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# Ontario Adults' Mental Health, Wellbeing, and Prosocial Behaviour During the First 16 Months of the COVID-19 Pandemic: A Longitudinal Study

Katie J. Shillington, *University of Western Ontario*

Supervisor: Irwin, Jennifer D., *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Health and Rehabilitation Sciences

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## Abstract

The overall purpose of this dissertation was to provide a detailed assessment of the mental health, wellbeing, and prosocial behaviour of Ontario adults aged 30–59 (those at highest risk for losing years of healthy life due to chronic disease) during the first 16 months of the COVID-19 pandemic (April 2020–August 2021). To address this dissertation’s purpose specifically, four distinct yet thematically connected articles were written. **Article 1** provides the starting point of this program of research via an overview of Ontario adults’ inter-related health behaviours (i.e., physical activity, sedentary behaviours, and dietary intake) and outcomes including, mental health, and wellbeing during the first few months of the COVID-19 pandemic (April–July 2020) along with differences between physical activity status and wellbeing, mental health, and dietary intake. **Article 2** presents a cross-sectional overview of the same adults’ prosocialness—inclusive of kindness—during the identical timeframe as Article 1 and, given the disparate risks associated with living locales at the time, also explored whether prosocial behaviour differed among those living in urban versus rural settings. To assess the longer term patterns of mental health, wellbeing, and prosocial behaviour as the pandemic continued, the specific purposes of **Articles 3** and **4** were to quantitatively assess participants’ mental health and wellbeing (Article 3) and their prosocial behaviour (inclusive of kindness), while also qualitatively exploring their lived experiences of prosocial behaviour (Article 4) over the first 16 months of the pandemic.

The findings from **Article 1** indicated that during the first few months of the COVID-19 pandemic, in general, individuals’ ( $n = 2,156$ ) mental health and wellbeing were poor. The average score for participants’ mental health was concerning and

indicative of experiencing some mental health problems during this timeframe. With respect to wellbeing, participants' scores were below the "normative" range for means in Western populations in several of the domains (i.e., satisfaction with their physical and mental health, respectively, as well as their satisfaction with feeling part of their communities and their future security). Further analysis revealed that participants who engaged in moderate-to-vigorous physical activity (MVPA) during the initial stages of the pandemic reported significantly higher levels of positive mental health and wellbeing, compared to those who did not engage in MVPA.

The results from **Article 2** revealed that participants ( $N = 2,188$ ) scored high on prosocial behaviour, as well as on the three kindness-related questions pertaining to their awareness of kindness around them, engagement in deliberate acts of kindness, and view of kindness as crucial to their pandemic experience, during the first few months of the COVID-19 pandemic. Interestingly, there was no statistically significant difference in participants' prosocialness based on geographic location (urban vs. rural).

The findings from **Article 3** identified that participants' ( $N = 2,188$ ) mental health significantly improved over the first 16 months of the pandemic, though their average scores at each time point indicated that they still may have been experiencing mental health problems throughout this timeframe. Statistically significant changes in participants' wellbeing were noted on several domains. Specifically, participants' satisfaction with their standard of living, physical health, mental health, personal relationships, and spirituality/religion significantly decreased over time, while their satisfaction with their safety, community connectedness, and future security significantly

decreased during the first few months of the COVID-19 pandemic and increased thereafter.

The results from **Article 4** revealed that participants' ( $N = 2,188$ ) prosocialness significantly increased over time, while their awareness of kindness around them, engagement in deliberate acts of kindness, and view of kindness as crucial to their pandemic experience significantly decreased. Additionally, participants described their experiences receiving, giving, and witnessing kindness, their perspectives on how prosocial behaviour shifted throughout the pandemic, their experiences of prosocial burnout, and they provided several examples of how they engaged in prosocial behaviours, and continued to do so, throughout the ongoing pandemic.

Based on the findings presented in this dissertation, it can be concluded that during the early stages of the pandemic, Ontario adults' mental health and wellbeing were, in general, poor, while they reported high levels of prosocialness. As the pandemic continued, findings revealed that participants' mental health and prosocial behaviour improved, while their wellbeing declined in several domains. Participants' improvement in mental health may be explained, in part, by their high levels of prosocialness. These findings are particularly important as prosocial behaviour might be an approach worthy of further investigation as a mental health and wellbeing support during and following the pandemic.

*Keywords:* prosocial behaviour; kindness; mental health; wellbeing; adults; COVID-19

## Summary for Lay Audience

Public health emergencies, such as the COVID-19 pandemic, can exacerbate pre-existing mental health problems and lead to poor wellbeing, which can have long-term impacts on individuals. This is particularly concerning for adults aged 30–59 years, who are most at risk for losing years of healthy life due to chronic disease. Prosocial behaviour is one approach that has been associated with physiological benefits that can lead to improved mental and physical health and longevity. However, the COVID-19 pandemic has presented an extreme situation wherein typical expressions of prosocial behaviour might be challenged, thus providing a rare context to study this construct. To this end, the overarching purpose of this dissertation was to provide a detailed assessment of the mental health, wellbeing, and prosocial behaviour of Ontario adults during the first 16 months of the COVID-19 pandemic (April 2020–August 2021). To specifically address this dissertation’s purpose, four articles were written.

**Article 1** provides the starting point of this program of research via an overview of Ontario adults’ inter-related health behaviours (i.e., physical activity, sedentary behaviours, and dietary intake) and outcomes including, mental health, and wellbeing during the first few months of the COVID-19 pandemic (April–July 2020) along with differences between physical activity status and wellbeing, mental health, and dietary intake. It was concluded that, in general, individuals’ mental health and wellbeing were poor, and that those who engaged in physical activity during the initial stages of the pandemic had better mental health and wellbeing than those who did not engage in physical activity.

**Article 2** presents a cross-sectional overview of the same adults' prosocialness—inclusive of kindness—during the identical timeframe as Article 1 and, given the disparate risks associated with living locales at the time, also explored whether prosocial behaviour differed among those living in urban versus rural settings. It was found that the majority of participants reported high prosocial behaviour and kindness; however, there was no difference in participants' prosocialness based on geographic location (urban vs. rural).

Given the evolving nature of the pandemic, the purpose of **Article 3** was to assess adults' mental health and wellbeing over time during the first 16 months of the pandemic in Ontario. It was concluded that participants' mental health improved over time, while their wellbeing improved in some domains, but declined in the majority of domains.

In **Article 4**, Ontario adults' prosocial behaviour—inclusive of kindness—was assessed over the first 16 months of the pandemic, and their lived experiences of prosocial behaviour were explored via group discussions. It was found that participants' prosocial behaviour increased over time, while their awareness of kindness around them, engagement in deliberate acts of kindness, and view of kindness as crucial to their pandemic experience decreased over time. Participants described their experiences receiving, giving, and witnessing kindness, their perspectives on how prosocial behaviour shifted throughout the pandemic, their experiences of prosocial burnout, and they provided several examples of how they engaged in prosocial behaviour during the pandemic.

Given the uncertainty and novelty of the COVID-19 pandemic, understanding Ontario adults' mental health, wellbeing, and prosocial behaviour is a crucial starting

place, in order to develop appropriate health promotion interventions. Findings from this program of research might aid program planners in designing interventions that meet the needs of those most at risk for losing years of healthy life due to chronic disease, with the ultimate goal of improving individuals' health.

## Co-Authorship Statement

The material presented in this dissertation is my original work. However, I would like to acknowledge the important contributions and collaborations of five co-authors. First and foremost, I would like to thank my advisor, Dr. Jennifer D. Irwin, for her guidance, insight, and support with regard to all aspects of the four articles included in this dissertation. Second, I would like to recognize my advisory committee, Drs. Shauna M. Burke and Trish Tucker, for their contributions to the conceptualization, design, and development of *The HOPE Study* and their editorial guidance on all four articles. Lastly, I would like to thank Dr. Leigh M. Vanderloo, in particular for her statistical expertise, and to both she and Dr. Victor Ng for their contributions to the conceptualization, design, and development of *The HOPE Study*, and their editorial guidance on all four articles. Lastly, I would like to thank my incredible research assistants, Zoha Raza and Jaclyn Cook, who volunteered their time to assist with various tasks related to *The HOPE Study*.



## **Dedication**

For Sophia, Angie, and Jocelyn – even amidst the darkest of days, you always found ways to be kind. Your light, love, and passion give meaning to my work and remind me why I do what I do. I wish you could see this. This is for you.

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Throughout my PhD I have been fortunate to be surrounded by incredible friends, family, mentors, and colleagues, without whom I would not be the person or academic I am today. To the following people, I am eternally grateful for your unwavering support, genuine kindness, and enthusiastic encouragement over the years.

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I like to joke that I would have dropped out of my PhD if it were not for Julia’s friendship, and in part, this is true. I certainly wouldn’t be the person I am today without you, Julia. Thank you for validating my feelings, for believing in me when I didn’t believe in myself, and for celebrating my wins as if they were your own. I cannot think of anyone else I would rather FaceTime 3+ times per day. I am so proud of you, and I cannot wait to see all that you will accomplish during your PhD.

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## **List of Abbreviations**

HOPE	<u>H</u> ea <u>l</u> th <u>O</u> utcomes for Adults During and Following the COVID-19 <u>P</u> and <u>e</u> mic
WHO	World Health Organization
QOL	Quality of Life
CMHA	Canadian Mental Health Association
IHME	Institute for Health Metrics and Evaluation
PRECEDE-	Predisposing, Reinforcing, and Enabling Constructs in
PROCEED	Educational/Ecological Diagnosis and Evaluation
MAPP	Mobilizing for Action Through Planning and Partnerships
T1	Time Point 1
T2	Time Point 2
T3	Time Point 3
MVPA	Moderate-to-Vigorous Physical Activity
LPA	Light Physical Activity
CPSS-COVID	Canadian Perspectives Survey Series 1: Impacts of COVID-19
BMI	Body Mass Index
GPAQ	Global Physical Activity Questionnaire
STC	Starting the Conversation
MHI-5	Mental Health Inventory-5
PWI-A	Personal Wellbeing Index-Adult
SPSS	Statistical Package for Social Sciences
SD	Standard Deviation

CI	Confidence Interval
M	Mean
CTRA	Conserved Transcriptional Response to Adversity
PSA	Prosocialness Scale for Adults
ANOVA	Analysis of Variance

## Chapter 1: Purpose and Introduction

### Purpose

In March 2020, COVID-19 was declared a global pandemic by the World Health Organization (WHO). At this time, little was known about the COVID-19 virus let alone how individuals' lifestyle-related health behaviours would be impacted, if at all, during the pandemic timeframe. Given the role that health behaviours play in the development or prevention of chronic conditions (Irwin et al., 2023; McKenzie et al., 2022), understanding the lifestyle-related health behaviours of adults aged 30–59 years—those most at risk for losing years of healthy life due to chronic disease (WHO, 2005)—was imperative, especially in the context of the COVID-19 pandemic. As such, an ongoing large-scale, longitudinal study titled *Health Outcomes for Adults During and Following the COVID-19 Pandemic (HOPE)* was initiated in April of 2020, with the overarching aim of assessing adults' lifestyle-related health behaviours and outcomes, including physical activity, sedentary behaviour, sleep, diet, mental health, wellbeing, and prosocial behaviour, during and following the COVID-19 pandemic in Ontario, Canada.

While data on several lifestyle-related health behaviours and outcomes were collected in *The HOPE Study*, focusing on adults' mental health, wellbeing, and prosocial behaviour during the COVID-19 pandemic was of particular interest and importance, given the established relationship among these variables pre-pandemic (Lyubomirsky et al., 2004; Nelson-Coffey et al., 2017; Paviglianiti & Irwin, 2017; Raposa et al., 2016; Shillington et al., 2020; Shillington et al., 2021a). Therefore, the **overall purpose of this dissertation** was to provide a detailed assessment of the mental health, wellbeing, and prosocial behaviour of Ontario adults during the first 16 months of the COVID-19

pandemic (April 2020–August 2021). To address this dissertation’s purpose, four distinct yet thematically connected articles were written (Shillington et al., 2021b; Shillington et al., 2022a; Shillington et al., 2022b; Shillington et al., 2023).

To provide an overview of relevant and interrelated constructs of interest that serve as the foundation of this dissertation, the two-fold purpose of **Article 1** (Chapter 2; Shillington et al., 2021b) was to: (1) provide an assessment of Ontario adults’ lifestyle-related health behaviours (i.e., physical activity, sedentary behaviour, dietary intake), and outcomes including mental health, and wellbeing during the first few months of the COVID-19 pandemic (April–July 2020); and (2) investigate the difference between physical activity status and mental health, wellbeing, and dietary intake. It has been well-established in the literature that engagement in physical activity can lead to improvements in mental health and wellbeing (e.g., Luo et al., 2022; McGregor et al., 2028; Rollo et al., 2020). As such, the decision to include additional constructs, and especially the movement behaviour variables (i.e., physical activity and sedentary behaviour) together with mental health and wellbeing in this article was purposeful, as to provide readers with a more complete understanding of the relationship among these constructs during the early stages of the pandemic.

While prosocial behaviour has been found to contribute to positive health and wellbeing (Lyubomirsky et al., 2004; Nelson-Coffey et al., 2017; Paviglianiti & Irwin, 2017; Raposa et al., 2016; Shillington et al., 2020; Shillington et al., 2021a), people’s abilities to engage in prosocial behaviour can be threatened by environmental and interpersonal disruptions (Caprara et al., 2005; Columbus, 2020), such as the COVID-19 pandemic. In addition to pandemic-associated interpersonal disruptions, early months of



the pandemic also revealed disparate risks associated with living locales at the time (Huang et al., 2021). As such, the purpose of **Article 2** (Chapter 3; Shillington et al., 2022a) was to: (1) provide a cross-sectional overview of adults' prosocialness during the initial stages of the pandemic in Ontario; and (2) examine whether prosocial behaviours differed among adults living in urban versus rural settings. Given that prosocial behaviour can serve as a protective factor against negative mental health outcomes (Layous et al., 2014), understanding prosocial behaviour in the context of geographic location is particularly important as individuals living in Canadian rural locations experienced social isolation, loneliness, and poor mental health pre-pandemic (Bolin et al., 2015; Monteith et al., 2020; Public Health Agency of Canada, 2011).

Articles 3 and 4 built off of the foundational findings presented in the first two articles, by reporting on how the mental health, wellbeing, and prosocial behaviour of Ontario adults changed as the pandemic progressed. Specifically, **Article 3** (Chapter 4; Shillington et al., 2022b) quantitatively assessed adults' mental health and overall wellbeing over time during the first 16 months of the pandemic in Ontario, Canada. Further, the purpose of **Article 4** (Chapter 5; Shillington et al., 2023) was two-fold: (1) to quantitatively assess adults' prosocial behaviour over time during the first 16 months of the pandemic in Ontario, Canada; and, (2) to more deeply explore, via focus groups, a sub-sample of Ontario adults' lived experiences of prosocial behaviour. Given the novelty of the COVID-19 pandemic, understanding how individuals' mental health, wellbeing, and prosocial behaviour changed over time was vital in order to inform the development of future programs/interventions to support Ontario adults.

The current dissertation was written using the integrated-article format, in which each chapter (2–5) represents a separate manuscript that has been submitted to (Shillington et al., 2022b) or published (Shillington et al., 2021b; Shillington et al., 2022a; Shillington et al., 2023) in a peer-reviewed academic journal and focuses on selected lifestyle-related health behaviours and outcomes of Ontario adults during the COVID-19 pandemic. Specifically, all four articles included in this dissertation relate to lifestyle-related health behaviours and outcomes of mental health, wellbeing, and prosocial behaviour. Consequently, some of the information presented in the purpose and introduction, and in each of the subsequent chapters, may be repeated. The remainder of this chapter will: provide an overview on adults’ mental health, wellbeing, and prosocial behaviour; discuss these constructs in the context of the COVID-19 pandemic and relevant health promotion and intervention models; and provide the rationale for the program of research included in this dissertation.

## **Introduction<sup>1</sup>**

### ***Mental Health and Wellbeing***

Mental health is an integral component of overall health and is conceptualized by the WHO as “a state of mental wellbeing that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community” (WHO, 2022a, para.1). Mental health is not merely the absence of mental illness; rather, mental health exists on a continuum that consists of the presence and absence of mental illness and mental health symptoms (Keyes, 2002). The ways individuals experience mental health along the continuum vary and can fluctuate in response to changing

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<sup>1</sup> Portions of this chapter have been submitted for publication (Shillington et al., 2022b) and/or published (Shillington et al., 2021b; Shillington et al., 2022a; Shillington et al., 2023).

environments, adverse experiences, and life events (Headey & Wearing, 1989; Peter et al., 2021; WHO, 2022b). Individual, social, and structural factors can interact to protect or undermine a person's mental health (Oliveros et al., 2022; WHO, 2022b). As such, the WHO (2022b) recommends utilizing a life course approach to understand the factors that can influence a person's mental health.

The aim of the life course approach to mental health is to explore how biological, psychological, social, and structural factors, acting across the life span, influence mental health (Heikkinen, 2011; WHO, 2022b). At the individual level, biological and psychological factors can impact a person's ability to manage their emotions and engage in meaningful relationships, activities, and responsibilities (WHO, 2022b). In addition to individual factors, a person's social environment and community also play a role in supporting or undermining their mental health (WHO, 2022b). The social environment consists of a person's immediate surroundings, namely family, friends, partners, and colleagues, and can include opportunities for meaningful interaction (WHO, 2022b). In addition to individual and social factors, structural factors are those that relate to "broader sociocultural, geopolitical, and environmental surroundings, such as infrastructure, inequality, social stability, and environmental quality" (WHO, 2022b, p. 20). Together, these factors interact to influence one's mental health, positively or negatively (WHO, 2022b).

