

MENTAL HEALTH, PHYSICAL ACTIVITY AND A QUALITY OF LIVING COURSE

**MENTAL HEALTH AND PHYSICAL ACTIVITY AMONG UNDERGRADUATE
STUDENTS IN A QUALITY OF LIVING COURSE DURING THE COVID-19
PANDEMIC**

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Abstract

Background & Purpose: University students have lower levels of mental health compared to the general population (Twenge et al., 2019). Since the beginning of the COVID-19 pandemic a further decline in university student mental health has been reported, emphasizing the growing concern for this population (Chen & Lucock, 2022). Positive education (i.e. courses grounded in positive psychology) could provide undergraduate students with techniques to cope with life, academic, and pandemic stress as growing research has shown its effectiveness at improving well-being (Smith et al., 2021; Yurayat & Seechaliao, 2021). However, to our knowledge no studies have qualitatively investigated the long-term impact of a semester long positive education course on university student mental health. Further, no studies have been found that examine the long-term impact of positive education on student mental health during the COVID-19 pandemic. Therefore, the first purpose of thesis is to explore the perspectives of students who took a Quality of Living course on if and how they believe the course influenced their mental health a) 1-year after taking the course and b) during the ongoing COVID-19 pandemic (RQ1). Additionally, physical activity is a well-researched predictor of mental health and is a first line treatment for depression (Fortier et al., 2020; Ravindran et al., 2016). There are studies that suggest a bi-directional relationship between physical activity and mental health may exist (Da Silva et al., 2012; Kim et al., 2017). Yet the influence of mental health on physical activity is just emerging and no studies, to our knowledge, have used a mixed methods approach to investigate the potential bi-directional relationship between physical activity and mental health in university students and during the COVID-19 pandemic. Thus, a secondary aim of this thesis is to use a mixed-methods approach to explore the bi-directional relationship between physical activity and mental health over time amongst the students who took the QOL course during the ongoing

COVID-19 pandemic (RQ2). It was hypothesized that there would be a bi-directional relationship between physical activity and mental health (Kim et al., 2017).

Methods: *RQ1:* The sample consisted of 10 university students who took the course in the Winter 2020 semester. Participants were chosen using purposive sampling from those who indicated interest and were interviewed. Semi-structured interviews were conducted 1-year after the class ended using an interview guide and a pre-interview package was sent prior to the interview. Thematic analysis of the transcripts was performed to generate common themes once data saturation occurred. *RQ2:* As part of a larger study investigating the Quality of Living course, quantitative data was collected (n=57). Physical activity and mental health were measured before (baseline) and after (endpoint) the course through validated self-report questionnaires and was analyzed using cross-lagged correlational analysis. For the qualitative component, during the semi-structured interviews additional questions were asked to address *RQ2*. Abductive thematic analysis was used to analyze the transcripts and generate common themes.

Results: *RQ1:* Overall, there were three primary themes identified in the data including *The Influence of the Course on Mental Health, Helpful Course Components, and Transferring the Course Topics to One's Personal Life During the COVID-19 Pandemic*. *RQ2:* The quantitative data were non-significant and did not support the hypothesis. However, the qualitative data supported the presence of a bi-directional relationship and the students agreed that physical activity influences mental health and vice versa.

Conclusions: These results suggest that positive education courses like the one investigated in this study could play a valuable role in improving undergraduate student mental health long-term. These results can be used to inform the development and implementation of future positive

psychology courses. Finally, a bi-directional relationship was qualitatively shown to exist and should be further investigated as understanding this relationship can help inform wellness interventions. Future research is recommended on these topics.

Chapter I: Introduction

Mental health is defined by the World Health Organization (WHO; 2019) as a state of well-being where a person can cope with the normal stressors of life, be productive, and is able to make contributions to their community. In contrast to mental health, mental illness is defined as a condition that causes alterations in thinking, emotions, and/or behaviour which lead to significant psychological distress and impaired functioning (Government of Canada, 2020). In Canada, an increase of younger adults (i.e. 25 to 44) screened positive for depression in spring 2021 (23%) compared to fall 2020 (20%) (Statistics Canada, 2021). This highlights increasing mental illness in young adults. University students are of particular concern with 1 in 3 of them reporting having a mental illness, most commonly depression and anxiety (Auerbach et al., 2018). According to the Canadian National College Health Assessment (2019), 88.2% of students reported feeling too overwhelmed in the past year by all they had to do in a day. To help explain reduced mental health levels in this population, Robinson et al. (2016) found that students face high academic demands, increased overall stress, and relationship worries. Evidently lower mental health is concerning and puts university students at higher risk of developing poor physical health and suicide (Grasdalsmoen et al., 2020), as well as substance abuse (Esmaeelzadeh et al., 2018).

The abovementioned negative effects worsened when in February of 2020, a contagious virus began to cause concern worldwide, namely the “COVID-19 virus” (Ahmed et al., 2020). This virus appeared to have stemmed from distinct regions in China, which later spread to the rest of the world: a pandemic-pattern. As a result of the widespread nature of this virus and its significant health impacts, in-person attendance to stores and schools became very limited or prohibited. In many provinces in Canada, all residents were restricted to their households in an

attempt to control the spread of the virus (Nicola et al., 2020). The implementing of restrictions dramatically added stress to university students as their living situations and ways of learning suddenly changed (Xiong et al., 2020). For example, Talapko et al. (2021) recently found an increase in anxiety (50.1%), depression symptoms (50.8%), and stress (49.9%) amongst university students due to the COVID-19 pandemic compared to before. The low levels of mental health of university students - even before the pandemic - clearly show that there should be university courses that offer techniques that could aid in coping with stress and improving mental health. Such courses could provide undergraduate students with the tools and techniques to cope with the many demands of higher education, and a global pandemic. These courses also teach evidence-based techniques that students can transfer into their professional lives. This need in universities started to be filled by courses grounded in positive psychology.

Positive psychology is the study of optimal human functioning (Robertson, 2018). Courses grounded in positive psychology (referred to as positive education¹) have been shown to increase positive emotions, well-being, resilience, self-confidence, and self-regulation, as well as decrease depression and anxiety (Lyubomirsky et al., 2005; Sin & Lyubomirsky, 2009; Yurayat et al., 2021). These positive outcomes are promising as they have the potential to help undergraduate students deal with the many stressors of life and school. One example of positive education is the Quality of Living (QOL) course at the University of Ottawa, which aims to teach undergraduate students' evidence-based techniques and topics to improve their overall mental health (e.g., gratitude, self-compassion). This course does more than teach the techniques and

¹ Positive education will be the term used to refer to positive psychology interventions, and positive psychology education. It will be used interchangeably throughout this article.

topics but requires the completion of assignments where the students must practice the techniques on a weekly basis (Quality of Living Experiences or QLEs).

Though there is some quantitative evidence to support positive education increases mental health (Francis et al., 2021; Yurayat & Seechaliao, 2021), the literature on this topic is scarce and there have been no studies to our knowledge that have qualitatively explored the influence of this type of course on undergraduate students' mental health. This is the main purpose of this thesis to examine the impact of positive education long-term as well as during the COVID-19 pandemic. Thus, this study explored the perspectives of students who took a Quality of Living course on if and how they believe the course influenced their mental health a) 1-year after taking the course and b) during the ongoing COVID-19 pandemic.

In addition to positive education techniques discussed and practiced in the QOL course, the professor also emphasizes the importance and practice of physical activity (PA) as a mental health promoter. Physical activity has been significantly associated with mental health and is a first line treatment for mild to moderate depression (Fortier et al., 2020; Oberste et al., 2020; Ravindran et al., 2016). Considering its positive effects, PA could especially be an important protective factor for mental health in university students during the COVID-19 pandemic. In fact, a recent study highlighted adults who met the recommended physical activity guidelines were less likely to experience high anxiety and a low mood during the COVID-19 pandemic (López-Bueno et al., 2020). Interestingly, there has been some research on adults from the United Kingdom that indicates a reciprocal relationship whereby mental health also has a positive influence on physical activity levels (Kim et al., 2017). To our knowledge, there has yet to be any research examining this potential bi-directional relationship between mental health and physical activity in a university student population. Exploring this association is important

because in the past it has been found that increased physical activity leads to better mental health, but there is the potential for interventions to also increase mental health and see physical activity gains as a result. Therefore, a secondary aim of this thesis is to use a mixed-methods approach to explore the bi-directional relationship between physical activity and mental health over time amongst the students who took the QOL course during the ongoing COVID-19 pandemic.

Chapter II: Literature Review

Mental Health

For the purpose of this thesis, mental health is defined as a combination of emotional, psychological, and social well-being (Keyes, 2002). *Emotional well-being* refers to an individual experiencing mostly positive emotions and satisfaction with life, *psychological well-being* refers to an individual's belief in the self to positively function, and *social well-being* is the ability to positively function in social settings (Keyes, 2002). Keyes' theory (2002) postulates that an increase in emotional, psychological, and social well-being causes an increase in overall mental health.

This theory is contrary to the traditional way of defining mental health, which is the absence of mental illness. The definition of mental health put forth by Keyes, (2002) emphasizes the positive aspect of mental health that exists independent of mental illness which is a diagnosable psychological disorder. Keyes (2002) explains that mental health and mental illness exist on dual continua where an individual can be experiencing both mental illness and mental health at the same time. Furthermore, the absence of one (mental illness or mental health) does not indicate the presence of the other (Keyes, 2002). Keyes (2002) proposed that there are three mental health states that which an individuals can experience, that is *flourishing*, *moderately*

mentally healthy, or *languishing*. If a person is determined to have good mental health, they are categorized as flourishing if an individual has bad mental health they are languishing. It is important to note, although while they are separate one can have influence on the other.

Mental Health and University Students

Concern for undergraduate student well-being² is on the rise as mental illness rates have been increasing the last 10 years in this population (Twenge et al., 2019). According to the Canadian National College Health Assessment (2019), 63.6% of post-secondary students felt hopeless, 68.9% of students felt overwhelming anxiety, and 51.6% of students felt so depressed they could not function in the previous year. A meta-analysis by Shaffique et al. (2021) showed that there was a significant prevalence (79.5%) of depression, anxiety, and stress among university students. Evidently, university students are struggling to maintain high levels of mental health and this can be attributed to various things including increased loneliness (Sheldon et al., 2021), financial stress (Jessop et al., 2020), and physical inactivity (Murphy et al., 2018). A systematic review performed by Ribeiro et al. (2018) found that the high stress environment of university is related to a deterioration of quality of life, specifically associated with factors such as poor sleep quality, low mental health, high levels of depression, and ineffective coping strategies. Importantly, these negative outcomes highlight the fact that university students do not have the necessary resources to effectively cope with stress. The emergence of a pandemic further restricts these resources, raising concern for undergraduate student mental health even more.

² As in previous papers such as Fortier & Morgan (2021) well-being will be used in this dissertation as an umbrella term that to incorporate happiness, mental health, and well-being.

COVID-19 Pandemic and Mental Health

The onset of the COVID-19 pandemic and its many challenges has emphasized the mental health concerns of the entire population. Xiong et al., (2020) performed a systematic review and found that since the beginning of the COVID-19 pandemic, participants from eight different countries have experienced high rates of anxiety, depression, and psychological stress compared to pre-pandemic. Another meta-analysis and systematic review by Wu et al. (2021) found that the COVID-19 pandemic has caused many negative health outcomes in the general population such as increased mental illness, distress, and insomnia. With regards to university students, they have been forced to adapt by changing their geographical location, the method in which their learning is delivered, and reducing time spent having in person contact with their professors, classmates, friends, and family. Upper-year students who are already faced with challenging decisions about their future are now confronted with the uncertainty of a global pandemic. As a result of the pandemic, the following consequences have been shown to manifest in the student demographic: reduction in quality of sleep, high levels of psychological distress, and increased depression and anxiety (Prati & Mancini, 2021; Qi et al., 2020). Additionally, due to the restrictions imposed on the general population university students reported increased feelings of social isolation and loneliness which contributed to negative mental health (Prowse et al., 2021; Werner et al., 2021).

Furthermore, a systematic review and meta-analysis by Castro et al. (2020) found that an increase in screen time in university students during pandemic is linked with physical inactivity and negative mental health side effects. In addition, Browning et al. (2021) found that more than 8 hours a day on screens and less than 2 hours outside were high risk factors for psychological distress in university students during the pandemic. New studies examining the link between

physical activity and mental health during COVID-19 are needed. This is one of the purposes of this thesis.

Now that outcomes of the COVID-19 pandemic on student mental health have been identified, preventative strategies are necessary to improve student mental health. One way in which universities can contribute to increasing mental health and decreasing mental illness amongst their students is by offering relevant courses. There is a growing body of knowledge on the effects of such courses, which we will present below. To our knowledge, no studies have qualitatively examined the perspectives of undergraduate university students about these courses. Specifically, studies have not explored if and how the courses influence student mental health. This is one of the main gaps addressed in this thesis.

Positive Psychology and Predictors of Mental Health

Positive psychology is a developing field that has gained attention in academia. Positive psychology has been defined by Bridges et al. (2012) as a subfield of psychology in which researchers focus on positive emotions and human flourishing. Rather than focusing on treating mental illness, the field of positive psychology aims to understand what makes humans thrive even when faced with adversity (Seligman & Csikszentmihalyi, 2014). Courses rooted in positive psychology are called positive education and they cover a range of topics, however, most commonly teach concepts such as self-compassion, gratitude, random acts of kindness, and mindfulness. One such course exists at the University of Ottawa and is called a Quality of Living course (QOL).

One technique taught in the course to improve student mental health is self-compassion. Self-compassion is a healthy conceptualization and attitude towards the self (Neff & Germer, 2017). Self-compassionate individuals have a balanced awareness of their thoughts and emotions

(mindfulness), understand that what they are experiencing is part of being human (common humanity), and treat themselves with a gentle stance (self-kindness; Neff, 2003). Meta-analyses have shown that self-compassion has been linked to many positive outcomes such as overall mental and physical well-being (Gedik, 2019; Phillips & Hine, 2021; Wilson et al., 2020). Furthermore, individuals with higher self-compassion have been shown to have reduced rates of depression, anxiety, and negative affect (Stutts et al., 2018; Zessin et al., 2015). Studies among university students have shown self-compassion is a predictor of good mental health (Kotera et al., 2021) and acts as an effective emotional regulation strategy which decreases stress (Stutts et al., 2018). Thus, self-compassion would be a useful psychological resource for university students that could aid in adaptive coping and thus improve overall mental health. As such, increasing self-compassion is a primary aim of the Quality of Living course.

Another main topic covered in the Quality of Living course is the concept of mindfulness. Though mindfulness is a central component of self-compassion, it warrants further discussion alone as it has been identified as a key component of the promotion of mental health (Gál et al., 2021; Sevilla-Llewellyn-Jones et al., 2018). One study by Crowley et al. (2020) examined the effects of a mindfulness-based meditation course on college students. The researchers found that those who had an increase in mindfulness through meditation had statistically significant increases in happiness and decreases in anxiety as compared to the control group. Additionally, mindfulness mediated the effect of meditation onto happiness. Finally, a recent meta-analysis performed by Halladay et al. (2019) examining the effects of mindfulness found that even short mindfulness-based interventions of 2 weeks had positive impacts and reduced depressive and anxiety symptoms in post-secondary students which lead to other positive outcomes (i.e., increase in mental health and well-being).

Gratitude is another topic taught and is the acknowledgment of positive situations in life, developing a positive response to those situations, and feeling grateful for those situations (Sapmaz et al., 2015). Gratitude has been found to be a predictor of subjective well-being in university students (Sapmaz et al., 2015). Random Acts of Kindness is another topic taught in the course and has been shown to improve overall mood not only of the recipient but the person who performs the act of kindness as well (Curry et al, 2018). Furthermore, there are many other topics (see *Table 1* for a full list) and techniques taught to the students that can have positive influences on their mental health. In addition to teaching evidence-based positive education techniques, the QOL course also has a strong experiential component called Quality of Living Experiences (QLEs). Students must practice the weekly technique (QLE) and reflect on their experiences in a journal. In Table 1, see the topics covered in the QOL class as well as the accompanying QLEs.

Positive Education

Positive education is the teaching of evidence-based positive psychology techniques that aim to promote optimal human functioning (Sin & Lyubomirsky, 2009). Positive education provides a unique opportunity to organize and disseminate many techniques to help students cope with stressors, improve mental health, and promote thriving (Lee, 2017; Maybury, 2013; Smith et al., 2021). A central role of positive education is to bridge theory, empirical data (Seligman et al., 2009), and psychological techniques with practical applications (Maybury, 2013), action learning, and reflection (Russo-Netzer & Ben-Shahar, 2011). This bridging provides an opportunity for transference of skills beyond the students' academic lives. University courses provide a great opportunity by which positive education can be made accessible to students, especially at such a pivotal age. By offering a course through the university there is potential to increase the number of students who take the course and benefit from the many

techniques taught through the course. Since most courses based in positive psychology like the QOL course at the University of Ottawa tend to be experience-based, this provides a good opportunity for the students to practically experience what they are learning and to have long term gains.

