan, founder of the 'Sense of Community' theory, sense of community is "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan, 1976, as cited in Spinks, 2013). Mentors described all of these needs and the sense of feeling of social support when explaining what effect being a mentor had on their mental health.

The literature supports a positive correlation between social support and mental health, specifically in a student population. A study at a large university (n=1378) evaluated the relationship between mental health and social support of students (Hefner & Eisenberg, 2009). Social support was divided into *structural* (quantity of social interactions, using a two-question questionnaire that measured the frequency of contact with friends and family) and *functional* (perceptions of quality of social support, using a 12-item, Likert-style questionnaire) measures. Researchers found that both measures of social support were associated with better mental health. The functional measure, however, was most strongly associated with measures of mental health, i.e. lower likelihood of depression, anxiety, suicidality, and eating disorder. Thus, students with higher perceived levels of social support are less likely to experience mental health problems (Hefner & Eisenberg, 2009). Furthermore, research shows that a higher sense of social support protects against negative psychological outcomes when dealing with perceived stressors (Prince-Embury, 2011).

Additional support for the link between social support and mental health is the positive association between social support and resilience. Social support has also been shown to confer resilience to stress (Southwick et al., 2005), act as a buffer to stress and promote the use of adaptive coping strategies (Prince-Embury, 2011). Resilience on its own is positively correlated

with mental health (Akbari & Khormaiee, 2015; Hartley, 2013), so it seems that social support both directly, and indirectly – through resilience – provides benefits to mental health. Furthermore, Wang et al., (2014) found that students who engaged in more frequent and longer conversations with throughout the day were less likely to feel stressed. Although this is not entirely synonymous with the concept of social support, it supports the idea that social interactions and face-to-face communication with others are beneficial for mental health.

4.2.4 Leadership

Leadership was mentioned in many mentor self-reflections as a positive outcome of being a mentor. Mentors strongly felt that because they were leaders and in a position of authority, they had to be positive *role models* for their protégés. This led mentors to *practice what they were preaching* to the first-year students and implement the positive teachings from the course into their own lives. Mentors quickly learned that they could not expect their protégés to do what they were telling/asking them to do if they did not lead by example first. By adopting the teachings of the program and showing (rather than telling) their protégés how to develop a physical activity routine and make positive life changes, mentors were able to influence their protégés to do the same. Mentors achieved more success with their protégés by practicing what they were preaching – they were able to encourage and motivate their protégés more easily when they lead by example. Through their experiences as leaders and role models, mentors *developed leadership skills*.

At the beginning of September when mentors met their protégés, they had not yet had many mentorship classes to learn about how to be an effective mentor and leader. Therefore, mentors were almost ‘thrown into the deep end’ and forced to learn by trial and error. Through

practice, mentors learned that encouraging and motivating their protégés was not possible unless they practiced what they preached. Mentors felt that the opportunity to mentor first-year students was a highlight of their undergraduate education because they could practice their leadership skills and learn new ones.

According to Ryff's model of psychological well-being (1989), two of the six dimensions of psychological well-being are related to the theme of Leadership, specifically environmental mastery and personal growth (see Table 7) In relation to Ryff's dimensions, mentors explained that being a mentor helped them gain leadership skills to succeed in their roles; they described the opportunity to be a role model and develop their leadership skills positively influenced their mental health. Environmental mastery is characterized by "hav[ing] a sense of mastery and competence in managing the environment; control[ing] complex array of external activities; mak[ing] effective use of surrounding opportunities" (Ryff, 1989). This is reflected in the mentors' descriptions of leadership skill development, confidence in leading their protégés, and their burgeoning self-awareness as role models. Furthermore, mentors explained that practicing and learning leadership skills resulted in personal growth. Ryff (1989) defines personal growth as "hav[ing] a feeling of continued development; see[ing] self as growing and expanding; ha[ving] a sense of realizing his or her potential."

4.2.5 Personal Growth

Mentors experienced substantial personal growth through the mentorship program. Mentors expressed that weekly self-reflections, leadership experiences, and the lessons they learned all contributed to their personal growth.

Mentors described gaining a sense of *self-awareness* while mentoring first-year students. In addition to class lessons, mentors also completed weekly self-reflections in the course that reinforced the concept and importance of self-awareness. The required self-reflections led mentors to develop a habit of reflecting on their experiences, how they felt, what they could improve on, etc. — all of which helped mentors gain self-awareness and improve their self-management. This hands-on, experiential aspect was highly beneficial for developing self-awareness.