Subjective wellbeing differs from mental health as it is a component of quality of life (QOL), and can include both objective (e.g., the degree of physical disability) and subjective (e.g., perceived stress) dimensions (Cummins et al., 2004). However, the two dimensions do not form statistically reliable relationships with one another and should be

measured separately (Cummins, 2010a; The International Wellbeing Group, 2013). The subjective dimension of QOL is understood as subjective wellbeing (hereafter referred to as wellbeing) and measures a person's satisfaction with life as a whole and/or the various domains of life (e.g., health, standard of living, community connectedness; Cummins, 2004; The International Wellbeing Group, 2013). The theory of Subjective Wellbeing Homeostasis suggests that wellbeing is managed by “dispositional, genetically pre-wired, neurological systems” (Cummins, 2010b, p. 4), such that an individual attempts to maintain a baseline level of wellbeing (Cummins, 2010b). This means that a person's wellbeing is relatively stable and that while it can change in the short-term, over time an individual's wellbeing will return to a baseline level (Cummins, 2010a; Headey & Wearing, 1989). In general, a person experiences positive wellbeing, which reflects a stable positive mood and is often characterized by contentment, happiness, and excitement (Cummins, 2010a). However, it is possible for a sufficient adverse event, such as the COVID-19 pandemic, to depress an individual's wellbeing and can result in their baseline level of wellbeing falling below its homeostatic range (Cummins, 2004; Headey & Wearing, 1989).

Those exposed to significant adverse events and/or negative individual, social, and structural factors are at a heightened risk of experiencing mental health problems and poor wellbeing (Canadian Mental Health Association [CMHA], 2021). In 2018, it was estimated that globally, 506 million adults aged 30–69 experienced a mental disorder (Institute for Health Metrics and Evaluation [IHME], 2023). Anxiety and depression were the leading mental health disorders in both men and women, with depression being most prevalent among adults pre-pandemic (IHME, 2023). In Canada the prevalence of mental

disorders is concerning because one in five people experience a mental health problem in any given year, and by the age of 40, approximately 50% of the population will have or have had a mental disorder (CMHA, 2021). This is worrisome as there is a known relationship between mental health problems and chronic physical conditions (e.g., CMHA, 2008; Evans et al., 2005; Patten, 1999; Stein et al., 2019). Further, mental health problems can negatively impact an individual's social (Kupferberg et al., 2016) and cognitive functioning (Bunce et al., 2008; De Pue et al., 2021) and contribute to the adoption of poor health behaviours (e.g., CMHA, 2008; Hoang et al., 2019; Parletta et al., 2016). Individuals living with mental disorders are also more susceptible to experiencing poverty, unemployment, and social isolation (CMHA, 2008). Further, global threats (e.g., inequities, violence, natural disasters, public health emergencies) can compromise a person's mental health and negatively impact their wellbeing (WHO, 2022b). One global threat that has exacerbated pre-existing inequities (Warren & Bordoloi, 2020) and taken the forefront in recent years is the COVID-19 pandemic (WHO, 2022b).

### **Adults' Mental Health and Wellbeing During the COVID-19 Pandemic.**

Public health emergencies, such as the COVID-19 pandemic, can exacerbate pre-existing mental health problems and introduce new concerns, both of which can have long-term impacts (Moreno et al., 2020; WHO, 2022b). The pandemic introduced several stressors including: (1) negative health impacts as a result of the virus; (2) challenges associated with mandated public health protections; (3) financial strain; and (4) misinformation (United Nations, 2020). Many individuals fear infection and death due to COVID-19, either for themselves or their loved ones (Quadros et al., 2021). As a way to mitigate the spread of the virus, in earlier years of the pandemic, public health measures were

implemented globally, including such things as national and localized quarantines, lockdowns, restrictions of mass gatherings, social distancing measures, compulsory mask wearing, and school closures (Ayouni et al., 2021). Though the measures were implemented to protect peoples' health at a population level, they inadvertently contributed to additional barriers to mental health including social isolation, loneliness (McQuaid et al., 2021; Su et al., 2023), feelings of helplessness (Polizzi et al., 2020), and strained relationships (Ellyatt, 2022). The pandemic also exacerbated global pre-existing inequities, including poverty and unemployment rates (Warren & Bordoloi, 2020), both of which are known risk factors for mental disorders (Weich & Lewis, 1998). Due to the rapid spread of information, the COVID-19 "infodemic" resulted in the dissemination of false information, including rumors and intentional disinformation, which has undermined individuals' mental and physical health, and wellbeing (Elbarazi et al., 2022; Rachul et al., 2020; WHO et al., 2020c). Such stressors have led to reported mental health problems at a global level, including psychological distress, depression, anxiety, post-traumatic stress disorder (WHO, 2022b), and poor wellbeing (Elbarazi et al., 2022). Specifically, during the first year of the pandemic researchers estimated that the prevalence of depression and anxiety increased globally by 28% and 26%, respectively (Santomauro et al., 2021).

Depression and anxiety have increased on a global level, with substantial implications at the national level as well. For instance, one in four people living in Canada screened positive for symptoms of depression, anxiety, or post-traumatic stress disorder in Spring 2021, compared to the Fall of 2020 wherein the prevalence was one in five (Statistics Canada, 2021). Specifically, the proportion of adults aged 25–44 who

screened positive for symptoms of depression and/or anxiety increased from 18% to 23%, and 15% to 20%, respectively (Statistics Canada, 2021). Further, a greater number of Canadian adults (aged 25–64) screened positive for at least one mental disorder from Fall 2020 to Spring 2021 (Statistics Canada, 2021). Of the individuals living in Canada who screened positive for at least one mental disorder, 94% reported experiencing negative impacts related to the COVID-19 pandemic, including loneliness, physical health conditions, and relationship challenges (Statistics Canada, 2021). It is important to note that screening positive for a mental disorder did not always indicate the presence of a mental disorder, as the self-report instruments used by Statistics Canada, in their Survey on COVID-19 and Mental Health, measured the prevalence of mental disorder *symptoms* and *probable diagnoses* (Statistics Canada, 2021). As such, a positive screen was not indicative of a medical diagnosis and changes in behaviours, thoughts, and feelings can be a healthy response to stressful situations, such as the COVID-19 pandemic (Government of Canada, 2020; Statistics Canada, 2021).

Regardless of whether individuals screen for a mental disorder, substantive adverse experiences, such as those related to the pandemic, can negatively impact the mental health, wellbeing, and QOL of individuals (Government of Canada, 2020; Statistics Canada, 2021). Notably, in a study conducted by Jenkins and colleagues (2021), Canadian adults reported a deterioration in mental health during the initial stages of the COVID-19 pandemic (May 2020). This aligns with findings from Dozois (2021), who explored how Canadian adults were coping with the COVID-19 pandemic and investigated the impact of the pandemic on adults' experiences of anxiety and depression. While the author did not specify the timeframe during which data was collected, they

concluded that since the onset of the COVID-19 pandemic the number of participants with anxiety and depression increased from 5% to 20% and 4% to 10%, respectively (Dozois, 2021). Additionally, Capaldi and colleagues (2021) compared Canadian adults' mental health from pre-pandemic (January–December 2019) to the second wave of the pandemic (September–December 2020). Despite the fact that over half of the participants reported positive mental health, the authors found that, compared to pre-pandemic, there were significantly fewer participants who reported high levels of positive mental health during the second wave of the pandemic (Capaldi et al., 2021). Building off of these findings, Capaldi and colleagues (2022) investigated whether positive mental health and perceived change in mental health differed from the second (September–December 2020) to the third (February–May 2021) wave of the COVID-19 pandemic. The authors concluded that Canadian adults' mental health deteriorated from the second to the third wave of the pandemic, with fewer participants reporting positive mental health and improved mental health (Capaldi et al., 2022).

With respect to wellbeing, few studies have been conducted in Canada with adults as the target population. However, Zajacova and colleagues (2020) investigated changes in adults' psychological wellbeing during the early months of the pandemic in Canada and concluded that individuals' psychological wellbeing significantly decreased from March–May 2020. Thus, it is patently evident that the COVID-19 pandemic has negatively impacted the lives of people globally. Finding ways to promote positive mental health and wellbeing among individuals is critical in helping them survive and thrive in such complex and challenging times. One way to achieve positive mental health and wellbeing might be through prosocial behaviour.



### ***Prosocial Behaviour***

Prosocial behaviour can be understood as “voluntary behaviour intended to benefit another, such as helping, donating, sharing, and comforting” (Eisenberg et al., 2016, p. 1668) and can encompass many domains including compassion, care, love, sympathy, empathy, altruism, and kindness (Dunfield, 2014; Eisenberg et al., 2014). Similar to mental health, prosocial behaviour can be understood using a multilevel perspective, namely the micro, meso, and macro levels (Penner et al., 2005). At the micro level, prosocial behaviour is considered on the basis of individual differences in prosocial tendencies (i.e., genetic predispositions to act prosocially and the role of evolution; Penner et al., 2005). Whereas at the meso—or interpersonal—level, researchers consider prosocial behaviour in the context of the helper-recipient dyad (Penner et al., 2005). This level is the dominant discourse and provides the foundation for understanding *why* people help each other (Penner et al., 2005). Lastly, at the macro level prosocial behaviour is understood in the context of groups and large organizations; a common form of prosocial behaviour at this level is volunteer work (Penner et al., 2005). Volunteering—defined as “any activity in which time is given freely to benefit another person, group, or organization” (Wilson, 2000 p. 1)—is a form of helping behaviour that has been linked to greater life satisfaction, QOL, and wellbeing, as well as reduced depression (Jenkinson et al., 2013; Tabassum et al., 2016). Further, prosocial spending, which is understood as spending money on other people, has been associated with improved wellbeing (Dunn et al., 2020) and happiness (Dunn et al., 2008; Dunn et al., 2020). Prosocial behaviour also extends beyond giving time and money to include actions such as complimenting

someone, holding the door open for a stranger, providing care for a sick family member/friend, comforting a loved one, and/or returning a lost item (Aknin et al., 2019).

Engagement in prosocial behaviour is associated with physiological (Lazar & Eisenberger, 2022) and psychological benefits (Layous et al., 2012; Lyubomirsky et al., 2005; Nelson et al., 2015; Nelson et al., 2016; Raposa et al., 2016). Specifically, Lazar and Eisenberger (2022) found that those who engaged in prosocial behaviour after experiencing a stressful situation had a significant reduction in heart rate, diastolic blood pressure, and mean arterial pressure. This is particularly important as elevated heart rate and blood pressure can lead to hypertension, a known risk factor to cardiovascular disease (Reule & Drawz, 2012). Lazar and Eisenberger's (2022) findings are not surprising because they mirror what Fredrickson (2003) termed 'The Undoing Hypothesis', which posits that positive emotions have the ability to undo the effects of negative emotions. To test this theory, Fredrickson invoked anxiety among participants by telling them that they had one minute to prepare a speech that they would then give to their peers (Fredrickson, 2003). This suggested task increased participants' heart rate, peripheral vasoconstriction, and blood pressure (Fredrickson, 2003). After learning that they did not have to give the speech, participants were shown one of four videos eliciting amusement, contentment, no emotion, or sadness (Fredrickson, 2003). Fredrickson then measured the length of time it took for participants to return to baseline cardiovascular functioning and found that those who watched the videos that elicited positive emotions (i.e., amusement, contentment) recovered fastest (Fredrickson, 2003). The author concluded that positive emotions can undo the cardiovascular repercussions of negative emotions (Fredrickson, 2003). Therefore, it is not surprising that Lazar and Eisenberger (2022) found that prosocial

behaviour reduced participants' heart rate and blood pressure after induction of a stressful situation, as engagement in prosocial behaviour has been associated with positive affect (Nelson et al., 2016; Raposa et al., 2016), such as happiness (Layous et al., 2012; Lyubomirsky et al., 2005; Nelson et al., 2015). Thus, prosocial behaviour is associated with physiological benefits that can lead to improved physical health and longevity (Brown & Brown, 2015).

In addition to its physiological advantages, prosocial behaviour has been linked to psychological benefits including experiencing a greater meaning in life, enhanced self-worth and self-esteem (Klein, 2016), psychological flourishing (Nelson et al., 2016), increased life satisfaction (Son & Padilla-Walker, 2020), and reductions in stress (Raposa et al., 2016) and anxiety (Miles et al., 2022). Specifically, Klein (2016) conducted a study to investigate whether helping others increased meaning in life. The author concluded that those who engaged in prosocial behaviours (i.e., volunteering or prosocial spending) reported increased meaning in life, and those who spent money on others experienced increased self-worth and self-esteem (Klein, 2016). Additionally, Nelson and colleagues (2016) explored the impact of prosocial and self-oriented behaviours among adults. Participants were randomized into one of four groups and asked to: (1) perform acts of kindness for others; (2) perform acts of kindness for humanity/the world; (3) perform acts of self-kindness; or (4) complete a neutral activity (control; Nelson et al., 2016). The authors concluded that engagement in prosocial behaviour resulted in increased psychological flourishing and positive emotions (Nelson et al., 2016). Consistent with the findings of Nelson's team (2016), Son and Padilla-Walker (2019) explored prosocial behaviour among adolescents and concluded that those who reported engaging in

prosocial behaviour had greater life satisfaction two years later. Additionally, Raposa and colleagues (2016) explored the role of prosocial behaviour in reducing negative emotional responses to stress and found that individuals with high prosocial behaviour reported high positive affect and reduced stress.

It is clear, based on the above review of literature, that prosocial behaviour is associated with numerous health benefits. As such, prosocial behaviour might be a cost-effective approach to buffer against some of the negative mental health outcomes of the COVID-19 pandemic. Specifically, in the 2021 World Happiness Report, the authors identified prosocial behaviour as a protective factor for positive wellbeing during the pandemic (Okabe-Miyamoto & Lyubomirsky, 2021). Further, it is possible that the global pandemic prompted individuals to engage in prosocial behaviour, as it has been established that stress—a pervasive experience for many during the pandemic (Mahmud et al., 2023; Kowal et al., 2020)—promotes prosocial behaviours such as empathy and altruism (Buchanan & Preston, 2014). Researchers have also found that prosocial responses emerge from experiences of suffering and adversity (Staub, 2003; Staub, 2005), and it has been suggested that extreme disasters (e.g., war, natural disasters, public health emergencies) provide populations with a unique opportunity to engage in prosocial behaviour (Hartman & Morse, 2020; Kaniasty & Norris, 1995; Vollhardt, 2009). The COVID-19 pandemic has presented an extreme situation wherein typical, pre-pandemic expressions of prosocial behaviour might be challenged, especially during times of limited physical interaction, thus providing a rare context to study prosocial behaviour (Haller et al., 2022).

### **Adults' Engagement in Prosocial Behaviour During the COVID-19**

**Pandemic.** Given physical interactions have been limited to varying degrees throughout the COVID-19 pandemic, due to such things as mandated COVID-19 public health protections and personal risk-related decision-making, and given prosocial behaviour often includes some form of interaction, understanding adults' prosocial behaviour in the context of the COVID-19 pandemic is important. For this reason, Miles and colleagues (2022) investigated the impact of prosocial activity on adults' emotional wellbeing and mental health in Canada and the United States about one year into the COVID-19 pandemic (i.e., January–February of 2021). Participants were randomly assigned to perform prosocial, self-focused, or neutral behaviours three times a week for three weeks (Miles et al., 2022). Interestingly, the authors concluded that the prosocial condition did not significantly differ on emotional wellbeing or mental health outcomes compared to self-focused or neutral behaviours (Miles et al., 2022). However, exploratory analyses revealed that engagement in prosocial activity was associated with reductions in participants' anxiety and increases in participants' perceptions that life is valuable (Miles et al., 2022). Similarly, Sin and colleagues (2021) explored the association between engagement in daily prosocial activities and affective and social wellbeing by age, among adults living in Canada and the United States during the early months of the COVID-19 pandemic (March–August 2020). The authors concluded that older age predicted more frequent volunteering and giving of support during this timeframe, with middle- (40–59 years) and older- (60–91 years) aged adults providing more emotional support than younger (18–39) adults (Sin et al., 2021). Engagement in the described prosocial activities was also associated with increased positive affect and life satisfaction and the

provision of COVID-19-specific support was associated with lower negative affect (Sin et al., 2021). These findings differ from those of Miles and colleagues (2022), whose parallel study with North American adults found no such associations with regard to emotional wellbeing and mental health. One reason for this contrast might be the pandemic-timeframe during which these studies were conducted because Sin and colleagues (2020) explored adults' prosocial behaviour during the early months of the pandemic (March–August 2020), whereas Miles and colleagues (2022) investigated prosocial behaviour about one year into the pandemic (January–February 2021). Varma and colleagues (2022) also explored the prosocial behaviour of adults living in the United States during the early stages of the pandemic (April 2020) and concluded that engagement in prosocial behaviour led to increased positive affect, empathy, and social connectedness.

In addition to the North American specific studies described above, prosocial behaviour during the COVID-19 pandemic has also been explored on a global level (Haller et al., 2022; Hellmann et al., 2021; Tekin et al., 2021). Specifically, Haller and colleagues (2022) investigated the relationship between prosocial behaviour and wellbeing, as well as predictors of prosocial behaviour during the early stages of the pandemic (April–June 2020), across 60 countries. The authors found that participants reported engaging in prosocial behaviour frequently and that perceived social support, stress, positive affect, and psychological flexibility were predictors of prosocial behaviour (Haller et al., 2022). It is not surprising that Haller and colleagues (2022) found that higher levels of perceived stress were a predictor for prosocial behaviour during the pandemic, as this aligns with pre-pandemic work by Buchanan and Preston

(2014) who found that stress can lead to prosocial action. Additionally, Tekin and colleagues (2021) aimed to understand how and why individuals supported each other during the first half year of the COVID-19 pandemic (April–October 2020) through analyses of 104 altruistic stories from various countries around the world. The authors concluded that during this timeframe, altruism and prosocial behaviours took the form of material, social/emotional, and psychological support and that sharing a community/humanity identity, allyship, and showing gratitude were reasons behind individuals' engagement in prosocial behaviour (Tekin et al., 2021). In line with previous work discussed, Hellmann and colleagues (2021) investigated adults' prosocial behaviour at the outset of the pandemic (March 2020) in Germany and concluded that participants' prosocial behaviour increased during this time when compared to pre-pandemic times. Espinosa and colleagues (2022) found that engaging in prosocial behaviour during the pandemic enhanced participants' satisfaction with life and lessened the impact of COVID-19-related negative emotions of Columbian adults. Based on the above review of literature, it is clear that adults engaged in prosocial behaviour during the early stages of the pandemic globally; however, less is known regarding how prosocial behaviour changed, if at all, as the pandemic progressed.