One course offered by Harvard University based in teaching and experiencing positive psychology techniques was rated the most popular course at the university by students (Russo-Netzer & Ben-Shahar, 2011). The explanation for the popularity is yet to be researched in depth but through student feedback the course has changed their lives for the better and has made them happier (Russo-Netzer & Ben-Shahar, 2011). Apart from the Harvard course other similar courses have been studied. A systematic review by Francis et al. (2021) found nine secondary school-based studies that implemented differing positive education interventions to effectively improve mental health and decrease anxiety in school aged children. Moreover, a study by Maybury (2013) studied 23 undergraduate students enrolled in a semester long course rooted in positive education and found that students reported increased hope, well-being, and happiness immediately after finishing the course. These studies warrant further research on the effectiveness of positive education on student mental health as well as the potential long-term impacts, the main purpose of this thesis.

The majority of research on positive education so far has been conducted quantitatively and has provided evidence for reducing depressive symptoms and increasing positive emotions (Hendriks et al., 2020; Seligman et al., 2009). In addition, there is quantitative evidence that positive education improves mental health as well as decreases feelings of loneliness (Smith et al., 2021). A quantitative study done by Lee (2017) explored the impact of positive education provided to university students in Hong Kong. The course's main techniques were gratitude

activities and focused on improving happiness, life satisfaction, and hope in relation to well-being (Lee, 2017). The authors found that the techniques learned were useful and transferable outside of the course and were helpful in minimizing mental illness impacts, increasing resiliency, and promoting positive emotions in university students. Furthermore, three studies in a classroom setting examined their particular courses to test the transferability of techniques taught in the course (Bridges et al., 2012; Kurtz, 2011; Smith et al., 2021). These studies found that positive education is an effective method to teach valuable techniques such as gratitude and mindfulness, and these techniques are transferrable to students' personal lives (Bridges et al., 2012; Smith et al., 2021). While all these studies show effectiveness of positive education they are limited to short-term measures as well as are all quantitative based. To our knowledge, the perspectives of undergraduate students on if and how positive education influences their mental health long-term (i.e., 1-year post-course) has yet to be researched qualitatively which will provide rich insight into positive education; a gap this thesis will address.

Moreover, a study by Shoshani & Steinmetz, (2014) found that after a 2-year longitudinal study adolescent students who participated in positive education (n=537) still experienced mental health benefits of the course such as decreased depression, anxiety, and general distress, compared to a control group of those who did not (n=501). However, this is only one study, and used an adolescent student population. Thus, these benefits and the long-term impact of positive education on undergraduate students has yet to be researched which is another gap this study will address.

Positive education has been evaluated within the context of the COVID-19 pandemic as it could be beneficial to university student and the general populations mental health. With regards to the pandemic two studies have examined the effectiveness of positive education at mitigating

COVID-19 effects. A study by Brouzos et al. (2021) found that following a 2-week online intervention, 83 Greek adults found the intervention was affective at mitigating some COVID-19 effects and strengthened participant resilience. Another study by Krifa et al. (2021) found that in Tunisian healthcare students decreases in depression, anxiety, and general stress occurred after 8 weeks of online positive education (n=183) when compared to a control group (n=183). Both studies used only quantitative measures and were limited to short term follow-up post-intervention (i.e., 2 weeks and 3-months respectively). Thus, more research is needed on the long-term effectiveness of positive education on undergraduate North American university student mental health in the context of the COVID-19 pandemic.

Physical Activity

Another strong predictor of mental health that will be explored in this study and is a strong component of the QOL course is physical activity. Physical activity is defined as any bodily movement produced by the musculoskeletal system that requires energy expenditure (World Health Organization, 2020). Many meta-analyses and systematic reviews support the influence of physical activity on mental health (Dogra et al., 2018; Netz et al., 2005; Wiese et al., 2018). As previously highlighted, the onset of the pandemic and a transition to online learning has increased students sedentary time thus, exacerbating mental health problems (Gallè et al., 2020). Physical inactivity in combination with high levels of sedentary behaviour has put university students at even higher risk of psychological distress (Uddin et al., 2020). Thus, physical activity could be used to prevent declining mental health in university students (Uddin et al., 2020). With decreasing mental health in university students and reduced physical activity behaviour, especially through the pandemic, the need for more courses to discuss physical activity and encourage physical activity participation is apparent.

As previously mentioned, the COVID-19 pandemic has posed additional challenges to being physically active for university students. For example, Bertrand et al. (2021) found that 10% of students surveyed were meeting Canadian physical activity guidelines, and 30% meeting sedentary behaviour guidelines compared to the pre-pandemic levels of 16% and 54%, respectively. Furthermore, a recent study by Gallo et al. (2020) found that there was a decrease in physical activity amongst Australian university students as a result of the COVID-19 pandemic. They believe this decrease could be explained by loss of unintentional physical activity (e.g., commuting), closure of gym facilities, lack of social support, and lack of motivation. Individuals were forced to adapt their regular fitness regimes to the confines of their homes with limited resources. In an Italian adult population including university students, Maugeri et al. (2020) specifically found that this transition to home-based physical activity due to the pandemic is related to a reduction in total physical activity levels and suggest this decreases psychological health and well-being. Despite this new evidence, there have been no studies to our knowledge that have explored the relationship between physical activity and mental health within the context of the COVID-19 pandemic in Canadian university students. Interestingly, a study by Kim et al. (2017) found a potential bi-directional relationship between well-being and physical activity in UK adults whereby, physical activity increased individuals' psychological well-being, and this led to increases in physical activity. A previous study by Azevedo Da Silva et al. (2012) investigated the relationship between physical activity and anxiety/depression symptoms and they also identified a bi-directional relationship. In contrast, a recent study by Buchan et al. (2021) investigated the bi-directional relationship between physical activity and anxiety/depression in Canadian youth and found there was no bi-directional relationship. However, Azevedo Da Silva et al. (2012) and Buchan et al. (2021) looked only at

those who experienced anxiety and depression not general mental health and not university students. Therefore, more research is needed on the bi-directional relationship between physical activity and mental health in university students and in the context of COVID-19, a gap that will be addressed with our study.

Summary

In summary, the literature has showed that positive education can improve mental health outcomes and university student mental health is of concern especially since the COVID-19 pandemic. However, several gaps are still present in the literature that will be addressed in this study. First, while the techniques taught in positive education were quantitatively found to improve various well-being outcomes and transferrable for the students, the in-depth experiences of students taking these courses were not examined. Furthermore, the existing research fails to qualitatively explore the perspectives of Canadian students who have taken such courses on if and how they believe the course has influenced their mental health. Using qualitative research will provide rich insight into the human experience in the course that will help us make recommendations for any future courses being developed. Second, to our knowledge no studies have explored the long-term influence of a Quality of Living course in university students. Third, there are limited studies to our knowledge that have explored the perspectives of university students in positive education during the COVID-19 pandemic. Finally, there has been three studies that have explored the bi-directional relationship between mental health and physical activity. However, these studies did not study the potential relationship in university students as well as they both used quantitative evidence where mixed methods could provide valuable insight into the nuances of the relationship. Moreover, to our knowledge no studies have

investigated the potential bi-directional relationship within the context of the COVID-19 pandemic.

The Present Study

Therefore, the primary purpose of the research was to explore the perspectives of the students of the QOL course on if and how they believe the course has influenced their mental health a) 1-year after taking the course and b) during the COVID-19 pandemic (RQ1). In addition, this study will qualitatively (RQ2a) and quantitatively (RQ2b) explore the bi-directional relationship between physical activity and mental health of students who took the QOL course during the COVID-19 pandemic. Based on previous research, it is hypothesized that there will be a bi-directional relationship between physical activity and mental health (Azevedo Da Silva et al., 2012; Kim et al., 2017).

Chapter III: Context

Epistemology

This thesis is guided by a pragmatic epistemology where researchers use the philosophical and methodological approaches that are most appropriate to answer the research questions (Kaushik & Walsh, 2019). As such, the focus of a pragmatic researcher is on the outcomes of the research rather than the methods (Kaushik & Walsh, 2019). Knowledge or meaning in the pragmatic epistemology is believed to be socially constructed where the individual integrates past experience with current experience to ultimately create knowledge. Pragmatism is the appropriate epistemology as it allows for the exploring of a phenomena while still believing that one single “true truth” does not exist. As this study has two purposes that both require a different methodological approach, pragmatism epistemology aligns with the purposes of this study. Pragmatists reject traditional beliefs of objectivity and believe in the human

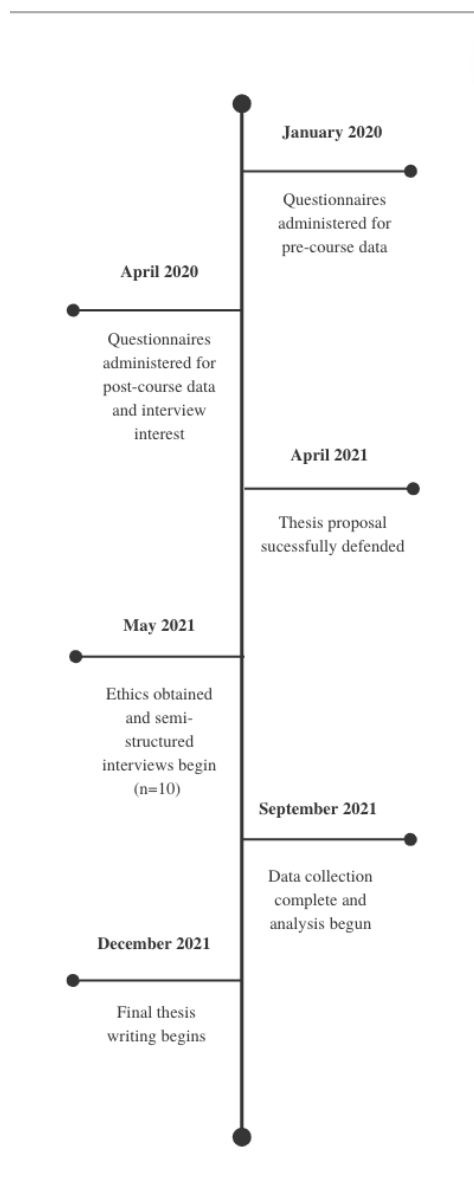
experience. The methods used are tools to answer the research questions, which directly aligns with a pragmatic view. In addition, pragmatism supports the integration of qualitative and quantitative methods and has been done successfully in the past (Galante et al., 2018). As a mixed methods design is being used for the second aim that will involve collecting and analyzing both quantitative and qualitative data, a pragmatic epistemology is arguably appropriate for this study.

Context

This study is a continuation of an ongoing study at the University of Ottawa on the Quality of Living course. The ongoing study is evaluating the impact of a semester long Quality of Living course and uses quantitative data to measure various outcomes such as well-being, self-compassion, and mental health. This study is a continuation of the pre-existing study conducted by the professor of the course and the supervisor of this thesis that will qualitatively explore the abovementioned research questions one-year following the QOL course. This study used raw quantitative data that was already collected by the co-author of the article [OP] through the previous study to answer RQ2b but will be analyzed and discussed within the context of this study. *Figure 1* demonstrates the timeline of the entire study.

Figure 1

Timeline of the Key Processes for Thesis



Researcher Description

Below are the co-authors and their contributions to the dissertation:

Kristen Sherrington is the principal investigator of this study and is a Master of Arts Student at the University of Ottawa. I co-conceptualized the research design, recruited participants,

collected the data, analyzed the data, wrote the manuscripts, and made all the revisions for the Article, and dissertation. I conducted this study as my thesis, and I chose this topic due to personal interest in positive psychology education, physical activity, and mental health. I was interested in learning about how the Quality of Living course influenced student mental health and I am interested in how the course potentially influenced the students during the on-going COVID-19 pandemic. I took the course being studied in my research and it did have positive influences on my mental health. Further, the professor of the course is my supervisor for this research study. Another area for bias is I lived through the pandemic myself; meaning I have my own perceptions and opinions on the pandemic. My experience during the pandemic is one of privilege and I acknowledged that during the research process. I reminded myself prior to each interview and during each phase of analysis what my biases were in terms of the pandemic, the course, and the professor. I understand I played an active role in the collection and analysis of the data and my personal biases may have affected some areas. A bias journal was kept during the thematic analysis and research process.

Dr. Michelle Fortier was involved in co-conceptualizing the research design and made significant revisions to the Article and dissertation manuscripts. She was also the professor of the QOL course. She supervised the entire research process as well as the dissertation writing. She made significant contributions to the final version of this thesis through multiple revisions.

Olivia Pastore contributed to conceptualizing the research design for the Article and editing the Article and dissertation. She also collected the quantitative data for RQ2b and distributed it to the primary author [KS].

Chapter IV: Journal Article

Article 1

The Article outlines the results from the qualitative study conducted to answer research question one and provides evidence that positive education increases undergraduate student mental health both 1-year post-course and during the COVID-19 pandemic. The article also presents helpful components of the course and how the students used the course techniques to cope during the COVID-19 pandemic. Many practical recommendations are made in the Article as well. This article is intended to be published after successful completion of the thesis.

**UNDERSTANDING THE INFLUENCE OF A QUALITY OF LIVING COURSE ON
UNDERGRADUATE STUDENT MENTAL HEALTH DURING THE COVID-19
PANDEMIC**

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Abstract

Concern for university students' mental health is on the rise. Since the beginning of the COVID-19 pandemic a further decline in university student mental health has been reported. Positive education could provide undergraduate students with the techniques to cope with academic demands, life stressors, and a global pandemic. However, the influence of positive psychology courses on university student mental health has yet to be examined qualitatively, long-term, and during the COVID-19 pandemic. Thus, the purpose of this study was to explore the perspectives of students who took a Canadian positive education course (i.e., the Quality of Living course), and specifically if and how they believe the course has influenced their mental health a) 1-year after taking the course and b) during the ongoing COVID-19 pandemic. Semi-structured interviews were conducted with ten Quality of Living students 1-year after taking the course. Abductive thematic analysis was performed to generate themes, which include The Influence of the Course on Mental Health, Helpful Course Components, and Transferring the Course Topics to One's Personal Life During the COVID-19 Pandemic. These results suggest that positive psychology courses like the Quality of Living course could play a valuable role in improving undergraduate student mental health and helping them during stressful times such as the COVID-19 pandemic.

Keywords. *COVID-19. Education. Mental Health. Positive Education. Qualitative. University Students.*

Introduction

Mental illness is defined as a condition that causes alterations in thinking, emotions, and behaviour which leads to significant psychological distress and impaired functioning (American Psychiatric Association, 2022). In the United States, 1 in 5 people experience mental illness and 12+ million had serious thoughts of suicide (National Alliance on Mental Illness, 2022). One subset of the population that specifically has high levels of mental illness are university students (Auerbach et al., 2018). In the most recent Canadian National College Health Assessment (2019), 51.6% of students reported feeling so depressed in the past year that they could not perform daily tasks.

In contrast to mental illness, Keyes (2002) defines mental health as a combination of emotional, psychological, and social well-being. *Emotional well-being* refers to an individual's feelings of happiness and life satisfaction, *psychological well-being* refers an individual's perception of having meaning in life and being able to positively function to fulfill this meaning, and *social well-being* is positive functioning in social settings. As an individual improves each dimension of well-being, they enhance their overall mental health (Keyes, 2002). Keyes (2002) describes mental health and mental illness as existing on dual continua where the absence of one does not indicate the presence of the other. Thus, mental health can exist independently of mental illness and vice versa. In the student population, low mental health and high mental illness are prevalent in parallel (Twenge et al., 2019).

Declines in student mental health became more of a concern in February, 2020 when the World Health Organization declared an increase of incidences in respiratory illnesses, namely the "COVID-19 virus" (Ahmed et al., 2020). Individuals around the world were restricted to their households in an attempt to control the spread of the virus through "social distancing"

(Nicola et al., 2020). The COVID-19 pandemic was a drastic change for everyone, including university students as they had to change their way of living and learning (Xiong et al., 2020). In addition to the stress that accompanies the high demands of academia, university students faced new stressors related to living through a global pandemic and transitioning to online learning (Liyanage et al., 2021). Recent research investigating the impacts of COVID-19 on university students found that the pandemic led to worsening mental health including increased stress and anxiety (71%), increased worry about health (91%), and concern for academic performance (82%) (Son et al., 2020). Importantly, these studies highlight the limited resources that university students have to effectively cope with stress. One-way students could cope with these stressors is using techniques taught through positive education.

Indeed, courses grounded in positive psychology (i.e., positive education³), the study of optimal human functioning (Sin & Lyubomirsky, 2009), have been shown to increase positive emotions, work productivity, mental health, as well as decrease depression, anxiety, and feelings of loneliness (Lyubomirsky et al., 2005; Sin & Lyubomirsky, 2009; Smith et al., 2020). Positive education covers a range of topics with most teaching concepts such as mindfulness, self-compassion, gratitude, and random acts of kindness. Covering these topics is important as they have all been associated with positive mental health (Curry et al., 2018; Stutts et al., 2018; Waters et al., 2021). In addition to teaching important psychological topics, a central role of positive education is to bridge theory and psychological techniques with practical applications and reflection (Maybury, 2013; Russo-Netzer & Ben-Shahar, 2011). This bridging is important

³ Positive education will be term used to refer to positive psychology interventions, and positive psychology courses.

as it provides an opportunity for students to transfer the knowledge and techniques, they learned into their day to day lives.