Being a mentor also provided mentors with the *motivation to change* and develop habits that they had been unable to prior to taking on their mentor roles. Mentors explained that being a mentor was a transformative experience because they gained motivation to be physically active and maintain that level of physical activity. Without the mentorship program, some mentors said that they never would have been able to become so physically active.

Mentors also became more *self-confident* through their mentorship and leadership experiences. The opportunity to practice leadership skills and be in a position to influence others led mentors to gain a sense of self-efficacy and mastery, which have been shown in the literature to provide benefits to mental health (Prince-Embury, 2011). Self-awareness has been shown in the literature to be positively associated with emotional regulation and mental health (Slaski & Cartwright, 2003). The concept of self-awareness is a core component of various theories of Emotional Intelligence, even though the theories describe emotional intelligence in different ways (Bar-On; 2010; Goleman, 1996; Salovey & Mayer, 1990). According to Daniel Goleman (1996), self-awareness is being "aware of both our mood and our thoughts about that mood…non-reactive, nonjudgmental attention to inner states. In other words, self-awareness is

the awareness of your own feelings and the ability to recognize and manage those feelings (Dulewicz & Higgs, 2000).

Emotional intelligence as a whole construct is positively associated with both psychological well-being and resilience in students (Akbari & Khormaiee, 2015; Wang, Xie, & Cui, 2016). Students who have higher emotional intelligence are more effective at regulating their emotions and are therefore better able to cope when stressful situations arise (Wang et al., 2016). Furthermore, students who are more emotionally intelligent are better able to cope with adversity (Campbell-Sills & Stein, 2007) and experience less distress when faced with stressful life events (Armstrong, Galligan, & Critchley, 2011).

Although self-awareness is only one of many factors of emotional intelligence, it is arguably the most important (Bar-On, 2010; Dulewicz & Higgs, 2000; Goleman, 1996), as awareness of one's own emotions and how to manage them is crucial in self-management as well as interpersonal relationships (Cherniss, Extein, Goleman & Weissberg, 2006). Self-confidence and self-acceptance are essential in the development of self-awareness and emotional intelligence (Bressert, 2018; Slaski & Cartwright, 2003), which mentors also described in their self-reflections as a positive mental health benefit of being a mentor. Slaski & Cartwright (2003) say that "through increased self-awareness, individuals are more able to detach themselves from events and regulate their emotions in order to prevent them from becoming 'immersed in' and 'carried away' by their emotional reaction."

4.3 General Discussion

The purpose of this study was to explore mentors' changes in mental health and resilience over the course of a 7-month long peer mentorship program using both quantitative and

qualitative methods. Exploring both objective and subjective accounts was integral to gaining a deeper understanding of the impact of being a peer mentor on mental health and resilience outcomes.

The findings of this study were mixed, as the BRS produced no statistically significant change over time, and the MHI only showed a statistically significant positive change in the Positive Affect subscale. Although minimal changes were seen in the quantitative questionnaires (BRS & MHI) over time using pre-post repeated measures t-tests, mentors clearly described in their qualitative self-reflections that mentoring positively influenced their mental health and resilience, despite the initial job stress and low self-efficacy they experienced.

The findings showed both similarities and differences with the previous year's study of mentors in the SHC Initiative. The present study was similar to the previous year's work in that it also used a mixed methods approach. However, the present study attempted to gain a more in-depth understanding of the mental health consequences of being a mentor, as it focused exclusively on mental health.

Both studies found that mentors' Total Mental Health, Anxiety, and Depression, as indicated by the MHI subscale scores, did not change significantly from pre- to post-program. As indicated by the BRS scores in Year 1, mentors' resilience improved, while Year 2 showed no changes in mentors' resilience. The MHI Behavioural Control subscale scores decreased from pre to post in Year 1, while Year 2 showed no changes. Finally, the direction of change in the MHI Positive Affect subscale scores was opposite in Year 1 and Year 2; Year 1 showed a decrease in Positive Affect, while the current study showed an improvement in mentors' Positive Affect from pre to post.

On the qualitative side, the present study used written self-reflections to specifically narrow in on mentors' experiences as they related to mental health and resilience, whereas last year's study used semi-structured interviews that asked mentors about their overall experiences, the relationships they developed with their protégés, and if/how mentorship impacted their own levels of mental health, resilience, and physical activity. Despite the different qualitative approaches used, however, similarities across themes in both studies were identified following data analysis.