Assessing individuals' prosocial behaviour, as well as mental health and wellbeing, is necessary to inform the development of future health promotion interventions aimed at supporting Ontario adults during the pandemic. Recently, a call to action for interventions aimed at enhancing positive emotion and psychological resilience was put forth (Varma et al., 2022). However, investing in such supports is difficult without first determining the needs of the population. It has been suggested that the

development of a health promotion intervention, such as one aimed at enhancing positive emotion and resilience, be grounded in a planning model or theory (McKenzie et al., 2022). Therefore, the current dissertation was grounded in the first phase of the Generalized Model: Assessment of Needs and Capacity (McKenzie et al., 2022).

### ***Health Promotion and Intervention Models***

Health promotion is defined as “the process of enabling people to increase control over and improve their health” (WHO, 1986, p. 2). To provide individuals with opportunities to improve their health, program planners must first determine the needs of the priority population (McKenzie et al., 2022). While there are several specialized health promotion models that aim to identify the needs of a population (e.g., PRECEDE-PROCEED Model, MAPP, Intervention Mapping Model), the Generalized Model for health promotion was selected for use in this dissertation for its simplicity and directness (McKenzie et al., 2022). The Generalized Model is a 5-step framework for creating, implementing, and evaluating health promotion programs (McKenzie et al., 2022). It involves: (1) assessing needs and capacity; (2) setting goals and objectives; (3) developing interventions; (4) implementing interventions; and (5) evaluating results (McKenzie et al., 2022). Specifically, this dissertation was grounded in the first phase of the Generalized Model: Assessment of Needs and Capacity (McKenzie et al., 2022). This phase is also referred to as a needs assessment or community health assessment and is “the process of collecting and analyzing data to determine the health needs and capacity of a population” (McKenzie et al., 2022, p. 43). In the current dissertation, the assessment of the mental health, wellbeing, and prosocial behaviours of Ontario adults during the first 16 months of the COVID-19 pandemic (Chapters 2–5) contributes to having an



understanding of needs of the priority population. Additionally, a reflection of the needs assessment came forth in Ontario adults' insights pertaining to their lived experiences of prosocial behaviour during the COVID-19 pandemic (Chapter 5). Based on findings from this dissertation's program of research, program planners will be well positioned to integrate the learnings into an evidence-based intervention aimed at enhancing the positive emotion and psychological resilience (Varma et al., 2022) of Ontario adults during the pandemic.

### ***Research Program Rationale***

It is evident that globally, adults' mental health, wellbeing, and prosocial behaviour have been impacted during the COVID-19 pandemic (Haller et al., 2022; Hellmann et al., 2021; 2021; Miles et al., 2022; Santomauro et al., 2021; Sin et al., 2021; Statistics Canada, 2021; Tekin et al., 2021; WHO, 2022b). Much of the research published to date has reported on these constructs cross-sectionally (Haller et al., 2022; Hellmann et al., 2021; Jenkins et al., 2021; Sin et al., 2021; Varma et al., 2022; Zajacova et al., 2020). While some authors reported on adults' mental health, wellbeing, and prosocial behaviour longitudinally, the data were primarily collected during the early stages of the pandemic (March-July 2020; Cenat et al., 2022; Hellmann et al., 2021; Zajacova et al., 2020) or within a small timeframe (e.g., January–February 2021; Miles et al., 2022). Understanding how adults' mental health, wellbeing, and prosocial behaviour have changed as the pandemic progressed is important in order to provide supports that meet the needs of the population, particularly given the evidence to suggest that positive activities, including prosocial behaviour, can serve as a protective factor against negative mental health outcomes (Layous et al., 2014). Further, researchers who have investigated

the adult population during the pandemic have primarily taken a broad approach by including young-, middle-, and older-aged adults (i.e., those aged 15 and older) together in their study designs (Jenkins et al., 2021; Miles et al., 2022; Sin et al., 2021; Zajacova et al., 2020). While this approach is all encompassing, it fails to take into account age group differences, as well as at risk populations. With chronic diseases being considered *the primary health threat* to Canadians pre-pandemic (Public Health Agency of Canada, 2017), individuals at highest risk might also be especially impacted by pandemic-related health behaviour/lifestyle changes. Therefore, understanding the mental health, wellbeing, and prosocial behaviour of those most at risk for losing years of healthy life due to chronic disease (i.e., middle-aged adults 30–59 years; WHO, 2005) is essential to appreciating the experiences of these individuals during the pandemic and also to provide tailored resources. It is worth noting that the COVID-19 public health measures were governmentally mandated and as a result, differed by country and province (Canadian Institute for Health Information, 2022). As such, narrowing the scope of the research by province is necessary in order to understand adults' mental health, wellbeing, and prosocial behaviour during the COVID-19 pandemic. Given that Ontario had the highest population density in Canada (14.7 million people) at the time of study creation (2020), it was deemed suitable as the target province for the current study.

It is evident that the COVID-19 pandemic has disrupted the lives of many; however, prior to conducting the current dissertation program of research, it remained largely unknown how Ontario adults' mental health, wellbeing, and prosocial behaviour changed, if at all, over time. Understanding this is important given the evolving nature of the pandemic, and will allow program planners to develop health promotion interventions

tailored to the needs of those most at risk for losing years of healthy life due to chronic disease: adults aged 30–59. Therefore, the overall purpose of this dissertation was to provide a detailed assessment of the mental health, wellbeing, and prosocial behaviour of Ontario adults during the first 16 months of the COVID-19 pandemic (April 2020–August 2021). To accomplish this, a large-scale, longitudinal, mixed-methods study was conducted (*HOPE*), from which four articles were written (Chapters 2–5) to address this dissertation’s purpose and will be presented, in order, in the subsequent chapters.

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## **Chapter 2: Ontario Adults' Health Behaviours, Mental Health, and Overall Wellbeing During the First Few Months of the COVID-19 Pandemic<sup>1</sup>**

### **Introduction**

COVID-19 was declared a global pandemic by the World Health Organization (WHO) in March 2020. In Canada, a state of emergency was declared between March 11–22, 2020 (province and territory dependant; Scarabel et al., 2020). Travel restrictions, the physical closure of schools and universities, and closing of many businesses resulted (Scarabel et al., 2020). Changes to everyday activities and routines (e.g., physical distancing, intense personal hygiene practices, working from home) were necessitated by public health mandates, and these changes impacted leisure and work practices for many citizens (Di Sebastiano et al., 2020). These changes might also be associated with widespread impacts on adults' health. In fact, researchers recently reported that, because of similar restrictions mandated in other countries, adults experienced a decline in health behaviours, wellbeing, and mental health (Constandt et al., 2020; López-Bueno et al., 2020; Meyer et al., 2020; Zheng et al., 2020). Many of the outcomes noted above are associated with increased risk of chronic disease and therefore, impacts to them may be particularly concerning for those already at highest risk for losing years of healthy life due to chronic disease (i.e., disability adjusted life years; adults aged 30–59; Government of Canada, 2015; Government of Canada, 2019; WHO, 2005). Variations in COVID-19 rates and subsequent public health measures across Canada and around the world necessitate the need to explore these behaviours at a local level. The current paper is intended to compliment and fill in current gaps in understanding the health behaviours

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<sup>1</sup> A version of this chapter has been published elsewhere (see Shillington et al., 2021).

(i.e., physical activity, sedentary behaviours, and dietary intake), mental health, and wellbeing of adults during the early months of the COVID-19 pandemic.

The COVID-19 pandemic continues to impact the health of Canadian adults. Researchers of studies conducted during the same timeframe as the current study have found that the pandemic has influenced Canadians' physical activity both positively (Petersen et al., 2021) and negatively (Di Sebastiano et al., 2020; Petersen et al., 2021; Woodruff et al., 2021) while their screen time (Zajacova et al., 2020) and sedentary behaviour have increased (Woodruff et al., 2021). Canadian adults also reported high levels of distress and negative mental health as a result of the pandemic (Jenkins et al., 2021; Woodruff et al., 2021), as well as improvements in healthy food consumption (Lamarche et al., 2021) and increased junk food consumption (Zajacova et al., 2020) compared to pre-pandemic. Specifically, Di Sebastiano and colleagues (2020) conducted a 10-week nation-wide study to investigate changes in the physical activity levels of Canadian adults ( $N = 2338$ , 35–44 years) prior to and immediately following the introduction of physical distancing guidelines in Canada. Participants were sampled using a physical activity tracking app that collected the physical activity data of app users (Di Sebastiano et al., 2020). The authors found that levels of objectively measured moderate-to-vigorous physical activity (MVPA), light physical activity (LPA), and steps per day (measured via a national physical activity tracking app) significantly decreased as a result of the pandemic (Di Sebastiano et al., 2020). Similarly, Peterson and colleagues (2021) explored how the pandemic impacted the physical activity and perceptions of health among adults in Calgary, a Canadian city, using a grounded theory methodology. A maximum variation sampling strategy was utilized to recruit 12 adults (20–70 years)

during the months of June to October 2020 (Petersen et al., 2021). The authors concluded that the COVID-19 pandemic impacted the daily routines of participants (e.g., work, school, home, family life, socializing) and the pandemic had both positive and negative effects on participants' physical activity and perceptions of health (Petersen et al., 2021). Jenkins and colleagues (2021) administered a cross-sectional survey to Canadian adults ( $N = 3000$ ; aged 18+) with the goal of investigating the impact of the pandemic on their mental health. The researchers distributed the survey via a national polling vendor who deployed the survey to a random selection of Canadian adults, stratified by Canadian Census-informed socioeconomic characteristics (Jenkins et al., 2021). The authors concluded that Canadian populations experienced a deterioration in mental health and coping strategies as a result of the pandemic (Jenkins et al., 2021). Lamarche and colleagues (2021) investigated the change in diet habits and quality of adults ( $N = 2495$ ; aged 18+ years) during the early stages of the COVID-19 pandemic lockdown in Quebec, Canada. The researchers recruited participants via a multimedia campaign, based on a needs assessment, and administered questionnaires before (June 2019–February 2020) and during (April–May 2020) early lockdown (Lamarche et al., 2021). Interestingly, they found that diet quality improved slightly, from pre- to during lockdown (Lamarche et al., 2021). In contrast, Zajacova and colleagues (2020) assessed changes in Canadian adults' ( $N = 4383$ ; aged 25+) health behaviours (e.g., junk food consumption and screen time) during the early stages of the COVID-19 pandemic. To inform their work, the authors used publically available data from the Canadian Perspectives Survey Series 1: Impacts of COVID-19 (CPSS-COVID), a cross-sectional survey administered by Statistics Canada (Zajacova et al., 2020). The researchers found that 25% of participants increased

their junk food consumption and 60% of participants increased their screen time during the early stages of the pandemic (March-April 2020; Zajacova et al., 2020). Similarly, Woodruff and colleagues (2021) explored how the stress, physical activity, and sedentary behaviours of Canadian adults ( $N = 121$ ; aged 18+) changed during the early stages (April-May 2020) of the COVID-19 pandemic. The researchers recruited participants via social media advertisements; participants were asked to complete a fillable calendar with their step counts and answer an online survey (Woodruff et al., 2021). They found that participants' sedentary behaviour and stress (daily and work-related) increased, while their physical activity decreased as a result of the COVID-19 pandemic (Woodruff et al., 2021).

The COVID-19 pandemic has not only influenced the lives of Canadian adults but has also negatively impacted adults on a global scale. Most notably, and similar to what has been found in Canadian studies, adults' physical activity decreased (Ammar et al., 2020; López-Bueno et al., 2020; Meyer et al., 2020; Zheng et al., 2020), their sedentary behaviour increased (Ammar et al., 2020; Meyer et al., 2020; Zheng et al., 2020), and they reported high levels of distress and negative mental health (Mazza et al., 2020; Meyer et al., 2020), as well as weight gain and unhealthy food consumption (Ammar et al., 2020; Sidor et al., 2020). Specifically, Zheng and colleagues (2021) conducted a study to investigate the physical activity, sedentary behaviour, and sleep of young adults ( $N = 631$ , 18–35 years) during the initial stages of the COVID-19 pandemic in China (April 15–26, 2020). Participants were recruited via online advertisements and word of mouth and were sent a survey administered through Google forms (Zheng et al., 2021). The researchers concluded that there was an inverse relationship between physical



activity and sedentary behaviour, such that participants' physical activity levels declined significantly with concurrent increases in their sedentary time (Zheng et al., 2021). In the United States, Meyer and colleagues (2020) evaluated the impact of the pandemic (April 3–8, 2020) on adults' levels of physical activity, sedentary behaviour, and mental health ( $N = 3052$ , 18–24 years). Both convenience and snowball sampling were used to recruit participants (Meyer et al., 2020). Self-report data was collected cross-sectionally, wherein participants reflected on pre- and post-COVID health behaviours (Meyer et al., 2020). These authors also concluded that there was a decline in participants' physical activity levels and an increase in their sedentary behaviour which, in turn, were associated with higher negative mental health and lower positive mental health (Meyer et al., 2020). This was found to be particularly true for those who were previously active, as well as those who had self-isolated/quarantined (Meyer et al., 2020). Lopez-Bueno and colleagues (2020) investigated the physical activity levels of adults in Spain during mandated confinement (March 22–29, 2020), via a cross-sectional survey. Individuals were recruited through social media and convenience sampling was used to select study participants (López-Bueno et al., 2020). The researchers found that participants' weekly physical activity levels declined by 20% (i.e., approximately 45 minutes of physical activity per week; López-Bueno et al., 2020). Additionally, Ammar and colleagues (2020) administered an international online survey to examine how COVID-19 home confinement (April 2020) impacted adults' levels of physical activity and sedentary time, as well as their nutrition behaviours. Participants were recruited via email, social media platforms, and faculty websites and were administered a survey, that was reviewed and edited by over 50 researchers worldwide, through Google forms (Ammar et al., 2020).

The authors surveyed adults ( $N = 1047$ , aged 18+) primarily from Asia, Africa, and Europe and concluded that home confinement had a negative impact on all physical activity intensity levels, and participants' daily sitting time increased from 5 to 8 hours (Ammar et al., 2020). Further, participants reported engaging in increased unhealthy food consumption and meal patterns during confinement (Ammar et al., 2020). In Poland, Sidor and Rzymiski (2020) administered an online survey to adults ( $N = 1097$ , aged 18+ years) to investigate nutritional and consumer habits during the nationwide quarantine period (April 17–May 1, 2020). This survey was self-designed and not based on previously validated scales (Sidor et al., 2020). The authors concluded that 43% of participants reported eating more and 52% reported snacking more during quarantine, and that these behaviours were more common in individuals with overweight and obesity (Sidor et al., 2020). Further, nearly 30% of respondents reported weight gain and an increased body mass index (BMI) that was associated with low vegetable, fruit, and legume consumption, as well as high consumption of meat, dairy, and fast-food (Sidor et al., 2020). Mazza and colleagues' (2020) investigation of Italian adults ( $N = 2766$ ) revealed psychological distress during COVID-19 (May 18–22, 2020). The authors administered a cross-sectional online survey and concluded that, compared to European epidemiological statistics, participants demonstrated high and very high levels of distress (Mazza et al., 2020). The researchers also found a significant association between being female and increased depression, anxiety, and stress (Mazza et al., 2020). In a study conducted in the United Kingdom by White and Van Der Boor (White et al., 2020), the authors investigated the impact of the COVID-19 pandemic—inclusive of the initial lockdown period (March 31–April 13, 2020)—on the mental health and wellbeing of

adults. A convenience sample of participants were recruited via social media platforms and a cross-sectional online survey was administered (White et al., 2020). Participants that self-isolated prior to the lockdown reported increased feelings of isolation, and the majority reported poorer mental health, wellbeing, and quality of life leading from concerns about their livelihood due to COVID-19 (White et al., 2020).

Worth noting are the methodology strategies utilized in the above-described studies. Specifically, in the Canadian studies sampling methods ranged from maximum variation sampling (Petersen et al., 2021) to random sampling stratified by census information (Jenkins et al., 2021). Other Canadian studies did not recruit participants but rather analyzed publicly available population data (Zajacova et al., 2020) or utilized data available from physical activity tracking apps (Di Sebastiano et al., 2020). Studies conducted outside of Canada primarily utilized convenience (López-Bueno et al., 2020; Meyer et al., 2020; White et al., 2020) and snowball sampling (López-Bueno et al., 2020). While the majority of the studies (both Canadian and international) were cross-sectional and survey-based, they differed in terms of rigour. For example, Meyer and colleagues (2020) relied on retrospective self-report data, a method of data collection where participants tend to overestimate their responses and demonstrate recall bias (Sato et al., 2011; Ebner-Priemer et al., 2006). To combat retrospective data collection and recall bias, researchers use technology such as wearable activity trackers (Woodruff et al., 2021) and apps (Di Sebastiano et al., 2020). Lamarche and colleagues (2021) improved the rigour of their recruitment and data collection process through use of a needs assessment and Ammar and colleagues (2020) administered a survey that was reviewed by 50 experts in the field prior to dissemination. In contrast, some researchers

created surveys without the inclusion of valid measurements (Sidor et al., 2020), and others strictly used publicly available data (Zajacova et al., 2020). The use of previously validated and reliable instruments in surveys has been recognized as crucial in social and health science research (Bolarinwa et al., 2015). The decision to create a survey without valid and reliable measurements alters the integrity of the tool, which is concerning. Further, using publicly available data has posed ethical concerns, as described in a recent analysis conducted by Stommel and de Rijk (2003).