The positive outcomes of positive education for university students are promising. However, there is a lack of research that has explored the in depth experiences of students who have taken positive education courses, specifically through qualitative methodologies (Bridges et al., 2012; Kurtz, 2011). For example, a quantitative study by Smith et al. (2020) empirically evaluated a 16 week-long positive education course taught to university students and found increases in happiness and student well-being after taking course. Although the authors found positive outcomes after the course, they only measured students at two time-points before (i.e., week 1) and after the course (i.e., week 16). Moreover, a study by Yurayat & Seechaliao (2021) found that a positive education 8-week online intervention was effective at increasing university student psychological well-being. However, measures were again taken only at two time points pre-course (i.e. week 1) and after the course (i.e. 4 weeks after) that were relatively close to the end of the course. In addition, two other studies have researched the effectiveness of online positive education interventions during the COVID-19 pandemic and found they increased individual mental health but were also limited to short-term measures two weeks and three months following the course (Brouzos et al., 2021; Krifa et al., 2021). To account for a lack of in-depth explanation of short-term quantitative studies, Smith et al. (2020) recommended having a longer follow-up period after the completion of positive education courses as well as investigating why changes were observed; a gap the current study addresses. One study did examine high school students (N = 537) who participated in a positive education intervention over 2 years and found significant increases in mental health (Shoshani & Steinmetz, 2014). However, this study is not specific to a university student population and only used quantitative

measures (Shoshani & Steinmetz, 2014). As such, our study is the first to assess the long-term impacts of positive education on undergraduate university students' mental health using qualitative methods and during the COVID-19 pandemic. One positive education course is the Quality of Living (QOL) course offered at a large Canadian university. This course aims to teach undergraduate students techniques to improve their overall mental health and provides opportunities to practice these techniques outside the course on a weekly basis through activities called Quality of Living Experiences (QLEs). The purpose of the current study was to explore the perspectives of the students who took a positive education course on if and how they believe the course has influenced their mental health a) 1-year after taking the course and b) during the ongoing COVID-19 pandemic. This study will help us extend previous studies and understand the influence of a positive education course on undergraduate mental health, which will ultimately aid in the development and modification of future positive education.

Methods

Research Design and Participants

This study followed a basic qualitative research design that was guided by a pragmatic epistemology. This means the researcher chose the philosophical and methodological approaches best suited to answer their research question (Kaushik & Walsh, 2019). The individuals who were chosen to participate in this study were students who took the course during the Winter 2020 semester. Moreover, the participants had to have completed the course, be absent for less than two classes, and complete all assignments, which was confirmed through an online learning platform.

Procedures

The QOL course under investigation was offered in the Winter 2020 semester for 12-weeks and they met once a week for a 3-hour period. The course was taught in-person for most of the semester until the onset of the COVID-19 pandemic, which forced the instructor to teach the remainder of the course online (i.e., the last 3 weeks of the semester). The weekly topics and Quality Living Experiences (QLEs) are outlined in *Table 1*.

INSERT TABLE 1

Once ethics was obtained from the principal researcher's Research Ethics Board, an email was circulated the last week of the course to obtain emails for individuals who were interested in participating. Following completion of the course (i.e., 1-year after), individuals who provided their email were contacted and asked to confirm their interest in participating. Once informed consent was obtained, an interview was scheduled at the participant's convenience. The semi-structured interviews took place between May 2021 and September 2021 ($N=10$). To ensure the safety of the participants due to the ongoing COVID-19 pandemic, all interviews were conducted over Zoom and audio-recorded with the participants permission. The day of their interview, participants were sent a package which included the purpose of the study, key definitions, the topics discussed in the course, resources for mental health, and the mental health continuum for reference (see Appendix C). These topics were all discussed in the interview and this package was used as a tool to ensure the participant and the interviewer were aligned when discussing different subjects. Semi-structured interviews were used to understand the perspectives of the students on if and how they believe the course had influenced their mental health 1-year after taking the course and during the COVID-19 pandemic. Once data saturation

was achieved (i.e., no new content was being discussed) the first author began conducting her thematic analysis.

Methodology

Demographic Variables

Demographic variables were asked at the end of the interview including age, year of study, gender, and if they perceive having a mental illness.

Semi-Structured Interviews

The interviews lasted approximately 60 minutes in length with the shortest being 45 minutes and the longest being 65 minutes. Semi-structured interviews use a set of pre-determined questions to guide the interview but allow the researcher to elaborate and ask further questions when needed (Carruthers, 1990). This creates a structured environment where the participant knows the purpose of the interview, the questions can be clarified if needed, and complete anonymity is guaranteed to the participant (Adams, 2015). Since this research explores specific concepts (i.e. mental health, positive education), it is important that the interviews have some structure to ensure they are guided enough to stay focused but also allow for conversation to flow naturally (Rabionet, 2011). An interview guide was used and was compiled of 10 questions (see Appendix D). Some of the questions asked include “*Considering all of the topics you learned and discussed in the course, are there any you found particularly valuable for your mental health?*” and “*How has the QOL course helped you during the COVID pandemic? Give specific examples if you can.*”

Data Analysis

All completed interviews were transcribed verbatim. Member checking was used to ensure all the transcripts were representative of what was said (i.e., data validity). Only one

participant added comments to their transcripts. Following data collection, thematic analysis based on the Braun and Clarke method (2016, 2019) was used to identify common themes and subthemes in the data. Abductive thematic analysis is useful for examining the perspectives of different participants as this technique highlights similarities across large datasets and helps the researcher remain organized and structured (Braun & Clarke, 2019). This method is comprised of six steps that were followed to analyze the data and generate themes. These stages are data familiarization, coding, theme development, theme refinement, theme defining and naming, and reporting (Braun et al., 2016). The first stage was data familiarization, which occurred through the first author transcribing all the interviews verbatim. During the initial analysis, transcripts were read and re-read with notes taken to identify alternate meanings and potential themes (coding). Next, themes were developed through creating groups of codes that could then be merged into common themes. These themes were then refined by either regrouping themes into sub-themes, merging themes, or eliminating themes. This entire process was performed by the first author by hand using Microsoft Word. To further ensure data validity, ‘critical friends’ was used monthly throughout the thematic analysis process.

Results

Participants

All participants who participated in this study were between the ages of 22-25 years ($M=23.4$, $SD=0.97$ years). Out of those who completed the interviews three participants identify as male and seven participants identify as female. Out of ten participants, two identified as having a mental illness. As this study was guided by Keyes (2002) theory of mental health, it allowed us to still discuss mental health with participants despite presence of mental illness. All participants came from varying academic backgrounds with some still pursuing university

education ($n = 8$) and two participants have entered the workforce since completing the QOL course ($n = 2$).

Themes

Overall, there were three primary themes identified in the data including *The Influence of the Course on Mental Health*, *Helpful Course Components*, and *Transferring the Course Topics to One's Personal Life During the COVID-19 Pandemic*. Students mentioned many techniques as being helpful to them but for conciseness only certain ones will be discussed at length.

Pseudonyms will be used to quote participants as needed.

Theme 1: The Influence of the Course on Mental Health

Mental health was a common theme in the interviews, whether it be the impact of the course on their mental health, or the impact of the COVID-19 pandemic. Overall, most participants said their mental health improved immediately after the course and this improvement was sustained 1-year later unless extreme circumstances occurred (e.g., death in the family or having to self-isolate for extended periods of time). When asked about mental health after the course, Stephanie said “After the course I had learned better coping mechanisms and strategies to get back into a good healthy mental health. I feel like it was more a combination between reactive and healthy.” Two participants described no change in their mental health.

Using Keyes (2002) theory of mental health, the participants described different aspects of their mental health that were improved including social, psychological, and emotional well-being. Another common sub-theme that emerged in the data surrounding student mental health was leisure physical activity, therefore it is discussed further.

Social Well-Being

One perspective many participants had was the course helped them realize their need for and importance of quality social relationships, especially with the isolation requirements of COVID-19. The most common relationships mentioned were with existing friends, family members, or romantic relationships. Regardless of the type of relationship, participants learned it was important to improve the quality of their social well-being as well as prioritize these relationships over life stressors such as school, and work. When asked about what participants remembered after the course being impactful to their mental health, Rebecca responded:

“I took a step away, went for a walk, called my sisters and called my mom. I never used to reach out to people when I was feeling the way I would (anxious). So I just realized that I was lucky and grateful to have family and friends to help me out. That really helped me.”

Another participant said:

“I would say the first one (most important topic learned in the course) would definitely be prioritizing friendships and relationships. I remember we talked all about love and telling people, like making sure you’re telling people how much you love them and care about them cause like you never know if they’re going to be there the next day. I don’t know I just remember that one class was like WOW. I was just overwhelmed because it made me reflect on just how many important people I had in my life.”

To many, the course reminded them that being social even during stressful times and social isolation caused by the COVID-19 pandemic is very important. Stephanie said

“...my social life, I feel like I’ve poured more importance to my social life having studied how important relationships are to our well-being... It made me realize that we are social

creatures, and we thrive in social environments. We need that to basically survive. We need social relationships and knowing that I put a lot more effort in cultivating my relationships and making sure I am maintaining them despite the pandemic. So, the course has really helped me prioritize my relationships.”

For most participants, improving social relationships was especially important during the COVID-19 pandemic. Moreover, the participants said they were improving their relationships through reducing screen time and active listening when around friends, family, and their partners. For example, Julia describes “But for me, something that helped a lot was just less screen time. I spent a lot of time on my screen and not being on it helped me value face-to-face interactions more. That was kind of my big one...” Thus, many participants said beginning to prioritize their social relationships was important to improving their mental health.

Emotional Well-Being

Emotional well-being was often discussed by participants where they would mention feeling happier in their personal lives due to the course and viewing happiness as a skill they can build, not something that is fixed. When asked about changes in mental health, Timothy explained:

“Right off the bat I will say I am 1000% a happier person after taking that class. That obviously effects my day-to-day life whether that be how I interact with my friends, my coworkers, colleagues and even myself. I am a lot kinder and gentler to myself and self-loving. I think I also get a lot of that back when I put that out.” Mark stated “Uhm and I am such a happier person now (post-course) than I ever was...”

Even those who did not see an overall increase in positive mental health throughout the past year report the course prevented them from having worse mental health or helped them

improve their emotional well-being, despite being able to work on the two other facets of mental health. For example, Julia describes when she moved home due to COVID-19 she describes the techniques learned in the course helping her emotionally through the transition. Julia says,

“I remember I would pause gardening and reflect back on the small things. Relating it to enjoying a sip of coffee. Appreciating that moment for what it was. If I did that when I was 14, I would probably be complaining but at that time I was thankful for it and just being like wow this is such a nice moment and appreciating what it was. I remember letting it help me and make me happy... So slowing down I would say I did that big time when I was home.”

Mackenzie also said the course helped accept her negative emotions to cope with them and eventually experience positive emotions again.

Psychological Well-Being

Not only did participants feel happier when implementing techniques learned in the course, they reported personal growth, acceptance of their life, and ability to adapt to their new environments. Participants often talked about being able to accept their situation and master new environments with techniques they learned in the course. One example is a participant who relocated to a different province in the past year and said:

“When I moved to PEI, I was in isolation here for 14 days and I just started going to go back to my stuff (topics discussed in course) ... I revisited that list (happiness ingredients) and there's some I changed and that would change cause there's some that are specific to Ottawa. I took those and I implemented them into my routine and try to do those everyday (now) not because it's part of a list but because it's part of my routine and makes me feel good.”

Another participant reported transitioning to full-time work and the skills they learned in the course helping them cope and master their new environment. Mila said,

“I know they are two really different things but yoga over my years I’ve just learned to appreciate it so much and I know that we talked about it as a tool in the class and then meditating just kind of goes along with it. They both help me really reflect on what I’m feeling that day, how I’m feeling in the moment and then when I’m done, I just let everything go. Which is so good because like my days at work are so busy. I don’t meditate every day, but I would say out of 7 days a week I try to do it for like 4 days a week. Even for 2 minutes before bed. So I do notice, I have a headache usually, like all the time and when I meditate it kind of diffuses the headache you know.”

Students perceived the skills learned in the course as giving them a sense of purpose in life and that they were able to feel as though they were in control of their mental health during the pandemic. Part of psychological well-being is self-acceptance and many participants described accepting their anxiety and stress to improve their mental health. For example, Rebecca describes,

“Where I had just excessive anxiety every day, I had panic attacks. I just couldn’t recognize myself. So it was, that was huge for me just actually accepting that I need more help than just implementing strategies for myself. So that on top of maintaining physical activity, meditation, developing a greater self-compassion for myself have been so beneficial (in maintaining MH) since I started the course.”

Overall, they reported their autonomy increasing when it came to making decisions about their mental health after the course and during the COVID-19 pandemic. For example, Timothy reported the course material sparked a curiosity into his own mental illness and this began

making him feel more at ease with his mental illness and encouraged him to look more into his mental illness, to cope with it, and improve his overall mental health. Specifically, he said

“I’ve also taken it upon myself to learn more about my ADHD which has been very empowering. So, my mental illnesses have also gotten significantly better because I have taken it upon myself to learn about them and how to appropriately react to negative situations or positive situations.”

The change in perspective about mental illness was perceived as beneficial to the participants 1-year post course, and they report it was beneficial to them being able to cope with the COVID-19 pandemic.

Leisure Physical Activity

One contributor to overall change in mental health was participating in leisure physical activity. All ten participants reported that physical activity is something that was taught in the course that had an impact on their mental health. Many of the participants already performed physical activity prior to the course, but after taking the QOL course they described a change in how they were physically active. The participants reported changing their physical activity from higher intensity activities (e.g., running, HIIT training, and spin classes) to more leisure physical activity that combined either meditation (e.g., yoga) or being in nature (e.g., nature walks).

Timothy describes his transition from intensely training as an athlete and not enjoying it to wanting to engage in more enjoyable leisure physical activity. Specifically, he said,

“I have a group of friends that we can just text each other whenever we want, and we can go for a bike ride, or I just bought a slackline. My friend has a Spikeball net. So, I am really trying to instead of staying inside, I am trying to get outside. Primarily in nature,

another strategy. Just being in nature, being active, getting the fresh air and being with friends there is so many positive aspects that add into each other.”

All participants reported going for more walks and spending more time outside engaging in physical activity as it was an activity they tried in the course and enjoyed.

The Course as a Catalyst for Personal Growth

Another sub-theme in the mental health data was that overall, the QOL course was described as a catalyst to the participants mental health journey. Specifically, the participants described that simultaneously learning the techniques, applying the techniques through the QLEs, and having a professor with a supportive teaching style was facilitative to their personal growth. Further, all the participants discussed that the social nature of the course allowed them to develop a sense of community and validated their feelings especially when dealing with the stressful times during the COVID-19 pandemic. Specifically, Brittany said “So if it wasn’t for the course, the professor of the course, APA4117, I probably would not have signed up for this positive psychology course that I am taking right now. Which has really helped with my mental health...A catalyst is the perfect word to describe it”. Natalie reports

“I’m putting in more effort to, thanks to the course, to really find different techniques or coping strategies to deal with stressful situations or stress and anxiety in general. As opposed to just kind of stay inside and keep to myself, I’m trying out things that will help with that and mostly it’s been going outside, and it’s been being active. Going for walks or going for walks without a purpose or going for a walk to get the groceries instead of taking my car...has been really helpful.”

Most of the participants also described the course as coming at a good time in their life. Rebecca said

“I feel like I took the course at the perfect time, that I was so open to hearing all of the suggestions and all of the different methods. I think for me I could not have taken the course at a better time. Had I taken that course a few years prior I don’t think I was in the place mentally to accept all of these suggestions with open arms.”

Even though this course would be helpful at various stages of life, it seems that upper year students found specific value in taking the course at this time in their education and life. Many of the participants described this course as a starting point to their personal growth and improved mental health. Without the course, many participants said they would not have been aware of their mental health and have the tools to improve it on their own. Overall, no participants had a negative experience with the Quality of Living course and all participants would recommend the course to their peers. Lastly, most participants expressed they would like to see this course in other faculties and departments as they believe it would be beneficial to all undergraduate students.

Theme 2: Helpful Course Components

Quality Living Experiences

Part of the course requirements are completing the weekly Quality Living Experiences (QLE). These activities provide a practical application of the topic discussed that week in course (e.g., going for a walk-in nature, writing a gratitude journal). All participants said the techniques they learned from performing the QLEs helped them cope later with various stressors like the COVID-19 pandemic, school, family issues, and navigating personal relationships. The specific QLEs that were described as helpful are as follows: Physical Activity ($n=10$)⁴, Gratitude ($n=9$),

⁴Number of participants who described the QLE as helpful

Self-Compassion ($n=9$), Improving Social Relationships ($n=9$), Reduce Screen Time ($n=8$), Meditation ($n=7$), Mindfulness ($n=7$), Yoga ($n=7$), Random Acts of Kindness ($n=4$), Slowing Down ($n=4$), Happiness Ingredients ($n=4$), and Emphasize the Good and Minimize the Bad ($n=3$). In terms of the most helpful, self-compassion, gratitude, and improving social relationships were the most mentioned by the students. For example, many participants found themselves becoming more self-compassionate which made it easier for them to accept their hardships. Cameron reported:

“I mean the biggest thing was, I kept telling myself “Be kind to yourself”. That was a big one for me even though it was very challenging. It was more or less just getting through something and letting time play its course. In terms of the techniques, I tried to do things I enjoyed. Whether that’s being outside, being with friends, being social. Doing my best to kind of “distract” myself... Yeah, the self-compassion was definitely one that was useful for me... Yeah, in terms of you know, concrete terms and things we learned from the course it was probably the gratitude, self-compassion, those two domains.”