Both studies identified the following broad themes: a) Impact of Physical Activity on Mental Health, b) Personal Growth, and c) Social Support. Within these themes, there were also sub-theme similarities between both studies: a) self-awareness, b) skill development, and c) sense of community. Some major differences in themes were also evident. For example, the theme of Leadership was a sub-sub theme in Year 1, under Personal Growth and Skill Development, whereas Leadership was one of five major themes in the present study (Year 2). This suggests that Leadership was a much more prominent theme in the second year of the mentorship program, potentially due to the contextual differences (i.e. mentors having and being responsible for a larger group of protégés). Mentors in the present study described that the leadership role and opportunity to be a role model to their protégés contributed positively to their mental health.

The theme of Physical Activity in the present study, and Impact of Physical Activity on Mental Health and Resiliency in the Year 1 study, were quite different. The Year 1 theme indicated that mentors perceived physical activity to be beneficial to their mental health, whereas the current study identified specific reasons for physical activity positively influencing mentors' mental health. A particularly intriguing finding in the current study was the sub-theme of

Positive Distraction within the Physical Activity theme. Mentors described that engaging in physical activity with their protégés through the mentorship program provided a "break" from their life stressors and was a positive distraction from everything else going on in their lives. Despite differences in context across the two years of the program, it was interesting that both cohorts of mentors reported many similar experiences that impacted their mental health.

In discussing Year 1 and Year 2, an important aspect to consider is the concept of mental health and whether mentors' mental health truly 'improved' from the various experiences they had, or whether their experiences and the skills they learned simply protected them from a deterioration in their mental health. There were no statistically significant changes over time in MHI scores, aside from mentors' Positive Affect. Thus, it is possible that being a mentor was protective of mental health. However, it is difficult to determine the true effect due to the mixed results from the quantitative and qualitative measures. All mentors, however, described that being a mentor was beneficial to their mental health. Even the mentors in the present study who disclosed their mental illnesses reported improvements in their mental health throughout the mentorship program, suggesting that being a mentor can positively influence mental health, or protect them from negative changes.

Because the MHI produced no significant results aside from the Positive Affect subscale, it might be concluded that the quantitative questionnaires were not measuring the true concept of "mental health" as described by the mentors. The statistically significant improvement in mentors' Positive Affect was an interesting finding because the questions asked in this subscale seem to be similar constructs to the themes identified in mentors' self-reflections. Mentors reported feeling happier and less affected by stress, which stemmed from a combination of many of the subthemes, including engagement in physical activity, social support, and altruism, among

others. Mentors clearly described in their self-reflections an improvement in their positive affect, which corresponds to the quantitative improvement in mentors' Positive Affect over time. The other dimensions measured in the MHI, however, are not prevalent in mentors' discussions of the impact being a mentor had on their mental health. A few mentors who disclosed their mental illnesses did discuss the benefit of being a mentor on their anxiety and/or depression, but the vast majority of mentors did not describe any experiences, let alone improvements, with anxiety, depression, or behavioural control. This may be an explanation for why the quantitative questionnaires did not show significant changes over time. The MHI measures different, more clinical, factors of mental health (anxiety, depression), whereas mentors described more of an improvement in their psychological well-being (Ryff, 1989; Seligman, 2012).

Mentors seemed to interpret the qualitative question "What impact has being a mentor had on your mental health?" from a psychological well-being perspective, as described by Carol Ryff (1989), one of the most influential psychologists in the field of psychological well-being. The elements in Ryff's model are all important in the striving to become a better person and to realize one's potential (Westerhof & Keyes, 2010). Ryff's model of positive psychological functioning encompasses six dimensions of psychological well-being: 1) self-acceptance, 2) positive relations with others, 3) personal growth, 4) purpose in life, 5) environmental mastery, and 6) autonomy (Ryff, 1989) (see Table 7 for definitions of each dimension). Many of the themes and sub-themes identified in the current study aligned with Ryff's conceptualization of psychological well-being. The following parallels can be made between *themes in the current study* and the dimensions of psychological well-being defined by Ryff (1989): *self-confidence* and Ryff's self-acceptance, *social support* and Ryff's positive relations with others, *self-awareness* and Ryff's autonomy, *having purpose/feeling needed* and Ryff's purpose in life, and

finally, *personal growth* and Ryff's personal growth. The theme of *leadership* in this study is related to Ryff's self-acceptance, environmental mastery, and personal growth.