It is evident, based on the literature reviewed above, that the COVID-19 pandemic has, on a global scale, negatively influenced individuals' health behaviours, mental health, and wellbeing. The impact of the pandemic on the full complement of these outcomes among the various provinces of Canada remains unclear, as none of the studies described above have investigated these outcomes strictly in the province of Ontario. Despite Canada's federated model of government, each province is responsible for organizing their own health systems with variations based on population needs. Consequently, each province has not experienced COVID-19 in the same ways, inclusive of prevalence rates and provincially mandated public health measures. Further, to our knowledge no studies conducted in Ontario have explored the difference between physical activity status and wellbeing, mental health, and dietary intake, respectively. Given the work conducted by Meyers and colleagues (2020) in the United States—who found that participants' physical activity levels were negatively correlated with their sedentary behaviour and mental health—there is a need to also explore this within Canadian populations. Additionally, one study described above used publicly available population data instead of recruiting participants (Zajacova et al., 2020), which warrants

caution as secondary data collection is at a greater risk for biases and error compared to primary data collection (Rabianski et al., 2003). Another study (Sidor et al., 2020) used tools that were suitable for responding to the study purpose but were not validated, thus requiring caution when interpreting the findings. As such, there is a need for studies with primary data collection and valid and reliable measurements. To this end, the purpose of this paper is two-fold: (1) to provide an assessment of Ontario adults' health behaviours (i.e., physical activity, sedentary behaviours, and dietary intake), mental health, and wellbeing during the first few months of the COVID-19 pandemic (April–July 2020); and (2) to investigate the difference between physical activity status and wellbeing, mental health, and dietary intake.

## **Methods**

The current paper is a part of the *Health Outcomes for adults during and following the COVID-19 Pandemic (HOPE)* ongoing, longitudinal study, which aims to assess adults' lifestyle-related health behaviours and outcomes, including physical activity, sedentary behaviour, sleep, diet, mental health, wellbeing, and prosocial behaviour, during and following the COVID-19 pandemic in Ontario, Canada. The current paper uses baseline data from the larger study, collected between April 24 and July 13, 2020. The study received ethics approval from Western University's Health Sciences Research Ethics Board (HSREB #115827; Appendix A).

### ***Study Procedures***

Participants were recruited via social media advertisements (i.e., Facebook, Twitter, LinkedIn, and Instagram; Appendix B). In addition, regional health units, community health centres and organizations, and medical clinics/hospitals across Ontario

were invited ( $N = 298$ ) to circulate the advertisement. To be included in the study, participants needed to be: (1) an Ontario resident; (2) between the ages of 30–59 years at baseline; and (3) able to read and write in English. A power calculation deemed that a sample size of 244 was sufficient to achieve 80% power at a significance level of 0.05. Upon clicking on the social media distributed study link or scanning the QR code, interested Ontario adults were directed to the study's letter of information, where they were asked to confirm their eligibility criteria, consent to participate in the study, create a participant ID (Appendix C), and complete the baseline survey questionnaires hosted on Qualtrics.

### ***Measures***

The tools used were selected based on their validity, brevity, and suitability for the study's target population. All tools required self-report and were administered online via Qualtrics as one survey. To diminish social desirability bias, *honesty demands* (Bates et al., 1992) were employed at the beginning of the survey. That is, at the beginning of the survey the following instructions were provided for participants: 'We ask you to please answer the following questions as honestly as possible. There are no right or wrong answers to any of the questions. Whatever you truly think or feel is the answer you should pick.'

**Demographic Questionnaire.** The demographic questionnaire (Appendix D) consisted of 14 items including age, sex, gender, ethnicity, income, highest level of education achieved, and COVID-19 diagnosis.

### **Health Behaviours.**

*Global Physical Activity Questionnaire (GPAQ)*. The GPAQ (Appendix E) was previously validated for use among adults and measures physical activity at the population level (Bull et al., 2009). The GPAQ includes four domains: (1) activity at work; (2) travel to and from places; (3) recreational activities; and (4) sedentary behaviour. For the purpose of this study, the recreational activities (6 items) and sedentary behaviour (1 item) components of the GPAQ were measured only, given the restrictions in place that prevented many citizens from traveling anywhere and necessitating many working from home (i.e., given the local mandated restrictions, the nature of individuals' work might have changed, resultantly confounding responses to scale questions [e.g., 'In a typical week, on how many days do you do vigorous-intensity activities as part of your work?]). Examples of recreational activities and sedentary behaviour questions included: 'How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical (pandemic) day?'; and 'How much time do you usually spend sitting or reclining on a typical day?' A second question was added to the sedentary behaviour component regarding screen time, as screen time is encompassed within Canada's newly released 24-Hour Movement Guidelines (Canadian Society for Exercise Physiology, 2020). This question was not included in the overall sedentary behaviour domain, but rather it was analyzed separately.

*Starting the Conversation (STC)*. The STC (Appendix F) was previously validated for use among adults and is used to identify individuals' dietary patterns (Paxton et al., 2011). The authors did not report traditionally used validity data; however, the STC items and summary score were moderately intercorrelated ( $r = 0.39-0.59$ ,  $p <$

0.05). The STC includes 8 items that ask individuals to identify the frequency with which they engaged in certain dietary behaviours over the past month from a set of response categories (e.g., less than 1 time [0], 1–3 times [1], 4 or more times [2]). Examples of questions included: ‘How many times a week did you eat fast food meals or snacks?’ and ‘How many servings of vegetables did you eat each day?’

### **Mental Health.**

*Mental Health Inventory-5 (MHI-5).* The MHI-5 (Appendix G) has been previously validated (AUC = 0.892; Berwick et al., 1991) for use among adults and measures mental health status using 5 items: 2 regarding general positive affect and 1 for each anxiety, depression, and behavioural/emotional control. Participants were asked how much time over the past month they felt each statement to be true of them on a 6-point scale ranging from ‘all of the time’ (1) to ‘none of the time’ (6). Examples of questions included: ‘How much of the time during the last month have you felt downhearted and blue?’ and ‘How much of the time during the last month have you been a very nervous person?’

### **Wellbeing.**

*Personal Wellbeing Index-Adult (PWI-A).* The PWI-A (Appendix H) was previously validated (Cronbach’s  $\alpha$  range from 0.70 and 0.85; International Wellbeing Group, 2013) and includes 7 items corresponding to quality of life domains (i.e., standard of living, health, achieving in life, relationships, safety, community-connectedness, and future security) and 2 optional items (i.e., satisfaction with life as a whole, and spirituality or religion; International Wellbeing Group, 2013). Participants were asked to indicate how satisfied they felt in each of the domains on a scale from 0 to 10 (0 being no



satisfaction at all and 10 being completely satisfied). Examples of questions included: ‘How satisfied are you with your personal relationships?’ and ‘How satisfied are you with what you are achieving in life?’ The question ‘How satisfied are you with your health?’ was altered to more specifically ask participants how satisfied they were with their (1) mental health and (2) physical health.

### ***Data Analysis***

All analyses were completed in SPSS (version 26). Data analyses involved computing measures of central tendency and dispersion for demographic characteristics and tools followed by descriptive statistics.

### **Health Behaviours.**

***Global Physical Activity Questionnaire (GPAQ)***. The scoring protocol, published by WHO (2021), which recommends calculating total time and percentage of time for each domain, was used to identify participants’: total recreational related physical activity in minutes per week and average total recreational activity in minutes per day (i.e., setting specific physical activity); the percentage of participants classified as doing no recreational-related physical activity; the total time spent in sedentary activities per day; the total recreational moderate-intensity minutes per week; and the total recreational vigorous intensity minutes per week. Total minutes per week spent engaged in moderate-to-vigorous intensity physical activity could also be calculated.

***Starting the Conversation (STC)***. To score the STC, all items were summed to yield a total score on a scale ranging from 0–16, with lower scores reflecting a healthier diet and higher scores indicating a need for improvement (Paxton et al., 2011).

**Mental Health.**

*Mental Health Inventory-5 (MHI-5).* To score the MHI-5 (Berwick et al., 1991), items 3 ('Have you felt calm and peaceful?') and 6 ('Have you been a happy person?') were reverse coded and then the scores for each item were summed. The raw scores were then transformed to a 0–100-point scale, where a score of 100 represents optimal mental health.

**Wellbeing.**

*Personal Wellbeing Index-Adult (PWI-A).* To score the PWI-A scale (International Wellbeing Group, 2013), all data (including the optional items) were converted to the standard 0–100 scale format (e.g., a score of 7 becomes 70 points). The PWI-A is scored by analyzing each domain as a separate variable or by summing the scores to yield an average that represents 'subjective wellbeing.' Items were analyzed separately, to account for the change made to the satisfaction with health question (i.e., the question 'How satisfied are you with your health?' was divided into two questions to ask participants how satisfied they were with their mental health and physical health). Per the scoring protocol (International Wellbeing Group, 2013), participants who consistently indicated a maximum (10) or minimum (0) score on all domains were removed prior to analysis because such data may indicate lack of understanding. Higher scores indicate better wellbeing and the normative range for means of Western samples is 70–80 (International Wellbeing Group, 2013). For a detailed account of the scoring protocol refer to the International Wellbeing Group (2013).

**Difference Between Physical Activity Status and Various Health Outcomes.**

Separate independent *t*-tests were conducted to investigate the difference between

physical activity status (no engagement in moderate-to-vigorous physical activity vs. engagement in moderate-to-vigorous physical activity) and various health outcomes including wellbeing (satisfaction with life as a whole), mental health, and dietary intake. A Bonferroni correction was used to adjust for multiple comparison bias and type 1 error inflation ( $\alpha/3 = 0.017$ ).

## **Results**

### ***Demographics***

The survey was completed by 2,156 participants with a mean age of 43.2 years ( $SD = 8.8$ ). Those who reported that they tested positive or were told by a medical professional that they were suspected to have COVID-19 ( $n = 32$ ) were excluded from the analyses; due to the small  $n$ -size, it was not possible to conduct separate sub-analyses to compare across groups. Of the included participants, the majority identified as female ( $n = 1718$ ; 89.4%) and Caucasian ( $n = 1760$ ; 91.5%). Most reported that they were married/common law/engaged ( $n = 1508$ ; 78.1%) and having completed a university undergraduate degree ( $n = 543$ ; 28.1%) or higher ( $n = 563$ ; 29.1%). The majority of participants reported being employed full-time ( $n = 1147$ ; 59.4%), with an average household income between \$80,000–\$110,999 ( $n = 371$ ; 19.2%) and \$111,000–\$150,000 ( $n = 382$ ; 19.8%). For a comprehensive overview of demographic characteristics, see Table 1.

**Table 1**

*Baseline Demographic Information of Ontario Adults During the Initial Stages of the COVID-19 Pandemic (April–July 2020)*

<b>Participant Characteristics (n = 2,156)</b>	<b>n</b>	<b>%</b>
Age, <i>M (SD)</i>	43.20(8.8)	
Sex		
Male	199	10.4
Female	1718	89.4
Gender		
Male	197	10.3
Female	1713	89.5
Non-binary	1	0.1
Ethnicity		
Arab	4	0.2
Black	9	0.5
Caucasian (White)	1760	91.5
Chinese	21	1.1
Filipino	5	0.3
Indigenous	20	1.0
Japanese	4	0.2
Korean	3	0.2
Latin American	14	0.7
Metis	3	0.1
Multiracial	19	1.0
South Asian	38	2.0
Southeast Asian	5	0.3
Marital Status		
Single	238	12.3
Married/common law/engaged	1508	78.1
Divorced/separated	155	8.0
Widowed	18	0.9
Highest Education Achieved		
Less than high school	23	1.2
High school completed	148	7.7
Community college and/or journeyman apprenticeship completed	606	31.4
University undergraduate degree completed	543	28.1
University graduate degree or higher completed	563	29.1
Other	42	2.2
Employment Status		
Employed full-time	1147	59.4
Employed part-time	153	7.9
Unemployed	199	10.3

Casual	33	1.7
Other	388	20.1
Income		
< \$30,000	94	4.9
\$30,000–\$59,999	234	12.1
\$60,000–\$79,999	220	11.4
\$80,000–\$110,999	371	19.2
\$111,000–\$150,000	382	19.8
> \$150,000	449	23.3

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*Note.* The total sample size was 2,156 participants; not all categories summed to equal the total sample due to missing data. Age was collected as a continuous variable.

### ***Health Behaviours***

The mean score for total recreational physical activity in minutes per week was 297.7 (5.0 hours;  $SD = 415.8$ ), while a total of 43% of participants were classified as doing no recreational-related physical activity. Individuals reported spending an average of 426.2 minutes (7.1 hours;  $SD = 244.8$ ) per day sitting or reclining (not including time spent sleeping) and an average of 359.4 minutes (6.0 hours;  $SD = 207.0$ ) per day on screens. The mean score for the total time spent engaging in moderate-intensity physical activity in minutes per week was 199.4 (3.3 hours;  $SD = 272.4$ ) and the mean score for the total time spent engaging in vigorous-intensity physical activity in minutes per week was 97.3 (1.6 hours;  $SD = 225.7$ ). In terms of dietary assessment, the score for the STC was 7.1 ( $SD = 2.6$ ). The scores of individual items can be found in Table 2.

### ***Mental Health***

The mean mental health score using data from the MHI-5 was 60.30 ( $SD = 19.1$ ). The scores of individual items can be found in Table 3.

**Table 2**

*Ontario Adults' Health Behaviours During the Initial Stages of the COVID-19 Pandemic (April–July 2020)*

<b>Scale</b>	<b>Total <i>n</i></b>	<b>Mean (<i>SD</i>)</b>	<b>Range</b>	<b>Frequency <i>n</i> (%)</b>	
<b><i>Global Physical Activity Questionnaire (GPAQ)</i></b>					
Total recreational PA in min/wk	2006	297.7 (415.8)	0–5460		
Percentage of participants classified as doing no recreational-related PA	2031	0.43	0–1.00		
Total minutes spent sitting or reclining in a typical day	2001	426.2 (244.8)	0–1380		
Total minutes spent on screens in a typical day	2005	359.4 (207.0)	0–1320		
Total moderate-intensity min/wk	2010	199.4 (272.4)	0–2730		
Total vigorous-intensity min/wk	2042	97.3 (225.7)	0–3360		
<b><i>Starting the Conversation (STC; Dietary assessment)</i></b>					
Over the past few months...					
... how many times a week did you eat fast food meals or snacks?	1947			<1 time/wk	901 (46.3)
				1–3 times/wk	774 (39.7)
				4+ times/wk	272 (14.0)
... how many servings of fruit did you eat each day?	1943			5+ times/day	85 (4.4)
				3–4 times/day	590 (30.3)
				<3 times/day	1268 (65.3)
... how many servings of vegetables did you eat each day?	1946			5+ times/day	240 (12.3)
				3–4 times/day	892 (45.8)
				<3 times/day	814 (41.8)
... how many regular sodas/pop or glasses of sweet tea did you drink each day?	1946			<1 time/day	1449 (74.5)
				1–2 times/day	365 (18.7)
				3+ times/day	132 (6.8)

... how many times a week did you eat beans (like pinto or black beans), chicken or fish?	1944			3+ times/wk 1-2 times/wk <1 times/wk	1147 (59.0) 577 (29.7) 220 (11.3)
... how many times a week did you eat regular snack chips or crackers (not low fat)?	1947			<2 times 2-3 times 4+ times	716 (36.8) 819 (42.1) 412 (21.1)
... how many times a week did you eat desserts and other sweets (not the low fat kind)?	1947			<2 times/wk 2-3 times/wk 4+ times/wk	537 (27.6) 737 (37.9) 673 (34.5)
... how much butter or margarine (or meat fat) do you use to season or put on vegetables, potatoes, or bread?	1947			Very little Some A lot	701 (36.0) 976 (50.1) 270 (13.9)
Total score	1936	7.12 (2.6)	0-15	0-5 6-10 11-15	533 (27.5) 2161 (62.8) 188 (9.7)

*Note.* Missing participants ranged from 5.3–7.2% for the GPAQ and 9.7–10.2% for the STC.



**Table 3**

*Ontario Adults' Mental Health During the Initial Stages of the COVID-19 Pandemic (April–July 2020)*

Scale	Total <i>n</i>	Mean ( <i>SD</i> )	Range	Frequency <i>n</i> (%)
<b><i>Mental Health Inventory-5 (MHI-5)</i></b>				
How much of the time during the past month have you...				
... been a very nervous person?	2118			All of the time 57 (2.7) Most of the time 214 (10.1) A good bit of the time 399 (18.8) Some of the time 614 (29.0) A little bit of the time 676 (31.9) None of the time 158 (7.5)
... felt so down in the dumps that nothing could cheer you up?	2117			All of the time 12 (0.6) Most of the time 86 (4.1) A good bit of the time 236 (11.1) Some of the time 445 (21.0) A little bit of the time 719 (34.0) None of the time 619 (29.2)
... felt calm and peaceful?	2119			All of the time 18 (0.8) Most of the time 394 (18.6) A good bit of the time 546 (25.8) Some of the time 593 (28.0) A little bit of the time 484 (22.8) None of the time 84 (4.0)
... felt downhearted and blue?	2118			All of the time 17 (0.8) Most of the time 139 (6.6) A good bit of the time 305 (14.4) Some of the time 570 (26.9)

				A little bit of the time	871 (41.1)
				None of the time	216 (10.2)
... been a happy person?	2119			All of the time	26 (1.2)
				Most of the time	611 (28.8)
				A good bit of the time	568 (26.8)
				Some of the time	566 (26.7)
				A little bit of the time	313 (14.8)
				None of the time	35 (1.7)
Total	2117	60.30 (19.1)	0–100	0–20	70 (3.2)
				21–40	331 (17.3)
				41–60	632 (34.5)
				61–80	819 (38.8)
				81–100	265 (12.5)

*Note.* Missing participants ranged from 1.8–1.9%.

### ***Wellbeing***

The mean response to each domain of the PWI-A across all participants satisfaction with: life as a whole was 69.0 ( $SD = 19.2$ ); their standard of living was 76.8 ( $SD = 18.9$ ); and their health, which was further broken down by the researchers to include physical and mental health, were 64.6 ( $SD = 20.7$ ) and 64.4 ( $SD = 21.9$ ), respectively. The mean score for participants' satisfaction with: what they were achieving in life was 68.9 ( $SD = 20.7$ ); their personal relationships was 72.0 ( $SD = 21.2$ ); their safety was 75.6 ( $SD = 20.4$ ); their satisfaction with feeling part of their communities was 64.1 ( $SD = 23.2$ ); their future security was 64.6 ( $SD = 22.4$ ); and their spirituality/religion was 73.3 ( $SD = 25.2$ ). The scores of individual items can be found in Table 4.