He said that since the course he has been much kinder to himself when he is going through periods of stress. This demonstration of self-compassion is not something this participant would have attempted before the course, and says it is the most important lesson he learned from the course. Since then, he discussed seeing an increase in academic success and feelings of satisfaction with his personal life, despite COVID-19 restrictions.

The Course as Evidence-Based

The participants also mentioned that teaching scientifically validated techniques was an important component of the course and their personal growth. Most participants expressed that having the techniques being evidence-based validated their drive to attempt the techniques and

validated the benefits they were experiencing due to these techniques. For example, self-compassion was a concept many had heard of, but they knew little about the benefits of practicing self-compassion. Mackenzie stated

“I feel like I didn’t know what self-compassion was until I took the course. So, after learning that I feel like I’m definitely a lot nicer to myself. Yeah, I feel like that’s my biggest thing that changed because I didn’t know what it was or how to apply it into my life. Then I learnt more about it and was like ‘wow okay, this is really important’”.

Theme 3: Transferring the Course Topics to One’s Personal Life During the COVID-19 Pandemic

Participants described how the COVID-19 pandemic challenged their mental health and the techniques learned in the course were helpful as previously described. Many of the QLEs listed above have been adapted to fit the individual’s life and the participants describe transferring what they learned in the course seamlessly to their personal lives during the COVID-19 pandemic. Most of them described using techniques simultaneously to help cope with the pandemic. For example, using gratitude, improving social relationships, and emphasizing “the good” at the same time. Mackenzie describes “The gratitude thing was a big thing for me. Reaching out to family and kind of reminding myself to look at the good instead of the bad throughout the year is a big deal.” Andy also describes how he integrates many QLEs into his life:

“Mindfulness is not something I actively work on, but it is something that has really significantly changed in my life because as I’m going through day to day I am much more mindful as I am thinking of things to amplify the positive and minimize the negative...Once I am more mindful of them (things that make him happy) and recognize

them, I become grateful for them... Gratitude is such a big thing. I really think, I feel like my happiness ingredients are a gratitude list and happiness ingredients all together because the things on my happiness list are things, I am also grateful for.”

These quotes demonstrate just how adaptable these QLEs are and how the participants adapted them to fit their lifestyle best, all while getting the benefits of performing them. This process of adapting the techniques and fitting them to their lifestyle was done during the COVID-19 pandemic which participants described as providing them the time and opportunity to practice these techniques post-course.

The COVID-19 pandemic proved to be difficult to many participants and impacted their mental health in various ways. For example, “When COVID started it really perpetuated my mental health challenges. I felt very isolated and angry. Especially because it was our last year of our undergrad, and we couldn’t do anything to celebrate that huge milestone.” All the participants described the techniques learned as being helpful to them during the COVID-19 pandemic. Two participants who had to isolate due to COVID-19 public health recommendations said they felt prepared to do the isolation as they were able to apply the techniques. Specifically, Caitlyn said

“COVID started, and it was hard, and I was trying to figure out courses for my bachelor (degree) to graduate...But it was a pretty stressful time and despite that it was pretty exciting because I had some tools (from the course) to help me cope with it and I was very optimistic for the next step so. It was better...”

Discussion

To our knowledge this is the first study to qualitatively explore the perspectives of undergraduate students who took a positive education course on if and how the course has

influenced their mental health long-term. Moreover, this is the first study to examine if and how a positive education course helped undergraduate students cope with the COVID-19 pandemic. The results revealed that most participants experienced an increase in their mental health 1-year after taking the course. Only two participants identified no change in mental health since taking the course, however they attributed this to external circumstances (i.e. death in the family, already good mental health). These results are consistent with previous quantitative literature on positive psychology education. For example, a 2-year longitudinal study found that adolescents ($n=537$) who participated in a positive education workshop every 2 weeks for 15 sessions throughout the school year had increased mental health compared to a control group ($n=501$) who received nothing (Shoshani & Steinmetz, 2014). The authors concluded that increased mental health seen in the positive education group was a result of the students having more coping techniques (e.g., goal setting, gratitude reflections) available to them and a greater sense of community (Shoshani & Steinmetz, 2014). The results found in this study support this claim. In fact, the students discussed learning effective coping techniques through the course to deal with the many stressors of life and school as well as discussed, the community feel in the classroom helping them cope. A recent systematic review has found that equipping secondary school students with coping techniques through positive education is an effective strategy to improve overall student mental health (Francis et al., 2021).

According to Keyes' (2002) definition of mental health, there were improvements in all three facets of well-being (i.e., social, psychological, emotional) from the course. The participants perceived the largest change since the course was on their social well-being, likely due to various techniques taught in the course to develop stronger social networks. One example includes technology free interaction (i.e., interacting without phones). Our study, along with

other research, shows that this is effective in creating higher quality social relationships because less time on screens facilitates more time spent with peers (Lavados-Romo et al., 2021) as well as better *quality* time together (Roberts & David, 2016). Specifically, the students described feeling more satisfied with their social interactions when they did so screen-free, such as on walks with friends and family or on dates with a romantic partner. “Phubbing” (phone-snubbing) is a new phenomenon where a person is distracted by their cell phones while in the presence of a partner (Ryan & David, 2016). Screen free interaction prevents “phubbing”, which decreases relationship quality especially in young adults (Bröning & Wartberg, 2022). Another technique students mentioned they used to improve the quality of their interactions is Active Listening (i.e., listening while demonstrating understanding) which has been associated with more supportive conversations (Jones et al., 2019). Improved social well-being is crucial as a lack of social support and loneliness are significant contributors to poor mental health in university students (Quadt et al., 2020; Saltzman et al., 2020). Overall, our study suggests that equipping university students with techniques to improve their social interactions through positive education could be helpful to their mental health.

Along with increases in social well-being, students also reported improved psychological well-being such as experiencing self-acceptance and personal development. Students even mentioned that the course was a catalyst for their personal growth and came at an ideal time in their lives. This finding aligns with current literature on general positive education. For example, a meta-analysis of 68 studies found that positive education is linked with increases in psychological well-being with a medium effect size of $d=0.23$ (Koydemir et al., 2021). Our study adds to the literature as students mentioned specific techniques of the course that particularly facilitated psychological well-being. Techniques mentioned include mindfulness and gratitude,

which were used to cope with difficult situations like exams. This finding is promising as research has shown mindfulness is associated with increased self-regulation (i.e., the ability to manage your reactions), self-soothing, and personal growth (Gedik, 2019). Moreover, research shows in the general adult population including university students, gratitude has been linked to increased psychological well-being and emphasizes the positives in one's life (Kardas et al., 2019; Voci et al., 2019). Taken together, the abovementioned techniques learned in the course could have facilitated the student's personal growth, self-acceptance, and ultimately psychological well-being.

Lastly, the students of the QOL course described long-term improvements in their emotional well-being due to the course. Specifically, the students reported having more positive emotions and feeling happier overall after the course. This finding makes sense as a recent meta-analysis found that increasing positive emotions was a potential mediator between positive education and student well-being (Koydemir et al., 2021). Our study adds to this literature as it explored which techniques contributed to emotional well-being increases. Specifically, the students alluded to self-compassion (i.e., a healthy way of relating to the self) and nature walks (i.e., mindfully walking outside or in nature) as techniques contributing to enhanced emotional well-being. There is ample research on the benefits of self-compassion on emotional well-being and overall mental health (Ferrari et al., 2019; Zessin et al., 2015). Indeed, individuals who are more self-compassionate respond to negative situations with self-kindness rather than self-judgment, which results in less rumination (Smeets et al., 2014). A self-compassionate mindset was evident in the students of the QOL course as they described themselves as responding better to adverse situations and not being as self-critical. As mentioned, nature walks were also mentioned by the students as important for their emotional well-being. In fact, the QOL students

discussed using the walks during stressful times (e.g., exam periods) to help them boost their feelings of happiness. This finding is promising as nature walks have been associated with positive emotions specifically awe and joy, decreased stress, and greater mental health in adult populations (Marselle et al., 2019; Sturm et al., 2020).

Our findings on emotional well-being are important, especially within the context of the COVID-19 pandemic. In fact, studies have reported decreased levels of student happiness during the COVID-19 pandemic (Kohls et al., 2021). Moreover, Clabaugh et al. (2021) found that among a sample of students ($N=295$), one third reported having difficulty coping with the COVID-19 pandemic and felt increased levels of stress and decreased emotional well-being due to academic stress associated with the pandemic. Contrary to a downward trajectory in mental health during the COVID-19 pandemic, 80% of the students in our study reported stable - or increased – levels of positive emotions and overall mental health. In summary, our findings of increased social, psychological, and emotional well-being provide support for the QOL course as helpful in increasing mental health in undergraduate students and mitigating the adverse effects of the COVID-19 pandemic.

As this study was conducted during the on-going global pandemic it is important to further discuss the results within this context. For example, the QOL students explained that the pandemic forced them to change their physical activity behaviours, coping strategies, social interactions, and increased their stress. This is consistent with other literature that found that 71.26% of college students showed high levels of anxiety and stress since the COVID-19 pandemic began (Wang et al., 2020). Moreover, a systematic review by Liyanage et al. (2022) found significant increases in anxiety in university students during the COVID-19 pandemic. There have been a couple studies that have shown that positive education reduced psychological

distress and increased mental health during the COVID-19 pandemic (Bouzos et al., 2021; Krifa et al., 2021). Specifically, Krifa et al. (2021) found that among 366 university students, those who participated in an 8-week positive education intervention saw increases in optimism, mental health, and study engagement (i.e., engaged in their academic schoolwork). Our study adds this literature by providing insight into the techniques the QOL students used to help maintain and/or increase their mental health during the COVID-19 pandemic, even after taking the course. For example, the students mentioned, improving their social relationships, and incorporating more enjoyable physical activity. Overall, our study shows that positive education could play a key role in promoting healthy coping behaviours during the COVID-19 pandemic.

With regards to physical activity, students mentioned it consistently in our study as a technique that promoted their mental health. These two variables have long been discussed together as physical activity is a strong predictor of mental health (McDowell et al., 2018; Morres et al., 2019). Due to physical activity being a coping strategy mentioned by all students, it is important to discuss how it impacted students' mental health. The students in this course described physical activity as one of the main contributors to their overall mental health as well as other health benefits like feeling better. According to a quantitative study and systematic review, physical activity levels during the COVID-19 pandemic have generally decreased in university students (Savage et al., 2020; Violant-Holz et al., 2020). Contrary to these studies, we found that the QOL students remained physically active during the COVID-19 pandemic, and this contributed to their stable or enhanced mental health. Importantly, we found that it was not only the *amount* of physical activity that contributed to improved mental health but more importantly the *type*. The students mentioned favouring yoga and nature walks during the pandemic and found these types of physical activity were impactful for maintaining and/or

increasing their mental health. It is not surprising that these types of physical activity could have been so impactful on mental health as they are both mindful ways of moving and incorporate a meditative aspect (Djernis et al., 2019; Falsafi, 2016). Recent research has shown that nature walks (Olafsdottir et al., 2020) and yoga (La Torre et al., 2020) have been linked with improved mental health because mindful movement teaches one to regulate emotions and therefore cope with stress (Djernis et al., 2019; Meredith et al., 2020). Overall, our findings are promising as no studies to our knowledge have found that positive education can affect physical activity behaviour, specifically, through type of activities engaged.

In addition to physical activity, gratitude, self-compassion, and mindfulness, there were other topics and Quality Living Experiences (QLE) that participants found helpful for their mental health 1-year after taking the course and during the COVID-19 pandemic. For example, the students particularly found screen detoxing effective for reducing screen fatigue (i.e., feeling tired due to screen usage). This finding is especially promising today, where screen time and social media use are excessive with the average screen time among young adults being 7.2 hours/day (Smith et al., 2020). Studies found that more screen time is linked to poor mental health, especially during the COVID-19 pandemic where social interaction is limited due to “social distancing” (Colley et al., 2020; L. Smith et al., 2020).

In addition to the content of the techniques, the format by which they were taught could have also contributed to mental health improvements. In fact, the students mentioned in the interviews that having the practical component (i.e., the QLEs) of the course was extremely important for adapting the techniques to their daily lives. The practicality of the QLEs could explain why the techniques learned were perceived as easily transferrable and adaptable to student’s personal lives 1-year after completion of the course. This proposition is supported by

previous research. A study by Coker et al. (2017) found that when there was an experiential learning component (i.e., practical components) to a course, students found it easier to retain knowledge learned and translate it into practice. Additionally, the students in the QOL course were required to try out the techniques through QLEs and then reflect on their experience through weekly journals. This reflective component could be key in explaining why the students were able to adopt the techniques long-term. Indeed, reflection has been found to increase students critical thinking skills (Sabtu et al., 2019), and aid in knowledge translation (Coleman et al., 2020; Rovers et al., 2018). Another possible explanation as to why the students found the techniques transferrable and easy to maintain long-term is that they enjoyed the techniques. According to Self-Determination Theory (Deci & Ryan, 2012), individuals who have self-determined forms of motivation for an activity behaviour (e.g., they inherently enjoy it) are more likely to maintain it over time. Meta-analyses and systematic reviews support this proposition (Gillison et al., 2019; Howard et al., 2021; Ntoumanis et al., 2021). Thus, for students of the QOL course, their interest in, and enjoyment of, the topics and techniques could explain their long-term use of the techniques. Lastly, it is important to note that all topics and techniques taught in the QOL course were evidence-based, and the students mentioned this as being helpful. Previous research is limited in showing that evidence-based interventions or courses are more effective in promoting behaviour change in university students, but studies are suggesting this is best practice (Moch et al., 2010; Ruzafa-Martínez et al., 2016).

Significance

This study contributes to the on-going body of research surrounding university student mental health and positive education. To mitigate poor mental health amongst university students, positive education programs, courses, and interventions have emerged. This study is the

first to our knowledge to evaluate the long-term impact of positive education on university student mental health qualitatively and during the ongoing pandemic. This research is important as previous studies have not probed into which techniques learned through positive education has helped mental health, especially during the COVID-19 pandemic. This study provides support that positive education initiatives are beneficial to university students. The results of the current study further contribute to the literature by using rich qualitative data to describe *why* and *how* students perceive positive education, namely the QOL course, as helpful for their mental health 1-year after taking the course and during the COVID-19 pandemic. By using qualitative methods, we gained valuable insights into the course that helps expand on the quantitative support for positive education. The current study also adds to the literature by probing further into the techniques that could account for to the effectiveness of positive education courses in increasing student mental health.

The results of our study can inform future implementations of positive education courses. This study provides educators and higher education facilities insight into important course components such as timing to offer the course, helpful topics, and the course format. For example, individuals wishing to create a positive education course in their university should ensure it is evidence-based, offered in third year university, and include a practical and reflexive component. Moreover, positive education courses should have smaller class sizes, a physical activity component, and be facilitated through a collaborative environment. The results of this study as well as previous research conducted on positive education provide a strong rationale for making these courses compulsory to undergraduate university students. Thus, our study provides a solid foundation to inform positive education courses and programs on university campuses.

Limitations and Future Research

As with all research this study has some limitations. First, the sample size of this study is small and came from one cohort of students. There is the possibility that these findings are specific only to these participants and are not generalizable. For instance, our sample was voluntary, and we may have had keener individuals participate. However, with qualitative methods, lower sample size is compensated with rich data (Moser & Korstjens, 2018). Indeed, we were able to obtain meaningful explanations regarding the influence of a positive education course on mental health. Another potential limitation is the sample and their high orientation towards physical activity enjoyment. The students in this study all belong to an undergraduate Kinesiology program, which may explain the prevalence of physical activity as a theme. Despite this, a physical activity component to positive education could be beneficial to student mental health. To strengthen conclusions quantitatively, a 4-armed randomized controlled trial could be conducted with one group receiving the course, a second group receiving the course and a physical activity component, a third group receiving a physical activity component, and a control group who receives no intervention. A larger sample size across multiple cohorts with various ages (e.g., graduate students) would also increase generalizability of the study and would increase the validity of these findings. Though the results are promising from this study and provide support for positive education as an effective approach to enhance psychological, social, and emotional well-being, more research is needed. For example, researchers could explore the relationships between each technique taught in the course quantitatively and how they relate gratitude, mindfulness, self-compassion, as well as social, emotional, and psychological well-being.