Table 7

Ryff's Dimensions of Psychological Well-Being

Self-acceptance *Possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self, including good and bad qualities; feels positive about past life.*
Positive relations with others *Has warm, satisfying, trusting relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships.*
Autonomy *Is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards.*
Environmental mastery *Has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values.*
Purpose in life *Has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living.*
Personal growth *Has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realizing his or her potential; sees improvement in self and behavior over time; is changing in ways that reflect more self- knowledge and effectiveness.*

(Ryff, 1989)

While Ryff's model of psychological well-being supports the themes in the present study, it mainly focuses on optimal functioning in terms of individual fulfillment (Westerhof & Keyes,

2010). Westerhof & Keyes (2010) believe that taking into consideration the social aspect of well-being is also important in the holistic sense of mental health. Keyes (2002) argues that to be considered mentally healthy, one must have a combination of emotional, psychological, and social well-being. He calls this state of mental health, *flourishing*. In combination with the traditional concept of emotional well-being (similar to the World Health Organization definition of mental health described previously), the social and psychological well-being aspects of well-being lead to a state of *flourishing* – "a state where individuals combine a high level of subjective well-being with an optimal level of psychological and social functioning" (Keyes, 2002).

Coming back to the definition of mental health as defined by the World Health Organization (WHO) (2014), as "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community", it was clear from the results of the mentor self-reflections that each of these characteristics of mental health were experienced and enhanced throughout the duration of the mentorship program. First, mentors clearly described an increase in self-confidence and self-awareness, along with the development of leadership skills, which aligns with the first component: "a state of well-being in which an individual realizes his or her own abilities." Next, mentors explained that being physically active, having a supportive social network, and learning essential life skills helped them manage their stress, which is consistent with "can cope with the normal stresses of life." Third, mentors explained that they were practicing what they were preaching to their protégés, which helped them be productive and lead a healthier lifestyle, which corresponds with "can work productively". Finally, mentors described a sense of altruism and sense of community, which aligns with "make a contribution to his or her

community." Thus, it was clear from the parallels between the WHO definition of mental health and the themes identified in the mentor self-reflections that being a mentor led to positive changes in mental health as described by the WHO definition of mental health/emotional well-being as well as the concept of flourishing as described by Keyes (2002).

4.3.1 Overall Resilience

Although the qualitative self-reflection question did not ask about mentors' resilience over time, some of the experiences mentors described, and the themes identified in the study indicated that mentors experienced improvements in their resilience along with the improvements in their mental health. Despite the initial job stress and low self-efficacy that most mentors experienced, mentors reported gaining skills and resilience to persist in the face of adversity and overcome the challenges. The challenge of overcoming and managing job stress and low self-efficacy appeared to be the platform for building resilience in the mentors. Some of the themes identified that mentors described are key components of resilience. A fundamental requirement for the development of resilience is being presented with challenges, but also support to face those challenges (Fletcher & Sarkar, 2016). Mentors reported building their resilience through overcoming adversity and feeling socially supported by both their fellow mentors, their protégés, and the course instructor. The challenge with the Brief Resilience Scale, and the nonsignificant changes over time compared to the qualitative self-reflections, was that the time of year likely influenced mentors' responses to the questions based on their level of stress at that point in time. The qualitative self-reflections did not explicitly ask about the effect of being a mentor on resilience, but it can be inferred from the qualitative self-reflections that mentors' resilience improved over time. Prince-Embury (2011) described three essential criteria for the development of resilience, including sense of mastery, sense of relatedness (social

support), and emotional reactivity. Mentors reported experiencing all of these throughout the mentorship program, which leads to the conclusion that being a mentor can foster the development of resilience.

4.4 Limitations

There are a few limitations that are important to note that limit the generalizability of these findings. First, the seven-month period for pre- and post-data collection may not have been sufficient time to observe any significant changes in mentors' mental health or resilience using quantitative measures. Second, the timing of data collection may have skewed participants' responses due to exam season stress and other confounding factors. A study looking at mental health, academic performance and behavioural trends of university students using smartphone tracking found that students are more stressed during the midterm and final exams periods (Wang et al., 2014). A similar trend is seen in students' positive affect; as the semester progresses and workload increases, positive affect seems to decrease (Wang et al., 2014). Thus, multiple data collection points throughout the entire academic year would have been helpful to gain a clearer picture of mentors' objective mental health and resilience using quantitative questionnaires.