### ***Difference Between Physical Activity Status and Various Health Outcomes***

Results from the independent sample  $t$ -tests indicated evidence of a significant difference between participants' physical activity status and their wellbeing ( $t(844.63) = -5.18, p = <0.001, 95\% \text{ CI: } -7.23 \text{ to } -3.26$ ; Table 5), mental health ( $t(872.64) = -6.25, p = <0.001, 95\% \text{ CI: } -8.17 \text{ to } -4.27$ ; Table 6), and dietary intake ( $t(1923) = 10.86, p = <0.001, 95\% \text{ CI: } 1.18 \text{ to } 1.69$ ; Table 7) based on physical activity status.

**Table 4**

*Ontario Adults' Wellbeing During the Initial Stages of the COVID-19 Pandemic (April – July 2020)*

Scale	Total <i>n</i>	Mean ( <i>SD</i> )	Range
<b><i>Personal Wellbeing Index-Adult (PWI-A)</i></b>			
How satisfied are you with...			
... your life as whole?	2150	69.0 (19.2)	0-100
... your standard of living?	2151	76.8 (18.9)	
... your physical health?	2150	64.6 (20.7)	
... your mental health?	2150	64.4 (21.9)	
... what you are achieving in life?	2150	68.9 (20.7)	
... your personal relationships?	2149	72.0 (21.2)	
... how safe you feel?	2150	75.6 (20.4)	
... feeling part of your community?	2151	64.1 (23.2)	
... your future security?	2148	64.6 (22.4)	
... your spirituality or religion?	2137	73.3 (25.2)	

*Note.* Missing participants ranged from 0.0–0.7%.

**Table 5**

*Difference Between Physical Activity Status and Wellbeing Among Ontario Adults*

*During the Initial Stages of the COVID-19 Pandemic (April–July 2020)*

<b>Variable</b>	<b>Group</b>	<b><i>n</i></b>	<b>Mean</b>	<b><i>SD</i></b>
Wellbeing (PWI-A)	No MVPA	530	65.30	20.61
	MVPA	1496	70.55	18.36

*Note.* PWI-A = Personal Wellbeing Index-Adult; CI = confidence interval, MVPA = moderate-to-vigorous physical activity.

**Table 6**

*Difference Between Physical Activity Status and Mental Health Among Ontario Adults*

*During the Initial Stages of the COVID-19 Pandemic (April–July 2020)*

<b>Variable</b>	<b>Group</b>	<b><i>n</i></b>	<b>Mean</b>	<b><i>SD</i></b>
Mental Health (MHI-5)	No MVPA	532	55.79	20.10
	MVPA	1497	62.01	18.54

*Note.* MHI-5 = Mental Health Inventory-5; CI = confidence interval, MVPA = moderate-to-vigorous physical activity.

**Table 7**

*Difference Between Physical Activity Status and Dietary Intake Among Ontario Adults*

*During the Initial Stages of the COVID-19 Pandemic (April - July 2020)*

<b>Variable</b>	<b>Group</b>	<b><i>n</i></b>	<b>Mean</b>	<b><i>SD</i></b>
Dietary Intake (STC)	No MVPA	496	8.18	2.67
	MVPA	1429	6.74	2.49

*Note.* STC = Starting the Conversation; CI = confidence interval, MVPA = moderate-to-vigorous physical activity.

## Discussion

The primary purpose of this paper was to provide an assessment of the health behaviours (physical activity, sedentary behaviour, and dietary intake), mental health, and wellbeing of adults in Ontario during the first few months of the COVID-19 pandemic (April–July 2020). The findings underscore the importance of focusing on healthy behaviours to support positive mental health and wellbeing during the COVID-19 pandemic and will be discussed below.

With respondents self-reporting 199 minutes of moderate physical activity and 97 minutes of vigorous physical activity per week, our sample, on average, met the physical activity goal identified in the newly released Canadian 24-Hour Movement Guidelines for Adults, which recommend at least 150 minutes of MVPA per week as well as several hours of LPA (Canadian Society for Exercise Physiology, 2020). This finding aligns with the qualitative work of Peterson and colleagues (2021); participants in their study described how the COVID-19 pandemic positively influenced their physical activity, as many participants adapted and developed strategies to maintain their pre-pandemic fitness levels. Similarly, with respondents indicating 7 hours per day engaged in sedentary pursuits, our sample also, on average, fell below the recommended threshold of 8 hours or less according to the guidelines. Interestingly, this finding differs from previous Canadian research conducted by Woodruff and colleagues (2021), who found that sedentary behaviour increased during the early months of the pandemic. The difference in findings may be attributed to the fact that Woodruff and colleagues (2021) included participants across Canada, though the majority of their sample also resided in Ontario. More likely to explain the difference, the authors measured physical activity



using daily step count via a wearable activity tracker (Woodruff et al., 2021). It is known that individuals tend to over-estimate their levels of physical activity when using self-report measures (Sallis et al., 2000) and thus, it is likely that the work by Woodruff and colleagues (2021) is a more accurate reflection of the physical activity levels in Canada. However, with respect to screen time, respondents reported about double the amount of recommended recreational use (at 6 hours per day versus the guideline of no more than 3). That said, recreational- and work-related screen use were not distinct variables within the tool and as such, it is plausible that a portion of the reported screen use was for reasons other than recreation. Our findings are in line with those by Lesser and Nienhuis (2020), who conducted a nationally representative study to investigate the impact of COVID-19 on Canadian adults' ( $N = 1098$ ) levels of physical activity and wellbeing. They found that 33% of individuals who were classified as "inactive" became more active and 40.3% of individuals classified as "active" also became more active during the months of April and early May 2020 (i.e., during the initial public health mandates in Canada; Lesser et al., 2020). This may be due to a surge in participants engagement in home-based exercise, which can have both physical and psychological benefits (Hammami et al., 2020). However, it is worth noting that approximately 43% of participants in the current study were classified as engaging in *no* recreational-related physical activity, which is concerning given that the data was collected during the spring/summer, a time when individuals are typically more active than in the winter months (Pivarnik et al., 2003). It is plausible that this number might increase as the pandemic continues into the winter months and environments become colder. It is also worth noting that participants who engaged in MVPA reported significantly higher levels

of wellbeing and mental health and consumed a healthier diet than those who did not engage in MVPA. This is not surprising given the plethora of evidence to support the positive association between physical activity and numerous health outcomes (Chekroud et al., 2018; Powell et al., 2018; Vuori, 2001). Such trends are important to consider and observe over time, given the longitudinal nature of the current study.

The average score for participants' dietary intake (i.e., 7.12 on a scale that ranged from 0 to 15) suggests that participants reported eating moderately healthy (Paxton et al., 2011). In a pre-pandemic Canadian survey, 28.6% of individuals (12+ years) reported consuming fruits and vegetables five or more times per day (Statistics Canada, 2017). By contrast, in the current study, approximately 4% and just over 11% of participants reported consuming fruits and vegetables five or more times per day, respectively. In a pre-pandemic study conducted by Nardocci and colleagues (2019), high processed foods were found to have made up nearly half (45%) of the daily calories consumed by Canadian adults and were positively associated with obesity. In the current study, more than one third of participants reported eating fast food/snacks 1–3 times/week, and 14% reported this for 4 or more times per week. Similarly, in a Canadian study conducted by Zajacova and colleagues (2020), the authors found that 25% of participants increased their junk food consumption during the early stages of the COVID-19 pandemic. These numbers are alarming as consumption of high processed food, such as some fast food, are highly correlated with the development of chronic disease (e.g., obesity, diabetes, cancer) (WHO, 2002). In other recent studies investigating adults' dietary habits during COVID-19 confinement/lockdown periods globally, researchers have also reported increased

unhealthy food consumption (Ammar et al., 2020), low fruit and vegetable consumption, and high consumption of fast food (Sidor et al., 2020).

The average score for participants' mental health (i.e., 60.3) was somewhat concerning. For interpretation, researchers have typically chosen MHI-5 cut scores ranging from 70 to 76 to identify mental health problems (Hoeymans et al., 2004; Kelly et al., 2008; van den Beukel et al., 2012). Therefore, it appears that many participants may have experienced mental health problems and challenges during the early stages of the pandemic. This is consistent with previous research conducted in Canada during the COVID-19 pandemic, as researchers found that participants are experiencing a deterioration in mental health and coping strategies as a result of the pandemic (Jenkins et al., 2021). While there could be many reasons for participants' poor mental health, based on previous research, it is possible that these findings could, in part, be associated with the dramatic changes/restrictions citizens experienced during Ontario's most stringent public health mandates. For instance, although fewer people were impacted directly, the Torontonians who were quarantined during the severe acute respiratory syndrome (SARS) outbreak in 2003 experienced substantial psychological distress and depression (Hawryluck et al., 2004). Regardless of their causes, findings from the current study are consistent with a systematic review conducted by Xiong and colleagues (2020), who found that symptoms of anxiety, depression, post-traumatic stress disorder, psychological distress, and stress during the COVID-19 pandemic were reported by individuals in China, Spain, Italy, Iran, the US, Turkey, Nepal, and Denmark. Similarly, in a secondary analysis of a national, longitudinal cohort study conducted by Pierce and colleagues (2020;  $N = 17,452$ ) the authors found that the mental distress of adults' (aged 16+)

increased by roughly 8% one month into lockdown (April 23–30, 2020) in the United Kingdom (UK). In another UK-based study, O'Connor and colleagues (2021) surveyed 3044 adults (aged 18+) during the first month of lockdown (March 31–April 9, 2020) and found that suicidal ideation increased over time. Interestingly, the authors found that symptoms of anxiety decreased, and depressive symptoms and feelings of loneliness did not change (O'Connor et al., 2021). The discrepancy in findings between the two UK-based studies may be due to the difference in sample size and timeframe of data collection, as Pierce and colleagues (2020) sampled a larger population further into the COVID-19 pandemic. Thus, while O'Connor and colleagues (2021) did not see significant changes in participants' mental health this may be because their sample size was smaller and they collected data early into the COVID-19 pandemic, when perhaps participants had not experienced the effects of the pandemic to the fullest extent.

Per the tool's scoring protocol, participants' wellbeing was below the "normative" range (i.e., 70–80 points) for means in Western populations in several domains, as measured via the PWI-A (International Wellbeing Group, 2013). Specifically, participants scored about 5–6 points below the low end of "normal" when asked how satisfied they were with their physical and mental health, respectively. Equally concerning were participants' scores regarding their satisfaction with feeling part of their communities and their future security, as they also had average scores that were more than 5 points below "normal." Our findings suggest that, on average, participants experienced a rather poor sense of wellbeing in these domains during the first few months of the pandemic in Ontario. That said, regarding their satisfaction with life as a whole and what they are achieving in life, participants were within decimals of falling into the

“normal” range, with average scores of 69.0 and 68.9, respectively. Worth noting are the domains that participants scored within the range deemed “normal”, including their satisfaction with their standard of living, their personal relationships, their safety, and their spirituality/religion. Interestingly, participants scores were within the “normative” range regarding their satisfaction with safety, but below the “normative” range in terms of their anticipated future security. It is possible that one such reason for this might be due to individuals’ fear of potential repercussions of the pandemic, which could negatively influence their future security. Additionally, it was suspected that individuals’ scores would be below “normal” in terms of their satisfaction with personal relationships and spirituality/religion, given that people might have experienced feelings of isolation/loneliness due to limited physical contact and as a result of places of worship being closed due to public health restrictions (McQuaid et al., 2021), respectively; however, this was not the case. It is possible that participants connected with others virtually, rather than in-person, thus maintaining their personal relationships (Moore et al., 2021). Further, 78.1% of the sample identified as being married/common law/engaged, which might also explain our findings. Many places of worship also offered virtual services, providing individuals with the opportunity to practice their spirituality/religion (Bryson et al., 2020).

### ***Strengths, Limitations, and Future Directions***

There are several strengths to this study. First, to the best of our knowledge, this is the first study to provide an overview of Ontario adults’ wellbeing, mental health, physical activity, sedentary behaviour, and dietary intake during the early months of the COVID-19 pandemic. The sample was large (>2,000) and the tools used were all

previously validated while being sufficiently brief to minimize participant burden and increase completion rates. Nevertheless, there are also limitations worth noting. First, all data were collected using self-report measures which have the tendency to lend themselves to social desirability bias. However, given the size of the sample, nature of the pandemic, and the government restrictions in place, it was not possible to collect data via wearables and as such, this limitation was unavoidable. *Honesty demands* were employed to limit the risk of bias (Bates et al., 1992). Second, while participants' screen time use was measured, it was determined via only one question. We were unable to locate a brief previously validated tool to assess screen use, and as such, one question was used to collect these data. As a result, we did not specify recreational versus work-related screen use and were unable to compare our results to the recommended guidelines. Lastly, the demographics of our sample limit the generalizability of our study. Most of our sample identified as White females of high socioeconomic status, having completed an undergraduate degree or higher. Given that the sample of participants is fairly well-educated and higher income, they might not face barriers to being physically active, compared to those with lower education and incomes. Further, the high proportion of females in the current study might be attributed to our recruitment methods. Participants were recruited via social media platforms (i.e., Facebook, Twitter, Instagram, and LinkedIn), which women reportedly use more than men (Tankovska et al., 2021). Future studies might utilize stratified sampling and include an exploration of the impact of the pandemic on the lifestyle-related behaviours, mental health, and wellbeing of multiple genders, less affluent individuals, and other ethnicities.

## Conclusion

A new “normal” has emerged because of the COVID-19 pandemic—one that includes physical distancing, wearing masks, and restrictions on social gatherings (Government of Ontario, 2020a; Government of Ontario, 2020b). During the strictest public health mandates to date, Ontario adults self-reported below average wellbeing, mental health challenges, moderately healthy dietary behaviours, and appeared to meet physical activity and sedentary behaviour guidelines. Findings from the current paper may aid in the preparedness for subsequent iterations of strict, pandemic-related public health mandates. Our findings might be immediately useful to encourage the development of timely and evidence-informed health promotion and disease prevention strategies for Ontarians. This could include the development of physical activity interventions and mental health resources to help citizens navigate their lives in as healthy ways as possible during future pandemics or future waves of the current pandemic. Our findings might also provide insights about Ontario women aged 30–59, as researchers have concluded that women have been disproportionately impacted by the pandemic compared to other genders (Connor et al., 2020; Zajacova et al., 2020). Strategies such as these could support adults’ health behaviours, mental health, and wellbeing during the COVID-19 pandemic and other, future pandemics.

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### **Chapter 3: A Cross-Sectional Examination of Ontario Adults' Prosocial Behaviour During the First Few Months of the COVID-19 Pandemic<sup>1</sup>**

#### **Introduction**

Social relationships are critical for the mental and physical health of individuals and also extend years of life (Baumeister & Leary, 1995; Sbarra & Coan, 2018; Umberson & Karas Montez, 2010). In fact, being around, engaging with, and showing consideration for others are essential elements of healthy human socialization (Umberson & Karas Montez, 2010). Prosocial behaviour, defined as “voluntary behaviour intended to benefit another, such as helping, donating, sharing and comforting” (Eisenberg et al., 2016, p. 1668) is an important element of human socialization and is strongly correlated with positive mental health and overall wellbeing both among those receiving and providing beneficial acts (Layous et al., 2014; Lyubomirsky et al., 2004; Pressman et al., 2015; Shillington et al., 2020). Prosocial behaviour is a complex construct with many domains that include compassion, care, love, sympathy, empathy, altruism, and kindness (Dunfield, 2014; Eisenberg et al., 2014; Gilbert et al., 2019). Many of the constructs overlap to the point that they are often used synonymously. Specifically, kindness can be understood as actions intended for others' betterment (Curry et al., 2018) and can include activities such as holding the door open for others, shovelling snow from a neighbour's driveway, or greeting strangers (Shillington et al., 2020). Not surprisingly, these activities are also considered to be prosocial (Sanderson & McQuilkin, 2017). Impetuses of prosocial behaviour include social connection, interpersonal interactions, and social

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<sup>1</sup> A version of this chapter has been published elsewhere (see Shillington et al., 2022).

relatedness; the latter includes the pleasure of social interaction (Caprara et al., 2005, Eisenberg et al., 2016; Warneken, 2015).

Prosocial behaviour, inclusive of acts of kindness, has contributed to positive health and wellbeing (Lyubomirsky et al., 2004; Nelson-Coffey et al., 2017; Paviglianiti & Irwin, 2017; Raposa et al., 2016; Shillington et al., 2020). Raposa and colleagues (2016) investigated the impact of engagement in prosocial behaviours on the negative effects of stress in adults ( $N = 77$ ). The authors concluded that engaging in prosocial behaviour might buffer against the negative impacts of stress on a daily basis (Raposa et al., 2016). Similarly, Nelson-Coffey and colleagues (2017) aimed to determine if there was a link between prosocial behaviour and human health by examining changes in leukocyte Conserved Transcriptional Response to Adversity (CTRA), a molecular process that has the potential to “mediate the health effects of negative psychological processes and adverse social conditions” (Nelson-Coffey et al., 2017, p. 9). Adults ( $N = 159$ ) were recruited from Southern California and randomized to four different conditions: (1) performing acts of kindness for others; (2) performing acts of kindness for the world in general; (3) performing acts of kindness for themselves; and (4) completing a neutral control activity (Nelson-Coffey et al., 2017). Prosocial behaviour aimed to better others (i.e., acts of kindness for others and for the world) were contrasted with self-focused prosocial behaviour and the neutral condition (Nelson-Coffey et al., 2017). The authors concluded that engagement in prosocial behaviour reduced the expression of CTRA indicator genes in participants, indicating that prosocial behaviour may lead to improved physical health (Nelson-Coffey et al., 2017).