Conclusion

This study investigated the perspectives of the students who took a positive education course on if and how they believed the course influenced their mental health a) 1-year after taking the course and b) during the ongoing COVID-19 pandemic. The results indicate that most students perceived an increase in their mental health 1-year after the course and during the COVID-19 pandemic. The students also indicated the techniques learned in the course were helpful in coping with daily stress during COVID-19, are easily transferred to their daily lives, and acted as a catalyst to their personal development. The effects of the COVID-19 pandemic were clear on the student's mental health and the course techniques were used to help maintain or improve mental health. Practically, this research provides useful knowledge for future positive education courses because it describes helpful course components and probed further into the positive effects. Future research is needed to investigate the longer-term effects (e.g., 3-5 years) of positive education courses in multiple cohorts and with control groups, especially students across varying departments (e.g., medical students, law students) and age groups (e.g., undergraduate vs. graduate). In summary, the positive education course is a practical way for universities to address the on-going mental health crisis and help students manage their stress, improve their mental health, and cope with adverse events such as a global pandemic.

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List of Tables

Table 1

Quality of Living Topics with The Corresponding QOL Experience Assigned

Topic	Quality of Living Experience
Introduction to class and concepts	A: Write your daily happiness ingredients presently (minimum 3 maximum 7) B: Insert them into your days over the next week and journal your experience. Identify your number one ingredient.
Simple happiness strategies: smiling, laughing, posture, touch, and slowness	A: smile more often B: Try to slow down Journal about your experience
Rest, Breathing, Sleeping, and Mindfulness	Try meditation for 3-7 days Comment on your experience in your journal
Other Therapeutic Approaches: Acceptance Commitment and Self-Compassion	Try one of three self-compassion activities. Journal about your experience
Stress Management, Thought Control, and Time Management	A: Thought control activity B: Draft a weekly schedule for a normal week and build in happiness activities/practices Journal about your experience
Leisure, Physical Activity, and Yoga	A: Plan to do enjoyable physical activity-outdoors if you can for at least 20-30 minutes, 4-7 days this week Journal about your experience
Nature and Screens/Social media	A: Do an awe walk outdoors for at least 15 min; 3-7 days this week B: Screen detox Journal about your experience
Relationships	A: Improve one of your relationships by connecting in person (unplugged) and by improving your listening B: Write a gratitude letter to someone about something they did. Journal about your experience
Gratitude and Journaling	A: For at least 3 evenings in the next week write 2-4 things you were grateful for that day and rate your mood before and after. Journal your experience

Random Acts of Kindness (RAK), Volunteering, and Forgiveness	A: choose amongst the RAK options provided in class B: Write a forgiveness letter Journal about your experience
Special Topics and Conclusions	Optional: Re-write your daily happiness ingredients and contrast it with what you would say they are now

Note. This table demonstrates the quality of living topics discussed during the course and the corresponding weekly assignment or QLE associated with the topic.

Chapter 5: Supplemental Results (RQ2)

This supplemental chapter will present the results relating to research question two: to examine the potential bi-directional relationship between physical activity and mental health in the students who took the Quality of Living course and during the COVID-19 pandemic. A mixed method approach was used to collect and analyze the data for this research question.

Quantitative

Data Collection and Analysis

As part of a larger study investigating the impact of the Quality of Living course, quantitative data were collected in January and May through validated online questionnaires. Specifically, these questionnaires (Appendix E) assessed physical activity (Godin Leisure-Time Exercise Questionnaire; Amireault & Godin, 2015) and mental health (Appendix F) (Mental Health Short-Form Continuum; Keyes, 2005). There was a total of 57 participants who answered the questionnaires, with a majority of the participants being female (66.7%) and in their 4th year of study (63.2%). Some participants were also in their 3rd year (26.3%) and 5th year (10.5%). The data were first checked for missing data and outliers in SPSS Statistical Software. For missing data, we conducted Little's MCAR test, which checks to see if missing data is at random (i.e., ignorable or does not indicate bias) or non-random (i.e., non-ignorable or indicates potential bias). We concluded that the data were missing at random ($p > 0.05$), therefore we used Expectation-Maximization to impute missing data ($n=2$). To assess the bi-directional associations between physical activity and mental health, we then conducted bivariate correlations: 1) physical activity at baseline and mental health at endpoint, 2) mental health at baseline and physical activity at endpoint, 3) mental health at baseline and endpoint, and 4) physical activity at baseline and endpoint with significance at $p < 0.05$. To further our

understanding of the results, we also conducted paired t-tests to examine potential changes in mental health and/or physical activity from baseline to endpoint with significance set at $p < 0.05$. We report Cohen's d as an effect size, which indicates the magnitude of change due to the course in physical activity and mental health. As outlined by Cohen, (1988), a small effect size is 0.2, medium effect is 0.5, and large effect is 0.8.

Results

There was no significant relationship ($r = -0.12$, $p > 0.05$), between physical activity at baseline ($M = 54.87^5$, $SD = 23.92$) and mental health at endpoint 4 months later ($M = 47.43^6$, $SD = 11.68$). In addition, mental health at baseline ($M = 43.70$, $SD = 11.83$) and physical activity at endpoint ($M = 61.08$, $SD = 29.54$) were not significantly correlated ($r = 0.02$, $p > 0.05$). As seen in Figure 2, there were significant correlations between mental health baseline and mental health endpoint measures ($r = 0.66$, $p < 0.001$). The remaining correlations were non-significant. Both paired samples t-tests revealed that mental health and physical activity significantly changed from baseline to endpoint. Mental health levels at endpoint were significantly higher than mental health levels at baseline, with between small and medium effect ($t(56) = -2.96$, $p = 0.005$, $d = -0.39$). Physical activity levels at endpoint were also significantly higher than physical activity at baseline however, this improvement was small ($t(54) = 2.09$, $p = 0.04$, $d = 0.16$). It is important to note that physical activity and mental health were not correlated in this study, however there were changes in both variables from baseline to endpoint. Thus, these changes are likely due to other factors, which will be discussed in the general discussion. Overall, the quantitative results

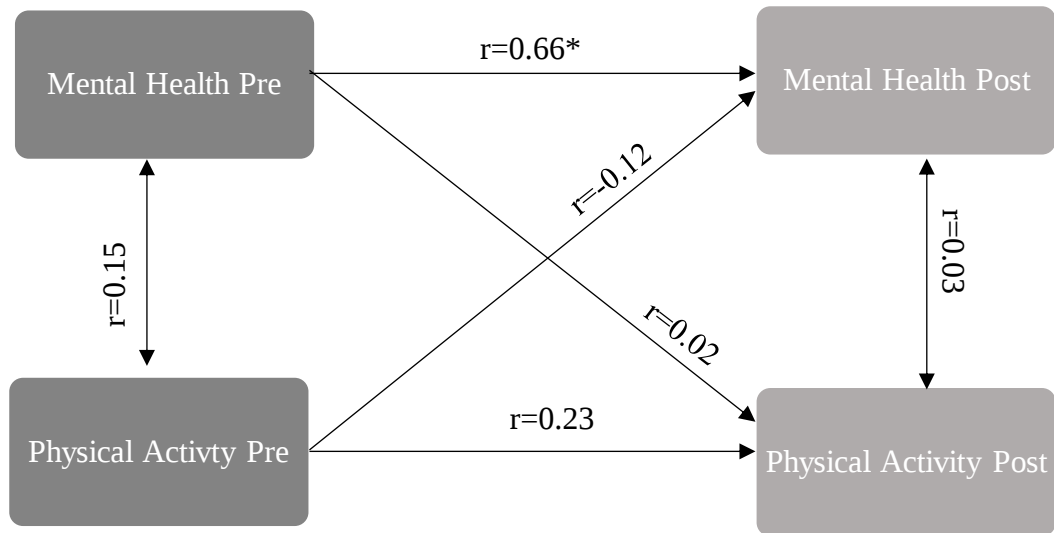
⁵ These means are indicating a total amount of leisure physical activity per week. Scores higher of 24 and more are considered active, between 14-23 are moderately active, and less than 14 are insufficiently active.

⁶ Scores range from 0 to 70. Higher the scores the higher the mental health.

do not support our hypothesis that a bi-directional relationship exists, which will also be discussed in the general discussion.

Figure 2

Correlations Between Mental Health and Physical Activity



* $p < 0.001$

Note. r represents the correlation co-efficient. Significance was set at $p < 0.05$.

Qualitative

Data Collection and Analysis

Semi-structured interviews were conducted with the same participants for research question 1 ($N=10$) 1-year post course and were transcribed verbatim. These participants also filled out the questionnaires 1-year prior and were part of the quantitative sample. Thematic analysis was performed to generate themes within the data (Braun et al., 2016; Braun & Clarke, 2019). This approach is comprised of 6 steps. Initially, the transcripts were coded using a deductive (i.e., to analyze the transcripts within Keyes (2002) theory of mental health) followed

by an inductive approach. Next, the initial themes were generated through features in Microsoft Word based on both coding approaches. Using critical friends, themes were refined and re-organized in monthly meetings with the supervisor, co-author of the article, and lab mates.

Results

Four main themes regarding the bi-directional relationship between physical activity and mental health were generated within the data: 1) The effects of physical activity on mental health, 2) The effects of mental health on physical activity, 3) The bi-directional relationship between physical activity and mental health and 4) The effects of COVID-19 on physical activity and mental health. These themes will be discussed in further detail.

The Effects of Physical Activity on Mental Health. The first theme generated is the effects of physical activity on mental health. Throughout the interviews, all ten participants discussed physical activity as having a positive effect on their overall mental health. The participants described when they performed any form of physical activity, even just 10 minutes a day, it provided them with a sense of accomplishment, improved their mood, had better body image, and experienced overall positive affect. Mackenzie said, “When I was running consistently in general, I felt lighter. I wasn’t carrying around so much stress, I felt better about myself and what I was doing for myself. I was sleeping better.”

Stephanie said,

“I think it’s a positive impact cause after you just finished working out or playing volleyball it’s a positive and you feel good. Your kind of like oh that felt good I was moving around and now I can rest. I like to do it in the morning or right when I get off work so I cannot worry about when will I work out, will I do it before dinner, after work, before bed, so it’s

just a break in the day and a good start to the day, push yourself a bit and you're good to go."

Cameron says,

"Yeah I would say plain and simple it (physical activity) increases my mental health in a positive way. I guess I don't really know how because I don't know the specific terminology to use but it makes me happier. Makes me feel a little bit better about myself internally and externally and it's an outlet to, you know, let go of stress and thoughts that you build up that would negatively impact your mental health. It's a good outlet to let those thoughts out and start fresh and prioritize yourself for like an hour."

Participants also described the opposite effect when not doing any physical activity. Specifically, they mentioned if they do not perform physical activity for an extended period, they found their mental health decreased. Julia said,

"But if I stop for a week. Then yeah, I kind of feel slower and less motivated at work and a little bit down. So it definitely affects my mood but not if I skip a day or two. If I skip a week or two then I think oh man. I definitely don't feel good." Overall, participants said that physical activity does have a large effect on their mental health.

The Effects of Mental Health on Physical Activity. Nine out of ten participants reported that their mental health does affect their physical activity levels. Participants stated that on days where they are experiencing good mental health, they were more motivated to perform physical activity, perform better quality physical activity, and increase the intensity and duration of their physical activity.

"Then on the opposite as well, when my mental health is doing really well it positively affects my physical activity habits. When I am feeling happy and energetic, I want to go

outside and make the time to go for a bike ride...When I am in a good mood I am more likely to reach out to a friend and say 'hey want to go to a park and slackline' or play frisbee or Spikeball or something...So it definitely impacts it no matter what kind of mood you are in."

The participants also described the opposite relationship, whereby if they are experiencing negative mental health they will do lower intensity physical activity, have less motivation to do physical activity, and in some cases, will not perform physical activity at all. Mackenzie said,

"Yeah absolutely. I would say the only thing I can relate my mental health to is work. Because work is so stressful but like it makes me have some bad days. So, if I am having some bad days cause of work, I'll probably be at the time less motivated to workout cause I feel like a blob anyway and I'm so tired. So, I don't feel like doing this after work so I would say yeah if your mental health is a little bit negative then it probably won't encourage you to workout. It won't for me at least. "

The Bi-Directional Relationship Between Physical Activity and Mental Health.

When asked explicitly, all participants believed that a bi-directional relationship between mental health and physical activity exists. Moreover, the participants discussed a cyclical effect whereby performing physical activity leads to better mental health, which further supports more physical activity. Conversely, negative mental health made participants less likely to perform physical activity which in turn influenced their mental health in a negative way. As seen in Figure 2, this bi-directional relationship could be broken down further. For example, if someone is experiencing poor mental health, whether they engage or do not engage in physical activity will influence their mental health state moving forward. Timothy describes,

“Whereas if it’s the other way around I’m enjoying it, and this is great wow look at me go. I think they both play a role in each other, and the mindset determines what kind of workout I will have. I can do something harder, and my body can take it and the other way around this is hard.”

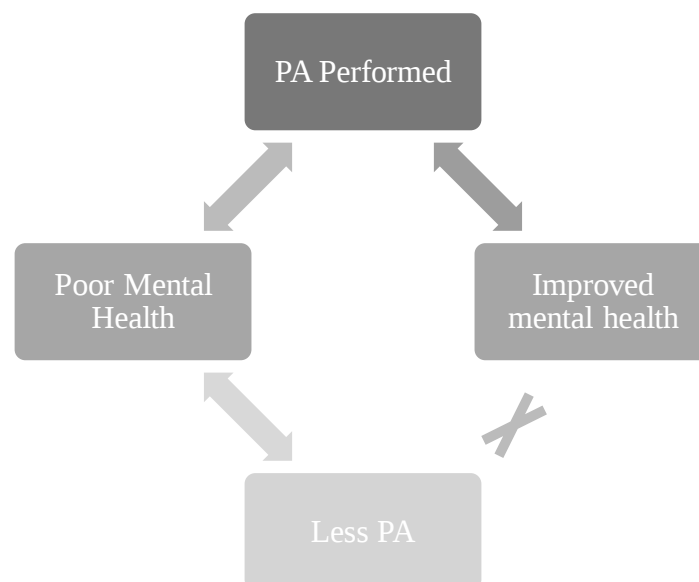
Another participant described the poor mental health days which she said,

“I feel like when I get low motivation it’s like eh, you did it last week you don’t need to do it (physical activity) again. Then I get in this problematic cycle of like justifying to myself why I don’t need to do it (physical activity). So they (mental health & physical activity) impact each other.”

This cyclical interaction between mental health and physical activity discussed by the participants indicates that a bi-directional relationship exists.

Figure 3

The Potential Cyclical Relationship Between Physical Activity and Mental Health



Note. The x represents there was no relationship observed or discussed by participants

The Effects of COVID-19 on Mental Health and Physical Activity. As previously discussed, the COVID-19 pandemic challenged students mental health throughout the past year. In terms of physical activity, the students described a change in their relationship with physical activity. Specifically, when lockdown restrictions were severe, and gyms were closed, students described their mental health as declining slightly and temporarily. At this time, they transitioned from more frequent intense training in the week to lighter physical activity outdoors. Participants described this shift as promoting their mental health and changing their relationship with physical activity in a positive way. The participants described that the constant change in restrictions encouraged them to be creative, try new things, and engage in more enjoyable physical activity. Examples of enjoyable physical activity the participants tried during the pandemic were suggested through the Quality of Living course (e.g., nature walks, yoga).

Timothy said,

“I’ve gone from 0 to 100 (amount of PA) but instead of focusing on exercise I’m focusing on enjoyable physical activity which is very important. If it doesn’t make me happy, I don’t do it. So I’ve been doing a lot of biking because I finally brought my bike outside and the weathers really nice and I love going for rides outside.” These behaviours continued when the lockdowns were less severe as students would continue to do lighter more enjoyable physical activity while integrating more intense physical activity when restrictions would allow.

Mila said,

“There’s definitely a nuance on how I view physical activity right after (the course) and now. So right after, I definitely worked out like 5-6 days a week. I felt that that was driven a lot by not having anything to do (during COVID-19). I still, I challenge myself

in some ways, but I still was just doing it just because. Then once I hit August to now, its 4-5 days a week of a lot of HIIT and upbeat tempo and strength mixed in with a lot of walking every day. That's honestly because I love to, I love that, I love to feel not utterly exhausted but just feel very worked at the end of a good workout session."

Additionally, some participants described the changing COVID-19 restrictions as effecting their physical activity in an inconsistent way. Specifically, Stephanie said, "It either increased my physical activity because I was bored and wanted to do something...or it completely reduced my motivation. So definitely ups and downs of motivated to not motivated at all."

Rebecca also said,

"At the beginning of COVID it (physical activity) was nothing, like actually nothing. Then I feel like there was this rise of online workout platforms and I was like this is so fun. Then I started doing walks because I just wanted to do walks. Then in the middle of COVID, it went down again. It was really tough in the winter...Kind of wavy so on and off"

All participants indicated that COVID-19 influenced both their mental health and physical activity. For some, this influence was an increase in motivation and increased opportunity to perform different types of physical activity and improve their mental health. For others, there was a negative influence and participants struggled with the changing restrictions and found their activity levels fluctuated along with their mental health. Overall, COVID-19 has been difficult for all participants in some capacity and at different times and in different ways, however all participants described a return to physical activity at some point during the pandemic. In sum, the COVID-19 pandemic appeared to influence the bi-directional relationship between physical activity and mental health and this effect was specific depending on the

individual. The results presented in this chapter will be discussed further in the general discussion section of this thesis.