Third, collecting more experiential accounts and qualitative data – rather than just at the end of the program – could have provided a more holistic view of the outcomes of mentorship. While the post-mentorship qualitative data did produce meaningful accounts of mentors' experiences, asking mentors to complete written self-reflections at three different time points: one before mentors began their roles, one in the middle of the year, and one at the very end, would have offered more rich accounts further contributed to the research. Conducting focus

groups with future cohorts of mentors is important for gaining a broader understanding of the benefits, and drawbacks mentors perceive in regard to their mental health.

Fourth, self-selection bias may have played a role in the overall positive results of this study. Mentors were not chosen, nor were they forced, to be mentors. This could be an explanation for the overall positive findings in the qualitative self-reflections and the minimal change in quantitative measures over time. The overall positive effect of mentorship on mental health described in mentors' self-reflections may be influenced by the type of person who opts to enroll in a mentorship program as a mentor. People who choose to be mentors may be more likely to derive a positive effect from the experience since they are people who like challenges and expect to gain from the experience.

Finally, although the sample size was dictated by the enrollment in the mentorship class, more participants would have enhanced the confidence of the quantitative data. However, the mixed methods design of this study enhanced the overall trustworthiness of the data because of the triangulation between the quantitative and qualitative data (Creswell, 2011).

4.5 Conclusion

The purpose of this research study was to explore the mental health and resilience outcomes of being a student peer mentor in a university-based peer mentorship program. Using a pre-post, mixed methods design, both objective and subjective accounts of mentor mental health were explored. The quantitative measures – Brief Resilience Scale & Mental Health Inventory – did not show any statistically significant changes over time, aside from the Positive Affect subscale in the MHI, which improved from pre- to post-mentorship program, suggesting that mentors' positive affect increased over time. The qualitative self-reflections that mentors

completed at the end of the program, in comparison to the quantitative results, indicated an improvement in mentors' mental health and resilience after participating in the mentorship program. All mentors expressed that their mental health was positively influenced by being a mentor. The themes and subthemes identified in this study may correspond more with a psychological well-being model than a mental health model, since the quantitative measure of mental health only showed significant changes in the Positive Affect of the mentors.

This study was the first of its kind to explore the mental health and resilience outcomes of mentors in a peer mentorship program. Findings from the study suggest that mentors gain many mental health and resilience benefits from leading and supporting others in a peer mentorship program. Future studies of peer mentors should consider collecting data at multiple time points during the year to account for the expected changes in stress levels of university students during exam periods. Furthermore, a longitudinal exploration of the mental health and resilience outcomes of being a mentor may provide a more concrete explanation of the factors contributing to the improved mental health and resilience that mentors reported in the current research study.

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Appendices

Appendix A: Western University Health Science Research Ethics Board Approval

Western Research

Research Ethics

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

Principal Investigator: Dr. Kevin Shoemaker
Department & Institution: Health Sciences\Kinesiology,Western University

Review Type: Delegated
HSREB File Number: 108318
Study Title: Smart, 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	NVRL 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 for Mentors	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.

Western Research

Date: 23 October 2017

To: Kevin Shoemaker

Project ID: 108318

Study Title: Smart, Healthy Campus

Application Type: Continuing Ethics Review (CER) Form

Review Type: Delegated

FB Reporting Date: November 7, 2017

Date Approval Issued: 23/Oct/2017 09:55

REB Approval Expiry Date: 11/Nov/2018

Dear Kevin Shoemaker ,

The Western University Research Ethics Board has reviewed the application. This study, including all currently approved documents, has been re-approved until the expiry date noted above.

REB members involved in the research project do not participate in the review, discussion or decision.

Western University REB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The REB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kelly Patterson

Appendix B: Letter of Information and Consent Form

Western HealthSciences

School of Kinesiology

Letter of Information and Consent

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
Research Nurse: Arlene Fleischhauer
Principal Investigator: Dr. Kevin Shoemaker

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

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.

Western HealthSciences

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	

Appendix C: Brief Resilience Scale

Participant ID: _____

Date: _____

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					

Western Health Sciences

Appendix D: Mental Health Inventory

MENTAL HEALTH INVENTORY (MHI)

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

Curriculum Vitae

Name:	Gazal Kukreja
Post-secondary Education and Degrees:	University of Western Ontario London, Ontario, Canada 2013-2017 B.A. University of Western Ontario London, Ontario, Canada 2017-2018 M.A.
Related Work Experience	Teaching Assistant University of Western Ontario 2017-2018