Although beneficial, and some might argue imperative, for the health of individuals and society at large, people's abilities to engage in prosocial behaviour can be threatened by environmental and interpersonal disruptions, particularly when those disruptions lead to conflicts of values or interests (e.g., those that promote self-serving behaviours; Caprara et al., 2005). The onset of COVID-19 has led to various environmental and interpersonal interruptions in typical human interactions (Columbus, 2020), in addition to the negative health implications of the pandemic itself (e.g., higher negative mental health, increased psychological distress, depression, anxiety, and stress, poorer wellbeing and quality of life; Mazza et al., 2020; Meyer et al., 2020; White & Van Der Boor, 2020). Unfortunately, some of these disruptions have resulted in widely publicized behaviours that could be viewed as both non-prosocial and, specifically, overtly self-serving (e.g., the stockpiling of personal supplies of goods without apparent concern for those unable to purchase any/enough; Columbus, 2020). That said, alterations to individuals' environments and interpersonal interactions can also encourage prosocial behaviour and connectedness (Barrett, 2020; BBC News, 2020; Shreve, 2020; Shubert, 2020). For instance, lay literature provides numerous examples of how the pandemic has prompted communities to come together by creating Facebook groups to document the good in the world (e.g., Barrett, 2020); displaying messages of hope and inspiration on the side of buildings using coloured duct tape (e.g., Shreve, 2020); and setting up groups to help support community members and specifically those in need (e.g., BBC News, 2020; Shubert, 2020). Researchers from different nations have also found increased empathy and prosocialness during the COVID-19 pandemic, and specifically as a result

of the public health restrictions implemented (Campos-Mercade et al., 2020; Pfattheicher et al., 2020; Sin et al., 2021).

The promotion of positive mental health amidst the negative psychological effects of the pandemic is especially critical in rural geographic locations (Monteith et al., 2020). Prior to the COVID-19 pandemic, individuals living in Canadian rural locations experienced social isolation, loneliness, and poorer mental than their urban counterparts (Bolin et al., 2015; Monteith et al., 2020; Public Health Agency of Canada, 2011). Some researchers have suggested that such findings may be due to individuals' lack of access to services that might promote social support and foster relationships (Monteith et al., 2020). The negative effects associated with feelings of isolation (e.g., poor mental health) might be further compounded by the public health restrictions (e.g., physical distancing, staying home as much as possible) mandated during the initial stages of the COVID-19 pandemic in rural Ontario (Monteith et al., 2020; White & Van der Boor, 2020). In a commentary by Monteith and colleagues (2020), the authors emphasized that "finding alternate ways to decrease social isolation and maintain connectedness and belongingness while adhering to physical distancing is paramount" (p. 2); one such alternative that some people might have chosen is engaging in prosocial behaviour.

Despite its potential importance, little research has examined prosocial behaviour during the COVID-19 pandemic and, to the best of our knowledge, none have compared prosocial behaviour between urban and rural areas. White and Van Der Boor (2020) investigated the impact of the pandemic on the mental health and wellbeing of adults ( $N = 600$ ) in the United Kingdom and found that participants who perceived an increase in kindness in their communities during the pandemic had lower levels of depression and

improved quality of life and wellbeing compared to those who did not perceive kindness as a component of their community. In a commentary, Fahey (2020) suggested that prosocial behaviour that follows public health guidelines could enhance individuals' social cohesion and, in turn, provide psychological benefits that may have been lost due to stringent government restrictions that impact in-person interactions. Knowing the extent to which prosocial behaviours were present during the early months of the pandemic would be a beneficial first step to explore the potential of prosocial behaviour as a positive support to promote during future waves of the pandemic. Understanding the degree to which prosocial behaviour is experienced within urban versus rural settings would allow for interventions to be setting specific. To this end, the purpose of this paper was two-fold: (1) to provide a cross-sectional overview of adults' prosocialness during the initial stages of the pandemic in Ontario; and (2) to examine whether prosocial behaviours differed among adults living in urban versus rural settings.

## **Methods**

As part of an ongoing, large-scale, longitudinal study wherein we are assessing adults' lifestyle-related health behaviours and outcomes, including physical activity, sedentary behaviour, sleep, diet, mental health, wellbeing, and prosocial behaviour, during the COVID-19 pandemic in Ontario, Canada, this paper offers a cross-sectional analysis of prosocialness reported by adults in Ontario. While the larger study includes three data collection time points during and following Ontario's framework for reopening, baseline data were utilized in the present study to provide a cross-sectional view of prosocialness during the initial stages of the pandemic (April 24 to July 13, 2020). The data collection timeframe corresponded to the province's early public health

restrictions (i.e., including lockdown and gradual reopening of businesses, public services, and outdoor spaces). The study received ethics approval from the host institution's Health Sciences Research Ethics Board.

### ***Study Procedures***

The research team recruited participants via social media advertisements (i.e., Facebook, Twitter, Instagram, LinkedIn) and community partners (e.g., individuals, community groups, health units, hospitals). To be eligible for the larger study, participants needed to be: (1) an Ontario resident; (2) between the ages of 30 and 59 years at baseline (the cohort that is most at risk for losing years of healthy life due to chronic disease; World Health Organization [WHO], 2005); and (3) able to read and write in English.

### ***Data Collection***

**Measures.** A demographic questionnaire was administered to solicit information regarding participants' age, sex, gender, ethnicity, income, education, and city/town of residence (coded as urban and rural; Appendix D). Defining what is considered "rural" is known to be a challenge (Letvak, 2002). For the purpose of this paper, rural areas are understood to be communities of less than 30,000 individuals with a travel time of more than 30 minutes to the nearest urban centre (Ministry of Health and Long-Term Care, 2011). Data on participants' prosocial behaviour was collected via the previously validated Prosocialness Scale for Adults (PSA; Caprara et al., 2005; Cronbach  $\alpha = 0.91$ ; Appendix I). The PSA assesses adults' prosocial behaviour using 16 Likert-scale items (Caprara et al., 2005); however, six questions were removed as they were not appropriate given that they involved physical contact with another individual (i.e., they did not follow

the COVID-19 physical distancing guidelines and would thus be inappropriate to complete). An additional two items were re-worded for the same reason (i.e., 'I try to be close to and take care of those who are in need' was changed to 'I try to be connected with and supportive of those who are in need' and 'I spend time with those friends who feel lonely' was changed to 'I spend time connecting with those friends who feel lonely'), leaving 8 original items and two modified items. Participants selected the response that best aligned with their initial reaction to various prosocial behaviour statements using a 5-point Likert scale ranging from 1 (never/almost never) to 5 (always/almost always). Examples of statements included, 'I am empathetic with those who are in need' and 'I am willing to make my knowledge and abilities available to others.' Three additional questions pertaining to adults' awareness of and engagement in kind behaviours during the COVID-19 pandemic were added using the same 5-point Likert scale (Appendix J). The three additional statements were, 'I am aware of kindness around me during COVID-19', 'I purposefully engage in deliberate acts of kindness during COVID-19' and 'I view kindness as a crucial component of my COVID-19 experience.'

### ***Data Analysis***

Descriptive statistics were conducted on all demographic variables. To address the primary research aim, the PSA tool was scored using a published protocol (Caprara et al., 2005). Descriptive statistics were computed for both the PSA data and the additional three kindness-related questions. All questionnaire items were summed and means and standard deviations for each item were calculated, where a higher mean was indicative of increased prosocial behaviour and a lower mean indicated decreased prosocial behaviour. A total PSA score was also calculated for each participant using the 10 PSA items, which



could potentially range from 10–50. To address the secondary research aim, an independent-sample *t*-test was conducted using participants' PSA total scores and location (i.e., urban vs rural). Alpha was set at 0.05. Given that the added questionnaire items on kindness had not been previously validated, we did not investigate potential differences in kindness based on geographic location. Instead, descriptive analyses were performed on these items and presented separately. All statistical analyses were performed using IBM SPSS version 26.

## Results

Of the 2,188 participants who completed the survey, the majority identified as female ( $n = 1,743$ ; 89.6%), were Caucasian (European decent;  $n = 1,789$ ; 91.6%), and had a mean age of 43 ( $SD = 8.82$ ) years. More participants reported living in an urban ( $n = 1,236$ ; 56.5%) versus rural setting ( $n = 675$ ; 30.8%), many had completed a university undergraduate degree ( $n = 550$ ; 28.0%) or higher ( $n = 573$ ; 29.2%), and approximately half reported household incomes \$80,000 and above ( $n = 1,220$ ; 62.2%). The mean score of the PSA was 39.25 ( $SD = 5.66$ ; Table 1) with responses ranging from 12 to 50. The majority of respondents ( $n = 1970$ ; 93.9%) had a “high” prosocialness score that was above the cut-off of 30, with only 5.8% ( $n = 125$ ) reporting a “low” prosocialness score below the cut-off. Participants scored highest on the item ‘I am empathic with those who are in need’ ( $M = 4.25/5.0$ ;  $SD = 0.69$ ) and lowest on the item ‘I spend time connecting with those friends who feel lonely’ ( $M = 3.49$ ;  $SD = 0.82$ ). The scores of individual items can be found in Table 1. The mean score of participants' awareness of kindness around them during the COVID-19 pandemic was 3.92 ( $SD = 0.78$ ). The mean score of participants who felt they purposefully engaged in deliberate acts of kindness during the

COVID-19 pandemic was 3.50 ( $SD = 0.91$ ). The mean score of participants' viewing kindness as a crucial component of their COVID-19 pandemic experience was 3.86 ( $SD = 0.96$ ). Results from the independent-sample  $t$ -tests found no statistically significant difference in the level of prosocialness between urban and rural participants ( $t(1899) = 1.94, p = 0.052, d = 0.093; 95\% \text{ CI: } -0.0049 \text{ to } 1.05; \text{ Table 2}$ ).

**Table 1**

*Ontario Adults' (n = 2,105) Prosocialness During the Initial COVID-19 Pandemic*

<b>Prosocialness Scale for Adults (PSA)</b>	<b>Mean</b>	<b>SD</b>
1. I try to help others	4.04	0.81
2. I am empathic with those who are in need	4.25	0.69
3. I intensely feel what others feel	3.74	0.89
4. I am willing to make my knowledge and abilities available to others	4.12	0.76
5. I try to console those who are sad	4.08	0.78
6. I easily put myself in the shoes of those who are in discomfort	3.95	0.81
7. I try to be connected with and supportive of those who are in need	3.88	0.79
8. I easily share with friends any good opportunity that comes to me	3.96	0.84
9. I spend time connecting with those friends who feel lonely	3.49	0.82
10. I immediately sense my friends' discomfort even when it is not directly communicated to me	3.72	0.83
<b>Total score</b>	<b>39.25</b>	<b>5.66</b>

*Note.* Individual items were administered using a 5-point Likert scale ranging from 1 (never/almost never) to 5 (always/almost always). The total score is out of 50, with higher scores indicating higher prosocialness and lower scores indicating lower prosocialness. A total of 4.3% of participants had missing data for one or more items on the PSA. Items 7 and 9 were re-worded, as they did not follow the COVID-19 physical distancing guidelines.

**Table 2**

*Differences in Prosocial Behaviour Between Urban and Rural Ontario Adults (n = 1,901) During the Initial COVID-19 Pandemic*

<b>Variable</b>	<b>Group</b>	<b><i>n</i></b>	<b>Mean</b>	<b><i>SD</i></b>
Prosocialness (PSA)	Urban	1231	39.51	5.59
	Rural	670	38.99	5.59

*Note.* PSA refers to the Prosocialness Scale for Adults.

## Discussion

This study provided a cross-sectional overview of Ontario adults' prosocial and kindness behaviours during the initial stages of the pandemic and examined whether prosocial behaviours differed between urban and rural residents. Using a cut-off of 30, 93.9% of participants reported high levels of prosocialness and many participants experienced kindness during the COVID-19 pandemic. While the research team anticipated public health restrictions would make interactions more difficult, the growing research-based and anecdotal/lay reports of communities coming together in kindness made this finding unsurprising. Our findings are consistent with those from other countries during COVID-19 (Campos-Mercade et al., 2020; Pfattheicher et al., 2020; Sin et al., 2021). In fact, researchers have found that the public health guidelines implemented as a result of COVID-19 have prompted opportunities for increased empathy (Pfattheicher et al., 2020) and prosocialness towards others (Campos-Mercade et al., 2020). Interestingly and with important implications for the pandemic, among a sample of Swedish individuals ( $N = 967$ ), Campos-Mercade and colleagues (2020) found that individuals with high prosocialness were more likely to follow public health guidelines (e.g., physical distancing, wearing a mask, following hygiene practices, protecting others) than those with low prosocialness. Similarly, in an analysis across four pre-registered studies, Pfattheicher and colleagues (2020) found that adults from Western countries ( $N = 3,817$ ) who showed empathy towards those most vulnerable to COVID-19 were more likely to engage in physical distancing and wear a face mask while in public compared to those with less empathy (Pfattheicher et al., 2020). Based on these findings, it is possible that individuals view following public health measures as acts of kindness

towards others and more research into this might be appropriate. Thus, while Ontario's public health mandates could have restricted participants from engaging in some prosocial acts once deemed "common" (e.g., holding a door for a stranger, offering to help someone carry groceries; Shillington et al., 2020), it is possible that they prompted a different type of prosocial behaviour in the wake of COVID-19—one that keeps people safe and healthy.

Alloway and colleagues (2014) indicated that social media platforms (e.g., Facebook, Zoom, Twitter, Instagram) might provide individuals with unique opportunities to act prosocially. Similar to the work of the aforementioned researchers (Campos-Mercade et al., 2020; Pfattheicher et al., 2020), it is likely that participants' high levels of prosocialness can be attributed to following public health restrictions during the reopening of the province, especially given that Ontario implemented physical distancing practices in early April (Government of Ontario, 2020) and regions started mandating wearing non-medical face masks in early July (Ottawa Public Health, 2020)—the timeframe in which participants completed the baseline survey. It is also plausible that at the completion of baseline assessments participants had not yet experienced COVID-19 burnout, which has been characterized in the press as "...a state of emotional, physical, and mental exhaustion caused by excessive and prolonged stress" due to coping with the pandemic (Queen & Keith Harding, 2020, p. 1). Rather, participants might have experienced the positive effects of communities coming together during the initial stages of the pandemic (McQuigge, 2020). Further research using data from later in the pandemic would be needed to explore this possibility further.

Interestingly, there was no statistically significant difference observed in prosocial behaviour between urban and rural participants. While it was thought that the COVID-19 pandemic might exacerbate pre-existing feelings of social isolation and loneliness in participants living in rural areas and, in turn, limit opportunities to engage in prosocial behaviour, this appeared not to be the case. One such reason for this might be due to the cut-off score used to determine ‘high’ versus ‘low’ prosocialness, as 93.9% of participants were considered high in prosocial behaviour per the cut-off established; thus, it would be unlikely to see any significant differences between groups. Another reason for such high levels of prosocialness might have been the opportunity to engage in social interactions outdoors while adhering to physical distancing guidelines, as rural areas tend to maintain open space (Monteith et al., 2020). This means that individuals might have been able to follow public health guidelines while engaging in prosocial behaviour outdoors. It is also possible that technology, namely social media, bridged the gap between individuals living in rural and urban settings. During the early stages of the pandemic, individuals turned to social media for support, entertainment, and social connection (Nabity-Grover et al., 2020). Thus, technology may have “leveled the playing field” in terms of participants’ ability to act prosocially, in that regardless of where people lived, they were able to connect with others virtually. Additionally, it is plausible that the public health restrictions did not negatively impact adults living in rural locations to the extent that was expected, as it is possible that rural participants were already accustomed to distanced living. One trait that tends to be common in rural environments compared to urban, are the close-knit communities and general helping behaviours of residents (Banyard et al., 2015; Banyard et al., 2019). Helping tends to occur most often

between friends and family (Banyard et al., 2019) and given that residents of rural communities often know each other it is possible that they would be more likely engage in helping behaviour as a result of the strength in the ties of the community (Amato, 1990).

It is possible that the high levels of prosocialness and kindness among participants in the current study are, in part, a consequence of the sample of the present study. Sin and colleagues (2020) investigated the association between daily prosocial activities (i.e., formal volunteering, providing and receiving support) and wellbeing during COVID-19 in a sample of primarily female (87%), Caucasian (89%), North American adults aged 18–91 years. They found that age was a predictor for engagement in daily prosocial activities, such that as participants increased in age, their prosocial behaviour also increased (Sin et al., 2021). Age was also associated with frequency of providing and receiving COVID-19-related support; as individuals' ages increased so too did their likelihood of providing and receiving support. Further, middle-aged adults (i.e., 40–59 years) provided more tangible support than younger and older adults. The current study shared similar participant characteristics in terms of gender, ethnicity, and age to those to those studied by Sin and colleagues (2020); therefore, it is possible that participants' high level of prosocialness was associated with their demographics. Contrary to what might appear logical regarding the disruptions to kindness-related environments (e.g., those that promote selfish behaviours; Caprara et al., 2005), the COVID-19 pandemic appears to be bringing out high levels of prosocial behaviour (or, the best) in some people.



### ***Strengths and Limitations***

The current study has a number of strengths. To the best of our knowledge, this is the first Canadian study to explore adults' prosocial behaviour, and kindness specifically, during Ontario's initial public health restrictions in the early months of the COVID-19 pandemic. The PSA tool was previously validated (Caprara et al., 2005); however, it was adapted to better account for the context of COVID-19. As such, the altered tool was not validated in the format as it was used. The researchers acknowledge that removing questions from a previously validated scale alters its validity and such considerations need to be taken into account when scoring the tool, analyzing the data, and interpreting the findings. Also, three kindness-specific COVID-19 questions were created specifically for this study and not taken from a previously validated tool. Additionally, although *honesty demands* (Bates, 1992) were employed to help reduce the likelihood of social desirability bias, the PSA tool was self-report, which means this concern cannot be ruled out. Our sample was primarily comprised of those who identified as female and Caucasian, which limits the generalizability of the study's findings. Finally, study findings may have been related to the manner in which "rural" was operationally defined.

### **Conclusion**

Ontario adults reported high levels of prosocialness during the early stages of the COVID-19 pandemic, a time reflective of the province's initial public health restrictions. As the pandemic continues to wear on the mental health and lifestyle-related behaviours of individuals (Ammar et al., 2020; Di Sebastiano et al., 2020; Meyer et al., 2020), prosocial behaviour, including acts of kindness, might be an approach worthy of further investigation as a mental health support.