Chapter 6: General Discussion

The Influence of the Course on Mental Health

The first purpose of this thesis was to explore the perspectives of students who took a positive education course called a Quality of Living (QOL) course at the University of Ottawa on if and how they believe the course influenced their mental health 1-year after taking the course and during the ongoing COVID-19 pandemic. We found that the course had a positive influence on student mental health by improving their social, psychological, and emotional well-being, all important constructs of Keyes (2002) theory of mental health. As outlined in our Article, social well-being was most impacted by the class and one explanation as to why the students saw an increase and/or maintenance in their overall mental health. In fact, the students widely discussed an increase in the quantity and quality of their relationships because of the course. Other studies also suggest positive education is an effective way to promote social competence in post-secondary education (Cohn & Fredrickson, 2010; Kennette & Myatt, 2018). Not only were the students spending more time with their friends and family (i.e., quantity) due to the course, but they were also actively listening more when with them (i.e., quality). Active listening (i.e., deep listening with appropriate feedback demonstrating you understand; Bodie et al., 2015) was mentioned by the students as one of the most popular techniques for improving social interactions and providing greater social satisfaction. This is not surprising as active listening has been shown to lead to more helpful and supportive conversations (Jones et al., 2019; Kuhn et al., 2018).

The social nature of the QOL course was also discussed by the students as being important for social well-being. The professor created activities that promoted a sense of community with the students, such as sharing their weekly highlight, having peer guest lectures, and having small group discussions. By engaging in these interactive activities, students were able to hear their peers' experiences and relate to them through shared struggles. Students discussed that these activities built a sense of connectedness/community amongst the class. This is important as a sense of belonging in university has been linked with desirable outcomes. For example, a meta-analysis by Korpershoek et al. (2020) among 208,796 university students found that those who experienced a greater sense of belonging/sense of community had increased academic success, experienced more favorable emotions, and were more likely to be intrinsically motivated toward their academics.

The increase in social skills became increasingly important during the COVID-19 pandemic which has been associated with feelings of loneliness and social isolation (Saladino et al., 2020). Indeed, the students mentioned that things they learned in the class such as prioritizing relationships and interacting screen free helped them interact during the COVID-19 pandemic. Our results suggest positive education could mitigate the effects of social distancing and the COVID-19 pandemic as the students in this study described increases in social well-being as well as made efforts to remain connected despite restrictions. Overall, our study is novel as it highlights the long-term effectiveness of positive education on social well-being.

Students also saw an increase in psychological well-being and specifically feelings of autonomy and mastery 1-year after the course which could contribute to an overall increase in mental health. They described using the techniques taught in the course such as self-compassion and gratitude to cope with stress and promote positive functioning in life. Positive functioning in

life and coping with stress are key indicators of psychological well-being (Keyes, 2002). A study by Yurayat and Seechaliao (2021) also found that a positive education course significantly led to increased psychological well-being. The findings from this study (Yurayat & Seechaliao, 2021) as well as ours, demonstrate that the ease of use of positive education techniques is one of the main contributors to these courses being effective. Students in the QOL course felt more confident using the techniques in their daily life because they were easy to implement and they practiced them weekly through the QLEs, which ultimately increased the frequency of them being used after taking the course. Specifically, students highlighted three main techniques they found useful to them when they were stressed: gratitude, self-compassion, and mindfulness. As previously discussed in the Article, gratitude (Kardas et al., 2019), and mindfulness (Kotera et al., 2021) are both contributors to psychological well-being (Kotera et al., 2021; Nguyen & Le, 2021). It is likely that self-compassion, gratitude, and mindfulness interact with each other as one study found gratitude to be an important mediator between self-compassion, mindfulness, and psychological well-being (Voci et al., 2019). Those who are more self-compassionate express gratitude for their progress during adversity and those that are mindful notice more things to be grateful for (Voci et al., 2019). Our results reflect this as students described learning to be more self-compassionate in stressful situations, being mindful of thoughts and emotions during adversity, and using gratitude as a tool to cope with negative thoughts and emotions due to the class. Thus, the interaction of these constructs as well as their individual effects could have helped students in this study improve their psychological well-being. Future quantitative research could further tease out the interplay between these three concepts.

Finally, the students reported an increase in emotional well-being which would further contribute to the improvement in mental health 1-year after the course. This is promising as the

current literature on students shows declines in emotional well-being (Machado et al., 2018), especially during the COVID-19 pandemic (Kohls et al., 2021). Our study found that one-year after the course, students discussed feeling more positive and less negative emotions overall. As mentioned in the Article, nature walks are a technique taught to students to increase their positive emotions and could be one of the techniques to account for our finding relating to an increase in emotional well-being. In fact, one study by Lee et al. (2019) found that those who walk frequently and received positive education were happier than those who just walked or just participated in positive education. Thus, it is not surprising that nature walks resulted in the students reporting better emotional well-being. Finally, yoga could be another technique taught in the course that could account for some of the observed changes in emotional well-being. Our students discussed yoga as being helpful to their mental health in general as well as their psychological well-being (i.e., facilitate positive function) and their emotional well-being (i.e., experienced positive emotions). This is not surprising as one study by Park et al. (2020) found after a single yoga session 144 adults saw an increase emotional well-being. Thus, the QOL course, and positive education in general, could mitigate the negative effects of university such as stress. In fact, a recent systematic review and meta-analysis found that positive education is effective at reducing anxiety and stress (Hendriks et al., 2020).

Overall, the QOL course teaches a variety of techniques that aim to increase mental health. Many participants commented on how the course covered multiple areas of life (e.g. relationships, social media, random acts of kindness) which gave them a variety of techniques to choose from to improve their mental health in everyday life and especially in times of stress such as the COVID-19 pandemic. For example, a QLE that the students discussed in the interviews was random acts of kindness (RAK), which improved their mood. RAK are important as they

have been linked to improved mental health in both the receiver and the giver (Curry et al., 2018; Hui et al., 2020). Rusk et al. (2018) suggest that when positive education targets multiple domains the results will be longer lasting, and relapse will be prevented in terms of anxiety, depression, and stress. As this course does target many different areas it is no surprise our results revealed increases in all aspects of well-being which were sustained 1-year after the course.

Helpful Components of the Course

As mentioned previously students found many course components to be helpful for their mental health. Moreover, limited studies have evaluated a semester long course (Krifa et al., 2021.; Lee, 2017; Maybury, 2013; Smith et al., 2021) and as we are one of them we are able to highlight helpful components of the course. In addition to their content, the Quality of Living Experiences (QLEs) were said to be helpful due to the experiential learning component of them. Experiential learning is a multi-dimensional dynamic process of learning where students experience real-life or simulated scenarios to learn content (Kolb & Kolb, 2017). Experiential learning requires the learner to make connections between knowledge and practice through direct experience and reflection as well as play an active role in the learning process. The QOL course facilitated experiential learning using the QLEs whereby students were required to practice the techniques every week for themselves and reflect on the process. This approach is important as experiential learning has been linked with deeper learning and academic performance (Leal-Rodríguez & Albort-Morant, 2019). Additionally, experiential learning components of courses have been shown to bridge the gap between knowledge and behaviour (Morris, 2020). Our results confirm these findings as students described that practicing the QLEs in their daily lives was helpful to transfer the course techniques to help them cope with other academic and life stressors. Further, the students mentioned that the social nature of the class and the professor's

teaching style, which was explained to be collaborative and caring, facilitated their learning. This finding is promising as a study found that experiential learning was enhanced through social interaction and a positive teaching style (Rong-Da Liang, 2021). Thus, the experiential learning component along with the collaborative environment created by the professor could explain the helpfulness of the course.

There are potential moderators that could have influenced the students' perception of the helpfulness of the course. Along with our study, a meta-analysis of 68 studies over 16,085 participants found that positive education is linked with increases in student well-being (Koydemir et al., 2021) and that this relationship was stronger when there is face-to-face delivery, and the size of the course was smaller. The students in the QOL course also mentioned this, such that the face-to-face format and smaller class size were better for social interaction and sharing, which helped to improve their mental health. These moderators are important to consider when designing or evaluating the impact of positive education, as they may dampen or strengthen effects on mental health.

The Course and the COVID-19 Pandemic

Another purpose of this thesis was to investigate the perspectives of the students who took a QOL course on if and how they believe the course affected their mental health during the COVID-19 pandemic. We found there were increases in mental health among the students despite the presence of the COVID-19 pandemic. This is in line with other studies that found positive education is effective at increasing resilience (Brouzos et al., 2021) promoting good mental health, as well as decreasing stress, anxiety, and depression (Krifa et al., 2021) during the COVID-19 pandemic. These findings suggest that the QOL course, and positive education in general, likely mitigates the negative effects of the COVID-19 pandemic on mental health among

university students. The qualitative results from our study provide support for improved mental health among the students, specifically as a result of the techniques learned in the course. For example, our students described being able to cope with stressful situations during the COVID-19 pandemic by using self-compassion, reducing screen time, and engaging in physical activity. The ability of the students to cope with the COVID-19 pandemic could indicate the students increased their resilience through the course. Resilience has been positively linked with overall mental health as well as less psychological distress during the COVID-19 pandemic (Verdolini et al., 2021). Thus, the course likely provided students with a multitude of techniques to help them cope with stressful events which helped the students develop resilience which could account for some of their overall mental health increases during the pandemic. Future research should investigate the role of resilience in coping with the COVID-19 pandemic and how positive education could contribute to increasing resilience.

The Bi-Directional Relationship Between Physical Activity and Mental Health

The secondary purpose of this thesis was to use a mixed methods approach to investigate the bi-directional relationship between physical activity and mental health among students who took the QOL course. We hypothesized that there would be a bi-directional relationship between physical activity and mental health in that more physical activity would lead to better mental health and that positive mental health would increase physical activity. The quantitative results did not support our hypothesis. This result is not in line previous studies which suggested the presence of a bi-directional relationship (Kim et al., 2017) now studies showing a positive link between physical activity and mental health (Dogra et al., 2018) as well as studies that found positive mental health predicts physical activity (Ohrnberger et al., 2017). However, one study by Buchan et al. (2021) investigated the potential bi-directional relationship between depression

and anxiety, and physical activity in youth and found the relationship was not bi-directional. The research remains inconclusive about the presence of a bi-directional relationship and future studies should continue to investigate the potential bi-directional relationship between mental health and physical activity. One explanation for the non-significant results could be the timing of administering the endpoint questionnaire which was during the COVID-19 pandemic. Since the COVID-19 pandemic and its many lockdowns have been linked with decreases in both mental health and physical activity in university students (Bertrand et al., 2021; Cao et al., 2020), our results could have been heavily skewed. For example, the students in the QOL course mentioned that their physical activity levels varied depending on whether there was a lockdown or not. Moreover, our sample size was relatively small ($N=57$) for correlations, which should be larger ($N > 100$) for significant findings (Knudson & Lindsey, 2014). Although our study was the first to use a mixed methods approach future research could have a sample larger than 100 and multiple data points to better test the reciprocal link between physical activity and mental health. In addition, the students in our sample were Kinesiology students which meant they could have already had higher than normal physical activity levels, thus skewing the quantitative results. The non-significant quantitative results will be explored further in the limitations section.

Contrary to our quantitative results, our qualitative results indicated a bi-directional relationship between physical activity and mental health. In fact, as discussed in the Article students said that physical activity played a significant role in their mental health 1-year after the course. In general, the benefits of physical activity are well-known, including reductions in anxiety, improved sleep quality, and decreased negative emotions (Zhang et al., 2020). Our participants described seeing these benefits after performing physical activity as well as “feeling better” both externally (e.g., appearances, body image) and internally (e.g., more motivation, less

fatigue, better productivity and mental health. One common theory is physical activity increases an individual's self-efficacy which contributes to better mental health (Neumann et al., 2022; Paxton et al., 2010) and this was reflected in our results when students describe "feeling better" as well as feeling confident after physical activity. Another possible reason for the students' improvements in mental health after performing physical activity could be due to physiological effects. In fact, the students in our study discussed that even while engaging in physical activity that was perceived as difficult, they felt better after, which improved their mental health. Studies support this claim and have shown while engaging in physical activity the body temporarily experiences stress, but after exercise there is a sustained decrease in stress hormones such as cortisol and epinephrine (Hackney, 2006; Wood et al., 2018). In addition, a systematic review and meta-analysis by Beserra et al. (2018) found that in 463 studies physical activity was able to regulate and decrease cortisol levels in people with depression resulting in overall health benefits. Ultimately, decreased cortisol, and stress, leads to good mental health (Liu et al., 2019). Additionally, physical activity has been linked to producing dopamine and serotonin which are categorized as "feel good hormones" (Karimi & Safapour, 2018; Zhang et al., 2020). Thus, a combination of decreased stress hormone and increase in happy hormones being produced due to physical activity could contribute to overall better mental health. It was evident in our sample that the students experienced the abovementioned mental health benefits that physical activity has to offer.

Second, the qualitative results revealed that mental health influenced physical activity, particularly the type and intensity. For example, when our participants perceived their mental health as good, not only were they more likely to engage in physical activity, but more social types of activities and ones that were more intense. To our knowledge, this is the first

study to qualitatively investigate the relationship between mental health and physical activity. Our finding is supported by empirical evidence. One study by Ohrnberger et al. (2017) specifically found there was a significant relationship between mental health and physical activity. The authors found that a potential mediator for this relationship is social interaction such that individuals who have better mental health are more likely to seek social interaction which leads to enhanced engagement in physical activity with others (Ohrnberger et al., 2017). It was clear that the students in the QOL course were seeking more, and higher quality, social interactions as seen from increases in social well-being, which may account for more engagement in physical activity. A systematic review confirms this hypothesis, whereby those who had better social well-being were more likely to participate in physical activity (Smith et al., 2017). We also found the reverse relationship with mental health and physical activity. When students perceived their mental health as being poor, they performed less physical activity overall and at a lower intensity. The students attributed this change in physical activity to high fatigue and lack of motivation. These results are supported by Farah et al. (2021) who found that in 1,570 adults, high fatigue and lack of motivation were common barriers to engaging physical activity, especially during the pandemic. Overall, our study adds to this literature by providing insight into *how* mental health influences physical activity, such as impacting the type and intensity of physical activity performed. Moreover, to our knowledge this is the first study to use mixed methods research to study the reciprocal link between physical activity and mental health. More research is needed on the bi-directional relationship between physical activity performed and mental health benefits observed in university students as they are prone to psychological distress.

All the students in our study agreed through the qualitative data that a bi-directional relationship exists between physical activity and mental health. Our results align with the limited literature surrounding this topic. For example, one study found that there is a bi-directional relationship between depression and anxiety and physical activity, whereby those who were more physically active experienced less depression and anxiety and those who had more depression and anxiety were less likely to meet physical activity guidelines (Azevedo Da Silva et al., 2012). The students in our study provided some insight into how this relationship may work and ultimately described it as a cyclical process. For example, the students mentioned that when their mental health was better, they were more motivated to perform physical activity because they knew it would have a positive effect on their mental health. This explanation is plausible as Kim et al. (2017) suggests those with higher mental health tend to want to be healthier and participate in more health seeking behaviours, including physical activity. These healthier individuals then engage in more physical activity which provides them with further benefits as outlined above. We propose that mental health and physical activity influence each other continuously in a cyclical fashion (see Figure 3), thus influencing the overall health status of the individual. There is reason to believe social support is a mediator in this relationship as it has been linked to greater physical activity and mental health (Cohrdes & Bretschneider, 2018; Smith et al., 2017; Wang et al., 2018). Ultimately, more research is needed on this cyclical relationship.

These findings are important especially during the COVID-19 pandemic. A systematic review and meta-analysis by Wunsch et al. (2022) found that 9801 adults reported a significant decrease in their physical activity since the onset of the COVID-19 pandemic. Our study found that despite the negative effects of the pandemic students were able to choose physical activity

that was suited for their mental health needs likely because of the class. Thus, despite COVID-19 pandemic restrictions the students were able to engage in physical activity consistently 1-year after the course. Our results suggest that outdoor physical activity could be more beneficial than indoor physical activity during the COVID-19 pandemic as students often described outdoor physical activity (e.g., running, cycling, walking) as improving their mental health best. A study by Lesser and Nienhuis (2020) supports the benefits of outdoor physical activity and found when participants engaged in outdoor physical activity, they had lower anxiety and increased well-being outcomes compared to those who performed indoor exercise. Moreover, a meta-analysis and systematic review of randomized control trials by Coventry et al. (2021) found that outdoor physical activity was most effective at improving mental health in adults. Thus, our study as well as others (Coventry et al., 2021; Lesser & Nienhuis, 2020) emphasize the type of physical activity engaged in (e.g., intensity, environment etc.) could be more effective than others at improving mental health during the pandemic.