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## **Chapter 4: Ontario Adults' Mental Health and Wellbeing During the First 16 Months of the COVID-19 Pandemic<sup>1</sup>**

### **Introduction**

The COVID-19 pandemic has created individual and systemic issues that have challenged the mental health of citizens (Fitzpatrick et al., 2020). At an individual level, the pandemic has caused insecurity, confusion, emotional isolation, and stigma, while communities suffer from economic loss, challenges related to work and school closures, and inadequate resources for testing, treatment, and protection (Pfefferbaum & North, 2020). Such challenges may lead to distress or psychiatric conditions, as well as unhealthy behaviours (Pfefferbaum & North, 2020). In response to the COVID-19 pandemic, the Ontario provincial government mandated various protections to mitigate the spread of the virus (Government of Ontario, 2022), which have been acknowledged as disrupting everyday activities and routines of citizens (Di Sebastiano et al., 2020). Such disruptions have been implicated in the pandemic's impact on people's mental health and wellbeing (Khan et al., 2020; Meyer et al., 2020). In addition to the range of health consequences from contracting COVID-19, researchers have also attributed individuals' mental health challenges to pandemic-related financial strain and unemployment, housing and food insecurity, lack of childcare, and disproportionate and gendered caregiving (Canadian Human Rights Commission, 2020; Van Lancker & Parolin, 2020). The mental health consequences of the COVID-19 pandemic are being recognized as a growing "wave" (Babaian, 2020; Tseng, 2020), with the number of

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<sup>1</sup> A version of this chapter has been submitted for publication (see Shillington et al., 2022a).

people impacted expected to increase over time (Douglas et al., 2020; Haynes et al., 2020).

In Canada, there is growing concern for the mental health and wellbeing of individuals (Angus Reid Institute, 2020; Capaldi et al., 2021; Jenkins et al., 2021). Specifically, during the early stages of the pandemic (April 2020), 50% of Canadian adults (aged 18+) reported that their mental health had declined and over 40% described being worried and/or anxious because of the pandemic (Angus Reid Institute, 2020). Jenkins and colleagues (2021) conducted a cross-sectional online survey study in May 2020 to investigate the impact of the pandemic on the mental health of adults in Canada ( $M_{\text{age}} = 49.1$  years;  $N = 3000$ ). The authors found that 38.2% of participants reported a deterioration in their mental health since the onset of the COVID-19 pandemic and those with pre-existing mental health conditions were significantly more vulnerable (Jenkins et al., 2021). Women were also more likely to report a deterioration of their mental health than men (44% compared to 32%, respectively; Jenkins et al., 2021). Moreover, respondents noted experiencing anxiety/worry (46%), stress (37%), loneliness/isolation (30%), depression (23%), as well as feelings of loneliness/isolation (27%), and sadness (23%; Jenkins et al., 2021). Contributing to their poor mental health were several pandemic-related stresses including loved ones getting sick, financial strain, and job loss (Jenkins et al., 2021). While some participants indicated that they were not coping well, others employed various strategies including exercise (59%), connecting with loved ones (56%), and maintaining a healthy lifestyle (43%; Jenkins et al., 2021). Additionally, Capaldi and colleagues (2021) used cross-sectional data from January 2–December 24, 2019 (pre-pandemic;  $N = 57,034$ ) and from September 11–December 4, 2020 (during the

pandemic;  $N = 11,324$ ) to compare Canadian adults' (18+ years) mental health, community belonging, and life satisfaction. Despite the fact that over half of the participants reported positive mental health, the authors found that, compared to pre-pandemic, there were significantly fewer participants who reported high levels of positive mental health during the early pandemic (60% in 2020 compared to 67% in 2019; Capaldi et al., 2021). In 2020, 64% of participants reported feeling high levels of community belonging, which was significantly lower than what was reported in 2019 (68.4%; Capaldi et al., 2021). Moreover, on a scale from 0–10, the average life satisfaction of Canadian adults was 7.19 in 2020, which was significantly lower than that reported in 2019 ( $M = 8.08$ ; Capaldi et al., 2021). When the authors categorized their data by province, it was clear that the findings from Ontario were consistent with those at the national level, such that there were statistically significant differences in participants' mental health, community belonging, and life satisfaction between 2019 and 2020, with fewer participants reporting favourable health characteristics (Capaldi et al., 2021).

The deterioration of mental health and wellbeing of adults living in Canada during the pandemic is not an isolated phenomenon, as international researchers have reported similar findings globally (e.g., O'Connor et al., 2021; White & Van Der Boor, 2020; Xiong et al., 2020). Specifically, O'Connor and colleagues (2021) investigated the mental health and wellbeing of adults ( $N = 3077$ ; 18+ years) during the first 6 weeks of lockdown in the United Kingdom (UK; March 31–May 11, 2020). The authors surveyed participants and concluded that rates of suicidal ideation increased during the initial weeks of the lockdown and that one in four participants reported experiencing moderate to severe levels of depression (O'Connor et al., 2021). Similarly, White and Van Der

Boor (2020) assessed the mental health and wellbeing of 600 adults ( $M_{\text{age}} = 36.75$ ) in the UK during the initial lockdown (March 31–April 13, 2020) and found that participants who self-isolated prior to the lockdown due to COVID-19 symptoms, as well as those who felt more isolated in general, experienced poor mental health compared to those who did not isolate (White & Van Der Boor, 2020). Specifically, participants reported significantly higher levels of anxiety and depression, as well as lower levels of wellbeing and quality of life than those who did not self-isolate (White & Van Der Boor, 2020). Moreover, Xiong and colleagues (2020) conducted a systematic review ( $N = 19$  studies) to explore the impact of COVID-19 on the psychological outcomes of individuals. The authors concluded that individuals in various countries (i.e., China, Spain, Italy, Iran, the US, Turkey, Nepal, and Denmark) reported concerning rates of depression (14.6% to 48.3%), post-traumatic stress disorder (7% to 53.8%), anxiety (6.33% to 50.9%), psychological distress (34.43% to 38%), and stress (8.1% to 81.9%) during the COVID-19 pandemic (Xiong et al., 2020).

It is evident, based on the data presented, that the COVID-19 pandemic has impacted the mental health and wellbeing of people around the world, including adults in Canada, during the early waves of the pandemic; however, no data have been reported on changes in Ontario adults' mental health at different time points during the pandemic. The aforementioned studies lacked the ability to detect changes in characteristics over time. As such, the current study fills this gap, given its longitudinal nature and the fact that the timeframe spans the first 16 months of the pandemic in Ontario, Canada. Moreover, it is important to investigate the mental health and wellbeing of adults at a provincial level as public health protection mandates are provincially determined. As

previously indicated, the COVID-19 pandemic has the potential to create a secondary crisis—one of psychological distress and “mental health system spillover” (Choi et al., 2020, p. 340). Given the mental health concerns reported to date, it is plausible that there will be more individuals with poor mental health that will need support than previously (pre-pandemic), thus creating a system “spillover” and, in turn, placing additional strain on the mental health system (Choi et al., 2020). Being able to anticipate the extent in which spillover might occur and overwhelm existing access to mental health services and resources, can help to buffer against the short- and long-term harm to adults’ mental health and aid in understanding the resource investments that need to be prioritized in order to support citizens during uncertain times (Choi et al., 2020). To this end, the purpose of this paper was to quantitatively assess adults’ mental health and overall wellbeing over time during the first 16 months of the pandemic in Ontario, Canada.

## **Methods**

### ***Study Design***

This paper is a part of an ongoing, longitudinal, survey-based study titled *Health Outcomes for adults during and following the COVID-19 Pandemic (HOPE)*, which aims to assess adults’ lifestyle-related health behaviours and outcomes, including physical activity, sedentary behaviour, sleep, diet, mental health, wellbeing, and prosocial behaviour, during the COVID-19 pandemic in Ontario, Canada. The current paper reports on participants’ mental health and wellbeing using data collected from April 24, 2020 to August 30, 2021. A more fulsome description of the methods (i.e., study design, study procedures, recruitment, measures, data analysis) for this research have been detailed elsewhere (Shillington et al., 2021; 2022b; 2022c).

### ***Participants***

Participants were recruited for the larger study via social media platforms and through community health centres, regional health units, and medical clinics. To be eligible for the study participants needed to be: (1) an Ontario resident; (2) between the ages of 30–59 years at baseline, as individuals within this age range are at highest risk for losing years of healthy life due to chronic disease (i.e., disability adjusted life years; World Health Organization, 2005); and (3) able to read and write in English.

### ***Study Procedures***

Data collection occurred at three time points: (1) baseline/time 1 (T1; April 24–July 13, 2020); (2) time 2 (T2; July 29–August 30, 2020); and time 3 (T3; July 29–August 30, 2021). Recruitment and T1 data collection occurred simultaneously; upon clicking the link in the study advertisement, interested Ontario adults were directed to an online survey, via Qualtrics, which included the letter of information, eligibility questions, consent, and the T1 questionnaires (inclusive of demographics, the Mental Health Inventory-5, and the Personal Wellbeing Index Adult). At subsequent time points the same questionnaires were administered with the exception of the demographic items. Most demographic questions were only asked at T1; however, some demographic questions were asked at each time point, as outlined in the Measures section.

### ***Measures***

While *The HOPE Study* included several measures, for the purpose of this paper, only demographic questions and the mental health and wellbeing measures were included and are presented below. For full measure details please see Shillington and colleagues (2021).

**Demographics.** The T1 demographic questionnaire included questions pertaining to participants' age, sex, gender, ethnicity, geographic location, employment status, income, education attainment, marital status, COVID-19 diagnosis (at any time point), and presence of mental health conditions (mental illness, mood/anxiety disorders, and schizophrenia; consistent with Statistics Canada's prevalence of chronic diseases among Canadian adults; Government of Canada, 2019; Appendix D). The T2 and T3 demographics questionnaires included questions pertaining to the extent to which participants' incomes may have changed over the pandemic, employment status, COVID-19 diagnosis (at any time point), and presence of mental health conditions (Appendix K).

**Mental Health Inventory-5 (MHI-5).** The MHI-5 (Berwick et al., 1991) was previously validated and is used to measure mental health status using 5 items that focus on positive affect ( $n = 2$ ), anxiety ( $n = 1$ ), depression ( $n = 1$ ), and behavioural/emotional control ( $n = 1$ ), respectively. Participants were asked the extent to which each statement was true on a Likert scale of 1 (all of the time) to 6 (none of the time). Higher scores indicated better mental health. The MHI-5 does not have a pre-determined cut-score; however, researchers have suggested that a score of 76 or below is indicative of a mental disorder (Kelly et al., 2008). As such, this cut score will be used to interpret findings in the current study.

**Personal Wellbeing Index-Adult (PWI-A).** The PWI-A (International Wellbeing Group, 2013) was previously validated and measures subjective wellbeing using 7 items that correspond to quality of life domains including: (1) standard of living;



(2) health<sup>2</sup>; (3) achievement in life; (4) relationships; (5) safety; (6) community-connectedness; and (7) future security. It also includes two additional (optional) items: (1) satisfaction with life as a whole; and (2) spirituality/religion. Participants were asked to indicate how satisfied they felt in each of the domains, as well as the additional items, on a Likert scale of 0 (no satisfaction at all) to 10 (completely satisfied), whereby higher scores indicated better wellbeing.

### ***Data Analysis***

A series of one-way repeated measures ANOVAs were conducted in SPSS to determine whether there were statistically significant differences in participants' mental health (1 item) and wellbeing (9 items), respectively, throughout the COVID-19 pandemic (T1 to T3). To correct for multiple comparison bias in post-hoc analyses, a Bonferroni correction was applied. Multiple imputation was used to handle missing data and maintain sample size. Thus, all participants ( $N = 2,188$ ) were included in the analyses and all data analyses were completed in SPSS (version 28.0.1.1).

## **Results**

### ***Demographics***

A total of 2,188 participants ( $M_{\text{age}} = 43.15$  years;  $SD = 8.82$ ) participated in *The HOPE Study*. Most participants identified as female ( $n = 1,743$ ; 89.55%) and were of European origins ( $n = 1,789$ ; 91.55%). At T1 1,162 (59.22%) participants were employed full-time, 1,220 (62.18%) had an annual household income of \$80,000 or greater, and 32 (1.63%) identified as having had COVID-19. Most participants in the study were

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<sup>2</sup> The health domain, which was comprised of the question 'How satisfied are you with your health?', was split into two questions that asked participants how satisfied they were with their (1) physical health and (2) mental health. A more detailed explanation can be found in Shillington et al. (2021).

married, common law, or engaged ( $n = 1,535$ ; 78.20%) and had a university undergraduate degree or higher ( $n = 1,123$ ; 57.21%). At T1, 6.85% ( $n = 150$ ) identified as having a mental illness and 24.04% ( $n = 526$ ) reported having mood/anxiety disorders. The prevalence of participants reporting mental illness at T2 and T3 was 3.24% ( $n = 71$ ) and 3.56% ( $n = 78$ ), respectively. The prevalence of mood/anxiety disorders at T2 was 11.06% ( $n = 242$ ) and at T3 it was 9.60% ( $n = 210$ ). No participants reported having schizophrenia at any time point. Moreover, when asked the extent to which their income had changed since baseline at T2, 78.38% ( $n = 678$ ) of participants reported that their income had stayed the same, while at T3, 54.80% ( $n = 428$ ) reported that it stayed the same. At T2 there were 16 participants (1.86%) who had tested positive or suspected themselves to have COVID-19, while at T3 this number increased to 25 (3.20%). Moreover, at T2, there were 503 participants who were employed full-time (58.15%) while at T3, 62.61% ( $n = 489$ ) participants were employed full-time. Full demographic details can be found in Table 1.

**Table 1***Demographic Information of Participants in The HOPE Study*

<b>Participant Characteristics (N = 2,188)</b>	<b><i>n</i></b>	<b>%</b>
Age (years), <i>M (SD)</i>		
Total	43.15 (8.82)	
Sex		
Female	1,749	89.55
Male	200	10.24
I prefer not to answer	3	0.15
Not listed	1	0.051
Gender		
Female	1,743	89.57
Male	198	10.17
Non-Binary	2	0.10
I prefer not to answer	3	0.15
Ethnicity		
Arab	4	0.20
Black	9	0.46
Caucasian (White)/European	1,789	91.55
Chinese	22	1.12
Filipino	5	0.25
Indigenous	20	1.02
Japanese	4	0.20
Korean	3	0.15
Latin American	14	0.72
Maltese	1	0.051
Metis	3	0.15
South Asian	38	1.94
Southeast Asian	5	0.25
West Asian	2	0.10
West Indian	1	0.051
Multiracial	19	0.97
I prefer not to answer	14	0.72
Not listed	1	0.051
Employment Status at T1		
Employed full-time	1,162	59.22
Employed part-time	156	7.95
Casual	33	1.68
Unemployed	204	10.40
I prefer not to answer	10	0.51
Other	397	20.23
Employment Status at T2		
Employed full-time	503	58.15
Employed part-time	82	9.50

Casual	15	1.73
Unemployed	55	6.36
I prefer not to answer	6	0.69
Other	204	23.58
Employment Status at T3		
Employed full-time	489	62.61
Employed part-time	69	8.83
Casual	16	2.05
Unemployed	39	4.99
I prefer not to answer	5	0.64
Other	163	20.87
Income (T1)		
< \$30,000	98	4.99
\$30,000–\$59,000	236	12.03
\$60,000–\$79,999	225	11.47
\$80,000–\$110,999	375	19.11
\$111,000–\$150,000	390	19.88
>\$150,000	455	23.19
I prefer not to answer	183	9.33
Extent That Income Changed Since T1 (T2)		
Reduced	122	14.10
Stayed the same	678	78.38
Increased	65	7.51
Extent That Income Changed Since T1 (T3)		
Reduced	148	18.95
Stayed the same	428	54.80
Increased	205	26.25
Tested Positive for COVID-19 (T1)		
Yes	32	1.63
No	1928	98.37
Tested Positive for COVID-19 (T2)		
Yes	16	1.86
No	844	98.14
Tested Positive for COVID-19 (T3)		
Yes	25	3.20
No	756	96.80
Marital Status		
Single	242	12.33
Married/common law/engaged	1,535	78.20
Divorced/separated	156	7.95
Widowed	18	0.92
I prefer not to answer	12	0.61
Highest Level of Education		
Less than high school	24	1.22
High school	150	7.64
Community college/journeyman apprenticeship	618	31.48

University undergraduate degree	550	28.02
University graduate or degree or higher	573	29.19
I prefer not to answer	6	0.30
Other	42	2.14
Presence of Mental Health Conditions at T1		
Mental illness	150	6.85
Mood and anxiety disorders	526	24.04
Schizophrenia	0	0
Presence of Mental Health Conditions at T2		
Mental illness	71	3.24
Mood and anxiety disorders	242	11.06
Schizophrenia	0	0
Presence of Mental Health Conditions at T3		
Mental illness	78	3.56
Mood and anxiety disorders	210	9.60
Schizophrenia	0	0

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*Note.* Time point 1 (T1) occurred from April–July 2020, time point 2 (T2) occurred from July–August 2020; and time point 3 (T3) occurred from July–August 2021. The total sample size was 2,188 participants; not all categories summed to equal the total sample due to missing data. Age was collected as a continuous variable.

### ***Mental Health***

A one-way repeated measures ANOVA revealed a statistically significant difference in participants' mental health over time,  $F(1.95,4,275.02) = 34.22, p < 0.001, \eta^2_p = 0.015$  (see Figure 1). Post hoc tests revealed a statistically significant increase in participants' mental health scores from T1–T2 ( $M_{\text{difference}} = -2.42, p < 0.001, 95\% \text{ CI} = -3.37 \text{ to } -1.46$ ) and from T1–T3 ( $M_{\text{difference}} = -3.44, p < 0.001, 95\% \text{ CI} = -4.45 \text{ to } -2.42$ ). The mean scores for participants' mental health at each time point were 60.21, 62.63, and 63.65, respectively, indicating presence of a mental disorder (see Table 2).