Limitations and Future Research

This thesis is not without limitations with one example being the sample demographics. Our sample consisted of Kinesiology students, which could explain the high levels of physical activity at baseline as well as the students perceiving physical activity as playing a large role in their mental health. As such, future studies could investigate different cohorts of students in different faculties to determine the influence of the course on a broader sample as well as against a control group that did not take the course. Second, the sample size was relatively small (i.e., quantitative $n=57$ and qualitative $n=10$) and were strongly motivated as those who were interviewed were chosen for their high engagement in the course. Future researchers could interview those who were engaged and some who were less engaged or drop-out to gain a

broader understanding of the influence of positive education on student mental health. Another limitation is the interviews in this study were conducted during the summer months in Canada. This could have influenced the student's overall mood during the interviews and perhaps they were more inclined to discuss the positives. Indeed, physical activity levels have been shown to change depending on the weather in countries that experience changes in season (Aspvik et al., 2018). Specifically, Welch et al. (2018) found that physical activity increased in the summer and decreased in the winter. Further, mental health has been shown to be affected by weather conditions as well where during the summer months mental health is better and vice versa (Cruz et al., 2020). This could further prove why the quantitative results do not align with the qualitative results as they were taken during two different seasons (i.e., winter and summer). Thus, different seasons could influence the mental health and physical activity outcomes found in this study. Future studies could perform interviews or collect diaries at multiple timepoints throughout the year to rule out influence of the weather on the results.

These results are promising for the future of positive education, however more research is needed to support these findings. Since this thesis was qualitative dominant and results are specific to this sample and not generalizable, future research could use a quantitative design to strengthen conclusions. For example, a randomized control trial could be conducted where one experimental group from different faculties receives the course and is compared against a control group from different faculties. Moreover, as mentioned in the Article a 4-armed randomized control trial would help strengthen the generalizability and conclusions. In addition, researchers could explore the potential mediators and moderators of these courses on mental health and physical activity. Understanding the mechanisms of positive education on mental health – and the factors that can influence these relationships – is important for optimizing the design and

delivery of such courses/programs. Lastly, studies should investigate the effectiveness of each QLE technique and how they directly relate to improvements in mental health and how they affect each of the three well-beings (i.e. social, psychological, and emotional) from Keyes (2002) theory.

Significance

This thesis contributes to the on-going body of research on the effect of positive education on mental health, and the relationship between physical activity and mental health. Additionally, this thesis adds to the literature surrounding Keyes' (2002) theory of mental health within the context of positive education and the university student population which is at higher risk of mental health problems. We found that positive education and specifically the Quality of Living course is effective at increasing social, psychological, and emotional well-being to improve overall mental health in university students. To our knowledge, this is the first study to qualitatively explore the perspectives of undergraduate students who took positive education on if and how they believed the course influenced their mental health 1-year after taking the course and during the ongoing COVID-19 pandemic. Using qualitative research allowed us to explore these courses beyond the answers quantitative data provides. It is important to note this type of course has been taught with great success in the past at Harvard University and is gaining popularity at many Ivey league schools as well as other universities across Canada such as Laurentian University in Northern Ontario. The Harvard course sees high enrollment numbers and receives ample positive feedback by the students, however it has yet to be researched in depth. This thesis provided insight into multiple explanations for the success of this type of course such as improvements in social, psychological, and emotional well-being. Specifically, this thesis revealed the importance of the Quality of Living Experiences and particularly

impactful techniques such as self-compassion and gratitude as well as the importance of the delivery method. Therefore, universities could benefit from using this study to inform future implementations of this course across departments as well as to inform wellness interventions that could be performed in addition to the course to help undergraduate mental health.

It is promising that students from the QOL course experienced enhanced or maintained mental health 1-year after the class. A common concern with changes observed after inspiring courses or programs is the idea of the “honeymoon effect” (Campbell et al., 1970). This effect occurs when an individual receives a compelling lecture and is inspired to make change in their life. However, this effect quickly wears off and the individual reverts to their normal habits. This effect was not the case for the students of this study. In fact, the students managed to maintain the mental health effects 1-year after the course and even found themselves using specific techniques as needed such as screen detoxing. Ultimately, this finding suggests that positive education has a positive effect on undergraduate students that are long lasting. Additionally, our students managed to use knowledge and techniques from the class to have high mental health during the pandemic when the general populations mental health was waning which is even more impressive. We are the first study, to our knowledge, to qualitatively observe these long-term influences of the course on undergraduate student mental health.

Indeed, a decrease in student mental health as well as student physical activity has been observed during the COVID-19 pandemic (Reuter et al., 2021). The participants in this study did not follow this trend and positive education could be a key factor as to why this was not observed. Other studies have suggested positive education is helpful during the COVID-19 pandemic, but these studies only evaluated short-term outcomes (Bouzos et al., 2021; Krifa et al., 2021). Unlike previous studies this thesis is novel as no other studies have investigated the

effects of positive education on university student mental health 1-year into the COVID-19 pandemic (i.e., long-term) as well as in a North American university student population. Furthermore, due to the rich qualitative data collected this thesis was able to provide some insight as to why the students mental health was not as affected by the pandemic using positive education techniques such as nature walks and social interaction. Our results are important as mental health will always be of concern and universities would benefit from positive education to help mitigate negative effects of the stress associated with university.

Based on our findings multiple practical recommendations can be made for future implementations of the courses. First, this study highlights the importance of experiential learning and specifically the QLEs and techniques that were most helpful to university students. For example, self-compassion, gratitude, nature walks, random acts of kindness, mindfulness, and reduced screen time were all techniques that improved mental health. Therefore, all these techniques should be taught in positive education courses moving forward. The empirical evidence behind each technique is important to teach in the course as our participants highlighted this as being particularly helpful. As there is a growing body of literature in positive education, individuals delivering positive education should stay up to date on research and incorporate new lessons and activities. For example, vulnerability and empathy practices have emerged as helpful for mental health and could be included (Kahlon et al., 2021; Stout, 2019). Further, given the results of our study saw a significant impact of relationships on mental health as well as an increase in substance abuse (Taylor et al., 2021) and domestic abuse during the COVID-19 (Ivandic et al., 2020) new topics should be introduced. Examples of new topics could include focusing on self-love, abusive relationships and coping with substance abuse which could be beneficial to teach students in future courses. Moreover, based on our findings the course should

be delivered face-to-face, have small class sizes, made available to all undergraduate students and preferable be taught in second or third year, and have a strong social and experiential component.

This thesis also qualitatively found a bi-directional relationship between mental health and physical activity. There is no other research to our knowledge that has investigated the bi-directional relationship between physical activity and mental health in university students as well as during the COVID-19 pandemic. Previous studies have investigated similar relationships but using other variables such as mental illnesses like depression and anxiety and in a different population (Azevedo Da Silva et al., 2012; Buchan et al., 2021; Kim et al., 2017). Compared to previous studies, our research is novel as to our knowledge it was the first to evaluate the bi-directional relationship between physical activity and mental health using a mixed methods approach, which provided insight into the complexity of this relationship. While the study design was limited to quantitative data that was collected 1-year prior to the interviews to ensure continuity between the cohort being interviewed and the questionnaires being evaluated, the qualitative data provided rich insights into this relationship. The cyclical relationship between mental health and physical activity hypothesized in this thesis could help explain the gap between motivation and behaviour by understanding how mental health effects physical activity behaviours. In future, universities could teach students how to be intuitive when choosing their physical activity and adapting it to their mental health. The cyclic relationship presented in the supplemental chapter is novel and could be useful to understanding how mental health and physical activity interact. The cyclical relationship proposed in this thesis could inform future health interventions. For instance, understanding this relationship could help change physical

activity behaviour by further understanding the intention-behaviour gap and how that gap could be shortened through addressing mental health.

Finally, this thesis provides strong rationale for targeting mental health and physical activity together through positive education or other health interventions. Our findings suggest that interventions that address mental health and physical activity at the same time could have greater benefits, as they are closely interconnected. The COVID-19 pandemic has emphasized the need for both physical activity and mental health interventions both on the university campus as well as to the general population. Positive education could be a helpful intervention that helps promote mental health as well as physical activity at the same time. By understanding the bi-directional relationship between mental health and physical activity and targeting both through positive education this could be a strong dyad to mitigate the negative effects of the COVID-19.

Conclusion

This dissertation had two main purposes; the first was to explore the perspectives of students who took a Quality of Living course on if and how they believe the course influenced their mental health a) 1-year after taking the course and b) during the ongoing COVID-19 pandemic. This study concluded that the QOL course effectively increased student mental health through improving social, emotional, and psychological well-being as well as teaching various techniques that helped improve mental health (i.e. physical activity, self-compassion, gratitude). These increases in mental health were sustained 1-year after taking the course in 80% of the students. Moreover, this dissertation was able to explore which components of the course were helpful such as the sense of community, the teaching style, the small class size, as well as the Quality of Living Experiences and provided valuable insight into future implementations of similar courses. This dissertation addressed many gaps in the literature such as a lack of

qualitative research on the long-term impacts of positive education on university student mental health 1-year after the course as well as during the COVID-19 pandemic. The second to use a mixed-methods approach to explore the bi-directional relationship between physical activity and mental health over time amongst the students who took the QOL course during the ongoing COVID-19 pandemic. Our results showed, a bi-directional relationship was discussed by all the participants in the study, despite lack of quantitative evidence to support the hypothesis. Through the rich data collected a cyclical relationship was posited to help explain the bi-directional relationship described by participants.

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List of Figures

Figure 1

Timeline of the Key Processes for Thesis

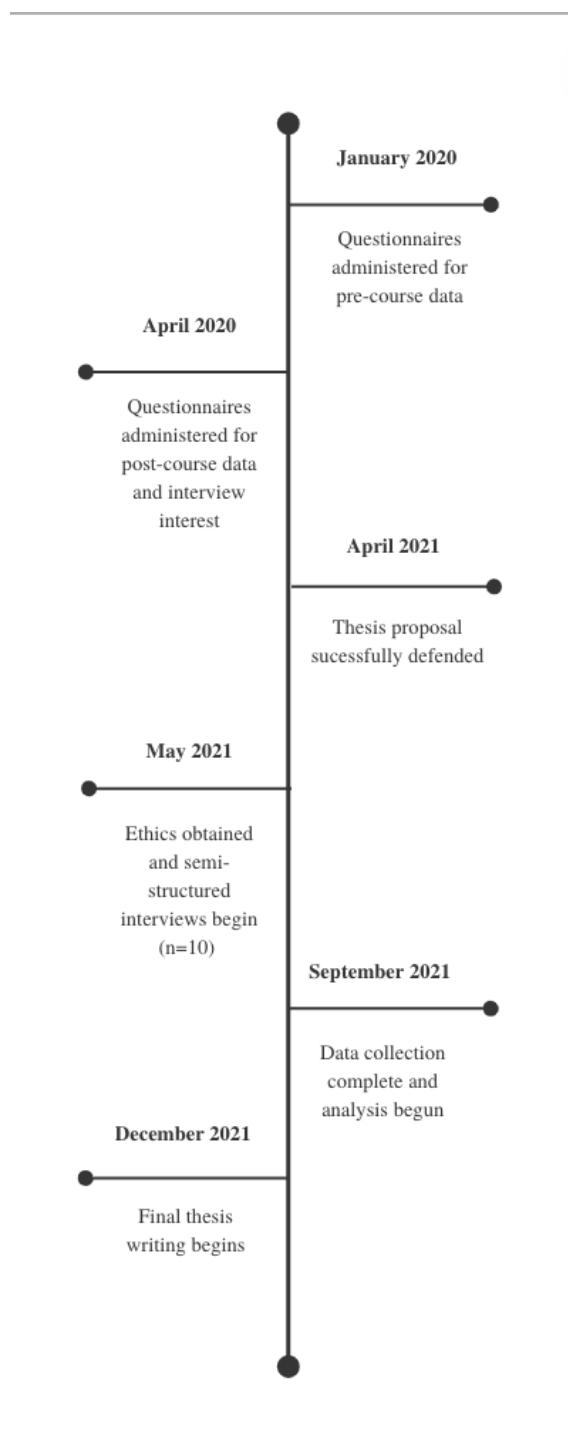
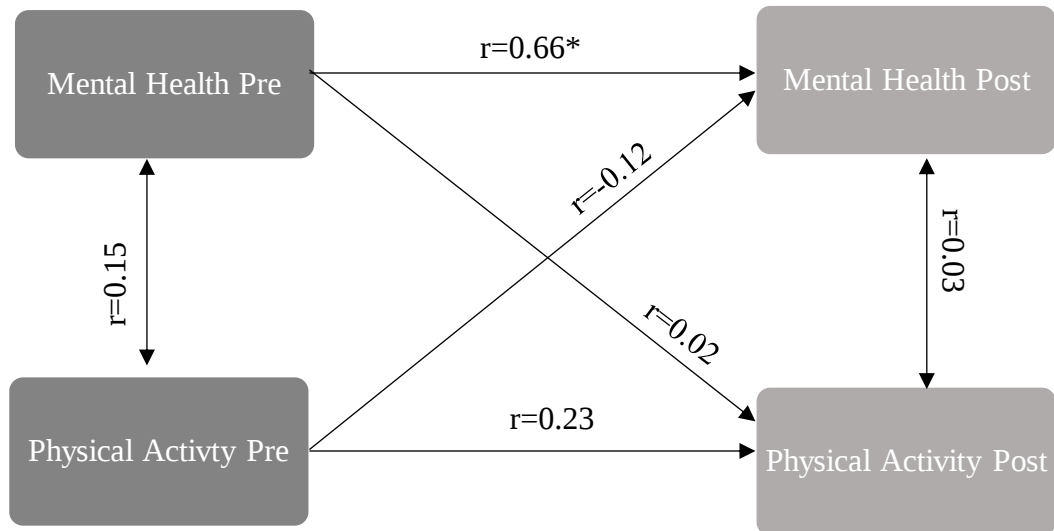


Figure 2

Correlations Between Mental Health and Physical Activity

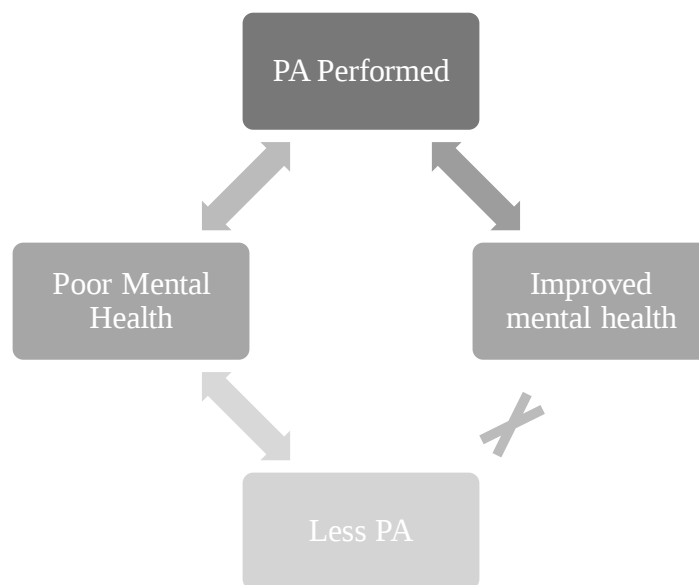


* $p < 0.001$

Note. r represents the correlation co-efficient. Significance was set at $p < 0.05$.

Figure 3

The Potential Cyclical Relationship Between Physical Activity and Mental Health



Note. The x represents there was no relationship observed or discussed by participants

Appendices

Appendix A-Participant Consent Form



Interview Consent Form

Title of the study: INVESTIGATING THE IMPACT OF A SEMESTER-LONG QUALITY OF LIFE COURSE AT THE UNIVERSITY OF OTTAWA

Principal Investigator : Dr. Michelle Fortier¹

Research Assistant : Olivia Pastore¹ MA (c)

Research Assitant : Kristen Sherrington

¹*Affiliation : School of Human Kinetics, Faculty of Health Sciences, University of Ottawa*

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Dr. Michelle Fortier, Kristen Sherrington, and Olivia Pastore.

Purpose of the Study: The purpose of the study is to explore the perspectives of the students and how they believe the course has influenced their mental health 1-year after taking the course, both of which were during the ongoing COVID-19 pandemic. A secondary aim is to explore the bi-directional relationship between physical activity and mental health.

Participation: At the same time the second survey is administered for this study, there will be a separate link for a SurveyMonkey question in which students enrolled in the Quality of Life course can indicate whether they wish to be contacted in the future to potentially participate in the interviews (if randomly selected) once the grades for the course have been submitted. After the grades have been submitted for the Quality of Life course, the research assistant will collect the emails of those who indicated that they wish to participate in the interviews if selected. The research assistant will then use an online random selection generator to select 5-10 students for the interviews. These interviews will include questions pertaining to my experiences, thoughts and feelings about the Quality of Life course that I will have completed. The interviews will be held via Zoom due to the COVID-19 restrictions.

As a participant I WILL NOT be video recorded. My voice; however, will be recorded during the interviews in order for the researchers to collect my responses.

Risks: I might experience minor psychological or emotional discomfort as a result of the discussions that I may have during the interviews. I have received assurance from the researcher that every effort will be made to minimize these risks. I have also been provided with a copy of emergency services offered both on and off campus, which is provided at the end of this form. I have been assured that if I am experiencing any psychological or emotional discomfort during the interview, I may stop it at any time without suffering any negative consequences.

Benefits: Participation in this study could potentially help support the effectiveness of the Quality of Life course offered at the University of Ottawa. My participation in this study will potentially contribute to the advancement of knowledge in the current field of positive psychology education and help recognize the Quality of Life course as a method of increasing well-being, thus achieving better psychological health.

Confidentiality and anonymity: I have received assurance from the researcher that the information I share during the interviews will remain strictly confidential. The information I share during the interviews might be cited or quoted in the analysis. I have been guaranteed that my identity will be protected through the use of ID number codes to identify participants on all interview transcripts. I have also been assured that professor Fortier will only receive anonymized transcripts from the interviews and all of the identifying data will be removed and destroyed after selection takes place. Lastly, my name will not be revealed in any future documents or publications.

Conservation of data: I understand that all interview data (audio recordings) will be on a locked computer with a protected passcode and hard copies will be kept in the principal investigator's locked office at the University of Ottawa with limited access. The data will be conserved for 5 years following the end of data collection and will then be safely destroyed.

Compensation: No compensation will be given for participating in this study.

Voluntary Participation: There is no obligation to participate in the interview portion of this study, and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If you choose to withdraw from the study, you will also have the option to withdraw your interview data. If this is the case, you can contact the RA directly and indicate that you wish to have your data withdrawn, otherwise your data will be included as it is impossible for the principal investigator to identify individual transcripts.

Acceptance: I, _____, agree to participate in the above research study conducted by Dr. Michelle Fortier, Kristen Sherrington, and Olivia Pastore.

If I have any questions about the study, I may contact the researchers.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Telephone: (613) 562-5387 **Email:** ethics@uottawa.ca

*There are two copies of the consent form, one of which is mine to keep.

Participant:

(Print name)

(Signature)

(Date)

Researcher:

(Print name)

(Signature)

(Date)

Appendix B-Ethics Certificate

22/12/2021

Université d'Ottawa

Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number

H-12-19-5246

Titre du projet / Project Title

Investigating the impact of a semester-long quality of life course at the University of Ottawa

Type de projet / Project Type

Recherche de professeur / Professor's research project

Statut du projet / Project Status

Renouvelé / Renewed

Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)

09/01/2020

Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)

07/01/2023

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22/12/2021

Université d'Ottawa

Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

Le Comité d'éthique de la recherche (CÉR) de l'Université d'Ottawa, opérant conformément à l'*Énoncé de politique des Trois conseils* (2014) et toutes autres lois et tous règlements applicables, a examiné et approuvé la demande d'éthique du projet de recherche ci-nommé.

L'approbation est valide pour la durée indiquée plus haut et est sujette aux conditions énumérées dans la section intitulée "Conditions Spéciales ou Commentaires". Le formulaire « Renouvellement ou Fermeture de Projet » doit être complété quatre semaines avant la date d'échéance indiquée ci-haut afin de demander un renouvellement de cette approbation éthique ou afin de fermer le dossier.

Toutes modifications apportées au projet doivent être approuvées par le CÉR avant leur mise en place, sauf si le participant doit être retiré en raison d'un danger immédiat ou s'il s'agit d'un changement ayant trait à des éléments administratifs ou logistiques du projet. Les chercheurs doivent aviser le CÉR dans les plus brefs délais de tout changement pouvant augmenter le niveau de risque aux participants ou pouvant affecter considérablement le déroulement du projet, rapporter tout événement imprévu ou indésirable et soumettre toute nouvelle information pouvant nuire à la conduite du projet ou à la sécurité des participants.

The University of Ottawa Research Ethics Board, which operates in accordance with the *Tri-Council Policy Statement* (2014) and other applicable laws and regulations, has examined and approved the ethics application for the above-named research project.

Ethics approval is valid for the period indicated above and is subject to the conditions listed in the section entitled "Special Conditions or Comments". The "Renewal/Project Closure" form must be completed four weeks before the above-referenced expiry date to request a renewal of this ethics approval or closure of the file.

Any changes made to the project must be approved by the REB before being implemented, except when necessary to remove participants from immediate endangerment or when the modification(s) only pertain to administrative or logistical components of the project. Investigators must also promptly alert the REB of any changes that increase the risk to participant(s), any changes that considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project or the safety of the participant(s).

Safaa LAMHOUEB

Coordonnateur de l'éthique / Ethics Coordinator

Pour/For **Daniel LAGAREC** Président(e) du/ Chair of the **Comité d'éthique de la recherche en sciences de la santé et sciences / Health Sciences and Sciences Research Ethics Board**

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Appendix C-Pre-Interview Package

Pre-Interview Package-Quality of Living Study

Principal Investigator : Dr. Michelle Fortier¹

Research Assistant : Olivia Pastore¹ MA

Research Assistant : Kristen Sherrington

Section A-Key Definitions

Purpose: The purpose of the study is to explore the perspectives of the students and how they believe the course has influenced their mental health 1-year after taking the course, both of which were during the ongoing COVID-19 pandemic. A secondary aim is to explore the bi-directional relationship between physical activity and mental health.

Before we start the interview I have some key definitions to refresh you on certain topics and to ensure we are aligned during the interview process.

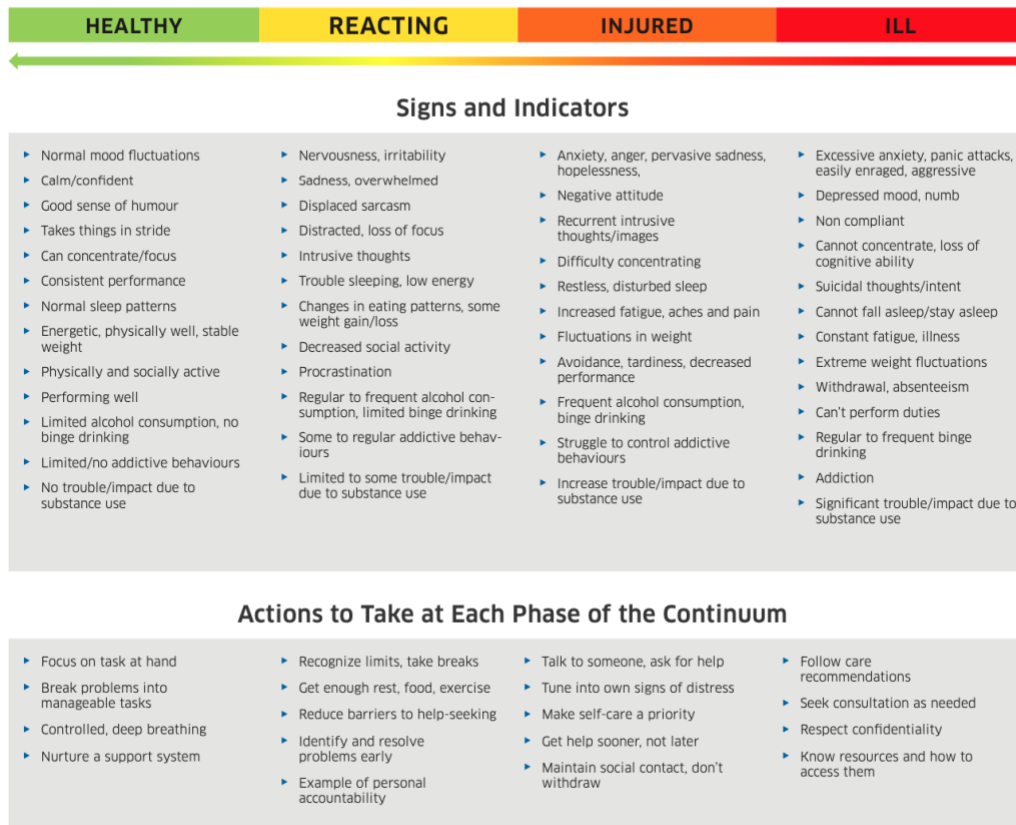
Mental health: For the purpose of this research mental health is defined as a combination of emotional, psychological, and social well-being. Emotional well-being refers to an individual's feelings of happiness and life satisfaction, psychological well-being refers to positive functioning in terms of self-realization, and social well-being is positive functioning in terms of social value. This position is based on Keyes theory of mental health. Mental health is separate from mental illness and the two can exist at the same time (Keyes, 2005).

Mental Illness: in contrast to mental health. Mental illness is defined as a condition that causes alterations in thinking, emotions, and/or behaviour which lead to significant psychological distress and impaired functioning (Government of Canada, 2020).

Mental Health Continuum:

Below is a continuum that has been developed to describe mental health and the different stages. Please read it and try to identify where you are the day of the interview. If you ever feel you are struggling during the interview or the topics are difficult to discuss, please ask me to stop and we can take a break/move on from that question. Remember I am here as a resource for you and can be someone to talk to at any point in this research process.

Mental Health Continuum Model



Section B- Topics in the course

Below is a table of all the topics you discussed in class and the quality of living experience you performed. Please refresh your mind with the table below and if you have any questions about it, let me know.

Quality of Living Topics With The Corresponding QOL Experience Assigned

Topic	QOL Experience
Introduction to class and concepts	A: Write your daily happiness ingredients presently (minimum 3 maximum 7) B: Insert them into your days over the next week and journal your experience. Identify your number one ingredient.

Simple happiness strategies: smiling, laughing, posture, touch, and slowness	A: smile more often B: Try to slow down Journal about your experience
Rest, Breathing, Sleeping, and Mindfulness	Try meditation for 3-7 days Comment on your experience in your journal
Other Therapeutic Approaches: Acceptance Commitment and Self-Compassion	Try one of three self-compassion activities. Journal about your experience
Stress Management, Thought Control, and Time Management	A: Thought control activity B: Draft a weekly schedule for a normal week and build in happiness activities/practices Journal about your experience
Leisure, Physical Activity, and Yoga	A: Plan to do enjoyable physical activity-outdoors if you can for at least 20-30 minutes, 4-7 days this week Journal about your experience
Nature and Screens/Social media	A: Do an awe walk outdoors for at least 15 min; 3-7 days this week B: Screen detox Journal about your experience
Relationships	A: Improve one of your relationships by connecting in person (unplugged) and by improving your listening B: Write a gratitude letter to someone about something they did. Journal about your experience
Gratitude and Journaling	A: For at least 3 evenings in the next week write 2-4 things you were grateful for that day and rate your mood before and after. Journal your experience
Random Acts of Kindness (RAK), Volunteering, and Forgiveness	A: choose amongst the RAK options provided in class B: Write a forgiveness letter Journal about your experience
Special Topics and Conclusions	Optional: Re-write your daily happiness ingredients and contrast it with what you would say they are now

Note. This table demonstrates the quality of living topic discussed during the course and the corresponding weekly assignment or QOL experience associated with the topic.

Resources-Mental Health

COVID-19 has been difficult and can take a toll on mental health. As well, life in general can be difficult and impact our mental health. If this interview has triggered any negative effects/mental health and you feel as though you need support you can contact myself and I will help you or I have attached some resources below. These are some of the resources offered on campus and in the Ottawa area but feel free to contact me and ask for additional resources/help if you need it.

University Wellness Centre

<https://www.uottawa.ca/wellness/>

Ottawa Crisis and Distress Centre

Distress: 613-238-3311

Crisis: 613-722-6914

Text: 343-306-5550 (10am -11pm)

2SLGTBQ+Youthline

<https://www.youthline.ca/>

Appendix D-Interview Guide

Interview Guide

Purpose of Study: The purpose of the study is to explore the perspectives of the students and how they believe the course has influenced their mental health 1-year after taking the course, both of which were during the ongoing COVID-19 pandemic. A secondary aim is to explore the bi-directional relationship between physical activity and mental health.

Introduction Script

Hi, how are you? Thank you for coming in today and agreeing to participate in another interview for the study regarding the Quality of Life course that you completed a year ago. These interviews are looking to explore your honest thoughts and opinions, so answer as openly and as freely as you would like. There are no right or wrong answers. Do not be afraid to answer truthfully as it would be best for the study if I got your honest answers about the course so that our findings are as accurate as possible. The results from this study will be used to inform future efforts to enhance the Quality of Life course in order to promote increased quality of life in its students. This interview will take approx.. 1 hour of your time. As discussed in the consent form, I will be audio recording and transcribing what is said today. Your information will be kept completely confidential and your name will not be revealed to anyone or used in any future publications. Do you have any questions regarding the study or interviews before we begin?

1. Considering your experience taking the Quality of Life course, describe in detail any changes, if any, you have seen in yourself 1-year later from the class? Give examples of how you changed.
 - a. Describe the role of this course in contributing to these changes?
2. Before taking the QOL course, what would you rate your mental health on a scale of 1-10 and why? What was it right after the class? What is it now, 1-year after taking the course?
 - b. What percentage (out of 100) would you attribute these changes to the course and why?
3. I understand it is long since you took the course, but a year later what are the biggest lessons (1-3 of them) that you still implement in your life from the class?
 - a. Can you give an example of how you implement these lessons in your life day-to-day?

*Thank you for sharing your experiences. Now I would like to understand the different skills from the course, if any, that you particularly enjoyed or found valuable following the course.

4. Considering all of the topics you learned and that were discussed in the course, are there any you find particularly valuable for your mental health? Explain why.
 - a. What is the most useful quality living experience for your mental health now?
 - b. Which of the activities have you maintained now, 1-year later?
 - c. What are the challenges or barriers to incorporating these activities into your schedule now?
 - d. Aside from the course activities, have you incorporated any other activities into your schedule to increase your mental health in the past year? If so, explain them.

*Thank you for sharing about the certain activities you learned. Now I want to understand a little more about how the COVID-19 has influenced your mental health and how the class has potentially helped you.

5. How has the QOL course helped you during the COVID pandemic? Give specific examples if you can.

*Thank you for sharing. Now I would like to explore a bit more about your physical activity levels and how it is related to your mental health.

6. Before taking the QOL course, what would you describe your physical activity routine? What was it right after the class? What is it now, 1-year after taking the course?
 - a. Would you attribute any of these changes to the quality of living course?
7. Overall, how has the COVID-19 Pandemic affected your physical activity levels? Explain.
 - a. How would you compare your physical activity before and at the beginning of the pandemic to now?
8. Has your physical activity affected your mental health throughout the COVID-19 pandemic? Explain.
9. Thinking of the reverse, has your mental health affected your physical activity throughout the COVID-19 pandemic? Explain.

*Is there anything else you wanted to add or that we should know about how this course has influenced your mental health or physical activity from this course?

Conclusion Script

We sincerely thank you for participating in this interview and sharing your experience with us. Before we finish, is there anything else that you wanted to add?

Post Interview Reflections (Completed by the PI immediately following the interview):

Appendix E-Godin Leisure Time Questionnaire

Godin Leisure-Time Exercise Questionnaire

During a typical 7-Day period (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

Weekly leisure activity score = $(9 \times \text{Strenuous}) + (5 \times \text{Moderate}) + (3 \times \text{Light})$

	Times per week		Totals
a) STRENUOUS EXERCISE (HEART BEATS RAPIDLY) (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)		X9	
b) MODERATE EXERCISE (NOT EXHAUSTING) (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)		X5	
c) MILD/LIGHT EXERCISE (MINIMAL EFFORT) (e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)		X3	
WEEKLY LEISURE-TIME ACTIVITY SCORE			

EXAMPLE
 Strenuous = 3 times/wk
 Moderate = 6 times/wk
 Light = 14 times/wk
Total leisure activity score = $(9 \times 3) + (5 \times 6) + (3 \times 14) = 27 + 30 + 42 = 99$

Godin Scale Score	Interpretation
24 units or more	Active
14 – 23 units	Moderately Active
Less than 14 units	Insufficiently Active/Sedentary

Adapted from: Godin, G. (2011). The Godin-Shephard leisure-time physical activity questionnaire. *Health & Fitness Journal of Canada*, 4(1), 18-22.



Appendix F- Mental Health Short-Form Continuum Questionnaire

Adult MHC-SF (ages 18 or older)

Please answer the following questions are about how you have been feeling during the past month. Place a check mark in the box that best represents how often you have experienced or felt the following:

During the past month, how often did you feel ...	NEVER	ONCE OR TWICE	ABOUT ONCE A WEEK	ABOUT 2 OR 3 TIMES A WEEK	ALMOST EVERY DAY	EVERY DAY
1. happy						
2. interested in life						
3. satisfied with life						
4. that you had something important to contribute to society						
5. that you belonged to a community (like a social group, or your neighborhood)						
SEE BELOW 6. that our society is a good place, or is becoming a better place, for all people						
7. that people are basically good						
8. that the way our society works makes sense to you						
9. that you liked most parts of your personality						
10. good at managing the responsibilities of your daily life						
11. that you had warm and trusting relationships with others						
12. that you had experiences that challenged you to grow and become a better person						
13. confident to think or express your own ideas and opinions						
14. that your life has a sense of direction or meaning to it						

Note: The original wording for item 6 was “that our society is becoming a better place for people like you.” This item does not work in all cultural contexts. However, when validating the MHC-SF, test both versions of item 6 to see which one works best in your context.