### ***Wellbeing***

There was no significant difference in participants' satisfaction with their life as a whole,  $F(1.20,4367.76) = 0.067, p = 0.93, \eta^2_p = 0.000$ . There was a statistically significant difference in participants' satisfaction with their standard of living over time,  $F(1.95,4267.44) = 18.54, p < 0.001, \eta^2_p = 0.008$ . Post hoc testing revealed that participants' satisfaction with their standard of living significantly decreased from T1–T2 ( $M_{\text{difference}} = 1.97, p < 0.001, 95\% \text{ CI} = 1.13 \text{ to } 2.81$ ) and from T1–T3 ( $M_{\text{difference}} = 1.88, p < 0.001, 95\% \text{ CI} = 0.94 \text{ to } 2.82$ ). A statistically significant difference was also found for participants' satisfaction with their physical health over time  $F(2.00,4365.93) = 42.50, p < 0.001, \eta^2_p = 0.019$ . Post hoc analyses revealed that participants' satisfaction with their physical health decreased significantly from T1–T3 ( $M_{\text{difference}} = 3.84, p < 0.001, 95\% \text{ CI} = 2.77 \text{ to } 4.90$ ) and from T2–T3 ( $M_{\text{difference}} = 3.00, p < 0.001, 95\% \text{ CI} = 1.94 \text{ to } 4.05$ ). There was also a significant difference in participants' satisfaction with their mental health over time,  $F(1.98,4333.72) = 4.27, p = 0.014, \eta^2_p = 0.002$ , with post hoc tests showing that scores decreased significantly from T1–T3 ( $M_{\text{difference}} = 1.40, p <$

0.001, 95% CI = 0.23 to 2.57). No statistically significant difference was found for participants' satisfaction with their achievement in life,  $F(1.99, 4358.38) = 1.73$ ,  $p = 0.18$ ,  $\eta^2_p = 0.001$ . There was a significant difference found for participants' satisfaction with their personal relationships over time,  $F(1.74, 3814.13) = 9.12$ ,  $p < 0.001$ ,  $\eta^2_p = 0.004$ . Post hoc analysis revealed that participants' satisfaction with their personal relationships decreased significantly from T1–T3 ( $M_{\text{difference}} = 2.35$ ,  $p < 0.001$ , 95% CI = 1.27 to 3.44) and from T2–T3 ( $M_{\text{difference}} = 1.75$ ,  $p = 0.019$ , 95% CI = 0.22 to 3.28).

There was a statistically significant difference in participants' satisfaction with their safety over time,  $F(1.99, 4349.86) = 83.89$ ,  $p < 0.001$ ,  $\eta^2_p = 0.037$ , with post hoc analysis showing that scores decreased from T1–T2 ( $M_{\text{difference}} = 3.54$ ,  $p < 0.001$ , 95% CI = 2.44 to 4.65) and increased from T1–T3 ( $M_{\text{difference}} = -2.64$ ,  $p < 0.001$ , 95% CI = -3.82 to -1.47) and T2–T3 ( $M_{\text{difference}} = -6.19$ ,  $p < 0.001$ , 95% CI = -7.36 to -5.01). There was a statistically significant difference in participants' satisfaction with their community-connectedness over time,  $F(1.92, 4,918.87) = 9.86$ ,  $p < 0.001$ ,  $\eta^2_p = 0.004$ . Post hoc analysis revealed that participants' satisfaction with their community-connectedness decreased significantly from T1–T2 ( $M_{\text{difference}} = 2.075$ ,  $p = 0.002$ , 95% CI = 0.59 to 3.56) and increased from T2–T3 ( $M_{\text{difference}} = -2.43$ ,  $p < 0.001$ , 95% CI = -3.92 to -0.939). There was a statistically significant difference in participants' satisfaction with their future security over time,  $F(1.99, 4,352.82) = 27.70$ ,  $p < 0.001$ ,  $\eta^2_p = 0.013$ . Post hoc analysis revealed that participants' satisfaction with their future security significantly decreased from T1–T2 ( $M_{\text{difference}} = 1.63$ ,  $p = 0.002$ , 95% CI = 0.48 to 2.77) and increased from T1–T3 ( $M_{\text{difference}} = -1.94$ ,  $p < 0.001$ , 95% CI = -3.13 to -0.76) and T2–T3 ( $M_{\text{difference}} = -3.57$ ,  $p < 0.001$ , 95% CI = -4.69 to -2.45). There was a statistically

significant difference in participants' satisfaction with their spirituality/religion over time,  $F(1.99, 4350.23) = 7.82, p < 0.001, \eta^2_p = 0.004$ . Post hoc analysis revealed that participants' satisfaction with their spirituality/religion decreased significantly from T1–T3 ( $M_{\text{difference}} = 1.78, p = 0.003, 95\% \text{ CI} = 0.47 \text{ to } 3.09$ ) and from T2–T3 ( $M_{\text{difference}} = 1.91, p = 0.002, 95\% \text{ CI} = 0.59 \text{ to } 3.23$ ). The means ( $M$ ), standard deviations ( $SD$ ), and the  $F$ -ratios of the one-way repeated measures ANOVAs for the wellbeing scale and the respective subscales separated by time can be found in Table 2.



**Table 2**

*The Mental Health and Wellbeing of Participants Throughout the COVID-19 Pandemic in Ontario, Canada*

Scale	Time 1 <i>M (SD)</i>	Time 2 <i>M (SD)</i>	Time 3 <i>M (SD)</i>	<i>F-ratio</i>
<b><i>Mental Health Inventory (MHI-5)</i></b>				
Total score (out of 100)	60.21 (19.16)	62.63 (21.34)	63.65 (18.37)	$F(1.95,4275.02) = 34.22, p = < 0.001^*, \eta^2_p = 0.015$
<b><i>Personal Wellbeing Index-Adult (PWI-A)</i></b>				
Satisfaction with life as a whole	69.11 (19.30)	69.02 (21.09)	69.20 (17.41)	$F(1.20,4367.76) = 0.067, p = 0.93, \eta^2_p = 0.000$
Satisfaction with standard of living	76.89 (18.98)	74.92 (18.92)	75.01 (18.43)	$F(1.95,4267.44) = 18.54, p = < 0.001^*, \eta^2_p = 0.008$
Satisfaction with physical health	64.62 (20.80)	63.78 (21.75)	60.78 (20.35)	$F(2.00,4365.93) = 42.50, p = < 0.001^*, \eta^2_p = 0.019$
Satisfaction with mental health	64.49 (21.94)	64.25 (25.77)	63.09 (20.00)	$F(1.98,4333.72) = 4.27, p = 0.014^*, \eta^2_p = 0.002$
Satisfaction with achievement in life	68.91 (20.87)	68.10 (23.27)	68.75 (20.15)	$F(1.99,4358.38) = 1.73, p = 0.18, \eta^2_p = 0.001$
Satisfaction with personal relationships	72.08 (21.25)	71.47 (30.50)	69.72 (21.39)	$F(1.74,3814.13) = 9.12, p = < 0.001^*, \eta^2_p = 0.004$
Satisfaction with safety	75.67 (20.59)	72.13 (21.37)	78.32 (18.71)	$F(1.99,4349.86) = 83.89, p = < 0.001^*, \eta^2_p = 0.037$
Satisfaction with community-connectedness	64.07 (23.37)	62.00 (29.73)	64.43 (23.40)	$F(1.92,4918.87) = 9.86, p = < 0.001^*, \eta^2_p = 0.004$

Satisfaction with future security	64.70 (22.52)	63.08 (22.41)	66.65 (21.87)	$F(1.99,4352.82) = 27.70, p = < 0.001^*, \eta^2_p = 0.013$
Satisfaction with spirituality/religion	73.37 (25.21)	73.50 (25.70)	71.59 (26.08)	$F(1.99,4350.23) = 7.82, p = < 0.001^*, \eta^2_p = 0.004$

*Note.* All participants were included in data analysis ( $N = 2,188$ ). An asterisk (\*) indicates statistical significance ( $p < 0.05$ ).

## Discussion

The purpose of this paper was to quantitatively assess adults' mental health and overall wellbeing over time during the first 16 months of the pandemic in Ontario, Canada (April 2020–August 2021). Interestingly, results showed that participants' self-reported mental health increased significantly over time, while their satisfaction with their mental health significantly decreased. Similarly, participants' satisfaction with their personal relationships decreased significantly over the course of the pandemic, while their satisfaction with community-connectedness decreased from April to August 2020 and increased from August 2020 to August 2021. Participants' satisfaction with their safety and future security decreased from April to August 2020, but increased from April 2020 to August 2021, respectively.

It is surprising that participants' self-reported mental health improved over time, as many authors have reported that the pandemic has negatively impacted the mental health of various populations (e.g., Amendola et al., 2021; Jenkins et al., 2021; O'Connor et al., 2021; Passos et al., 2020; White & Van Der Boor, 2020). This said, participants' improvement in mental health is consistent with what they reported in their demographic information, as the percentage of individuals who reported experiencing a mental illness and/or mood/anxiety disorder(s) declined over time. However, findings from the PWI-A revealed that participants' satisfaction with their mental health significantly decreased over time. While this appears inconsistent with the mental health improvements noted above, it is possible that while self-reported diagnosable mental health disorders reduced over time, those experiencing challenging levels of stress throughout these 16 months of the pandemic might have felt more run-down or fatigued by the end of the study, but not

to the point of experiencing a disorder. It is also worth noting that while the number of participants who reported experiencing a mental illness and/or mood/anxiety disorder(s) declined over time, it is plausible that the reported decline is due to participant attrition and is not indicative of improved mental health conditions. Additionally, even though participants' mental health scores improved over time, at every time point participants' average scores were still below the cut-off of 76, indicative of the presence of mental disorders (Kelly et al., 2008). The presence of mental health conditions during the pandemic aligns with work conducted by Amendola and colleagues (2021). Specifically, the authors explored the impact of the COVID-19 pandemic on the mental health of Italian adults ( $N = 299$ ) during the early stages of the pandemic (i.e., after a month of isolation due to COVID-19; Amendola et al., 2021). The authors concluded that females reported higher symptoms of depression and anxiety, compared to males (Amendola et al., 2021). This finding is worth noting as 90% of participants in the current study identified as female. Similarly, Passos and colleagues (2020) investigated the mental health of adults in Portugal and Brazil ( $N = 550$ ) during the COVID-19 pandemic (May 27–July 8, 2020) and found that the frequency of mental health conditions was considerably higher than pre-COVID-19 levels. Moreover, Chandola and colleagues (2020) explored whether there was an increase in prevalence and incidence of mental disorders among adults ( $N = 17,761$ ) living in the UK during the first months of lockdown due to the COVID-19 pandemic. The authors concluded that 29% of adults who did not report a mental disorder pre-pandemic, experienced a mental disorder during the early stages of the COVID-19 pandemic (April 2020; Chandola et al., 2020).

It is worth noting that the available data regarding individuals' mental health during the COVID-19 pandemic is primarily cross-sectional and occurred during the early stages. The current study is among one of the first to report longitudinal data. Thus, in order to compare the mental health of Ontario adults to other populations, more research is needed. The contrast between study findings may also be attributed to the difference in public health protection mandates among countries, as well as demographic characteristics. For context, data collection at time points 1 and 2 occurred during the first wave of the pandemic, wherein Ontario was primarily in a lockdown (e.g., closure of schools, businesses, and non-essential services) and COVID-19 case counts were high (Ontario COVID-19 Science Advisory Table, 2021). At time 3, the province had reopened with mask and vaccination requirements, and indoor services with larger numbers of people resumed (Government of Ontario, 2021). It is thus plausible that at the beginning of the pandemic (i.e., during times 1 and 2), participants might have experienced poorer mental health due to the unknowns, fears, and the novelty of the pandemic, compared to one year follow-up. As time progressed, it is not surprising that participants' mental health status improved as individuals learned more about safety precaution that could be taken to avoid COVID-19 infection. Further, it is possible that the improvement in Ontario adults' mental health was positively associated with the public health mandates lifting, such that over time the Ontario government gradually removed protections, allowing people to return to a new "normal", despite concurrently rising case numbers (Ontario COVID-19 Science Advisory Table, 2021). By lifting the mandates, it is possible that individuals perceived COVID-19 was significantly less concerning despite little data available on community transmission to support this

decision (Manuel et al., 2021). It is thus plausible that people no longer perceived COVID-19 to be a threat, which could aid in explaining their improvement in mental health. This interpretation aligns with the Normalization Process Theory, which suggests that “practices become routinely embedded—or normalized—in social contexts as the result of people working, individually and collectively, to enact them” (May et al., 2009, p. 2). Thus, it is possible that over time, public health protections might have become normalized and therefore, COVID-19 was perceived as less of a threat to participants’ mental health. It is also important to situate the findings of the current study in the context of participant demographics. Specifically, the study sample primarily consisted of White women of high socioeconomic status and thus, the mental health of Ontario adults of different genders, ethnicities, and low socioeconomic status is largely unknown. This information is important, especially considering international researchers have found that the COVID-19 pandemic has negatively impacted the mental health of men (Park & Yu, 2022), sexual and gender minority populations (Moore et al., 2021), and ethnic minorities (Smith et al., 2020), with minority populations being disproportionately affected (Moore et al., 2021). Moreover, Chung and colleagues (2021) explored whether the mental health and wellbeing of adults who were socioeconomically disadvantaged was worse than those of high socioeconomic status. The authors concluded that socioeconomic inequality, specifically in relation to mental health and wellbeing, was exacerbated by individual’s financial concerns during the pandemic (Chung et al., 2021). It is advised that further research be conducted to explore the impact of the pandemic on the mental health of minority populations in Ontario.

Participants' satisfaction with their personal relationships significantly decreased over time, while their satisfaction with community-connectedness decreased during the initial stages of the pandemic and increased one year follow-up. There is little available data on how the pandemic might impact one's personal relationships broadly. However, Pietromonaco and Overall (2022) suggested that separation, isolation, and loss as a result of the COVID-19 pandemic might negatively impact couples' relationships. Thus, it is possible that due to pandemic-induced stressors, participants' personal relationships were strained over the course of the pandemic. Additionally, in the study conducted by White and Van Der Boor (2020), the authors concluded that participants who experienced community connectedness during the early stages of the pandemic had lower levels of depression symptoms. Similarly, in the current study participants' satisfaction with community connectedness increased from August 2020 to August 2021, while the prevalence of mood/anxiety disorders appeared to decrease.

It is also worth noting that during the timeframe in which data were collected, there were several changes to public health guidelines, including the introduction of COVID-19 vaccines. During the pandemic many people consulted the Internet and social media for health information, which presented concerns regarding the legitimacy of information and sparked an anti-vaccination movement, contributing to vaccine hesitancy (Puri et al., 2020). This movement created divisiveness among many (Djuric, 2022), potentially impacting the personal relationships of participants in the current study. In a pre-pandemic study conducted by Gunaratne and colleagues (2019), the authors explored the anti-vaccination discourse on Twitter and suggested that pro- and anti-vaccine content naturally separate into distinct communities, amalgamating like-minded individuals.

Thus, it is not surprising that participants' satisfaction with community-connectedness increased while their personal relationships decreased, as it is possible that participants felt a part of their respective communities.

While participants' satisfaction with their safety and future security decreased from April to August 2020, it increased from April 2020 to August 2021. It is possible that while public health protections changed over time, some participants' increased satisfaction in safety and future security was, in part, attributed to the release of COVID-19 vaccines. In a study conducted by Syan and colleagues (2021), the authors examined the extent to which Ontario adults ( $N = 1,367$ ) were willing to receive the COVID-19 vaccine and found that 82.8% of their sample was willing and 74.2% perceived the vaccine to be safe. Coincidental to this timeframe was the introduction and mass availability of COVID-19 vaccinations. Thus, it might be possible that participants' satisfaction with their personal safety and future security in the current study was, in part, related to the introduction of vaccines. Additionally, it is reasonable that participants' perception of safety and security related to COVID-19 improved over time as more evidence emerged and the public developed a better understanding of the realities of the viral illness. Specifically, Ioannidis and colleagues (2020) concluded that individuals younger than 65 accounted for 4.5–11.5% of all COVID-19 deaths in European countries and Canada. Further, The OpenSAFELY Collaborative (2020) found that women are 2-times less likely to die from COVID-19 compared to men. This evidence highlights that risk of death due to COVID-19 is low in our sample, based on age and gender alone, potentially contributing to participants' increased perception of safety and security.



### ***Limitations and Future Directions***

This study is not without limitations. First, although *honesty demands* (Bates, 1992) were employed in the surveys to reduce bias, the risk of social desirability bias remains, as all data were collected using self-report measures. Second, the PWI-A was slightly altered to specify satisfaction with mental and physical health, respectively, whereas the validated tool included one question on satisfaction with health as a whole. As such, the altered tool was not validated in the format as it was used. Such considerations need to be considered when scoring the tool, analyzing the data, and interpreting the findings. Third, the current study lacks generalizability, as the sample was predominately comprised of highly educated women of European origins in Ontario, Canada. Future studies are encouraged to stratify their sample by targeting groups of diverse ethnic origins and genders, in order to achieve greater diversity and representation among the population. Given that the pandemic disproportionately affected those of low socioeconomic status and marginalized groups (Mishra et al., 2021), efforts are needed to more effectively target these individuals in future research. One way to accomplish this might be through targeted and purposeful recruitment methods. Researchers of future studies might consider targeting members of specific groups on social media (e.g., Facebook groups dedicated to rural locations, minority groups, and diverse populations) to increase representation among their sample. Further, the current study did not investigate the association between demographic variables and mental health, which is a limitation. However, since there is reason to believe that demographic variables are likely to be related to the outcome of interest—mental health—a decision tree analysis was conducted. The inclusion of this analysis was beyond the scope of the

current paper as the profiles generated were based on demographics and additional health outcomes from the larger *HOPE* study that were not applicable to the current paper. As such, a subsequent manuscript is currently in preparation (Shillington et al., 2023).

Lastly, there was significant attrition between baseline and follow-up time points. It is possible that attrition was due to respondent burnout, as there were many COVID-19-related studies occurring during this timeframe. In an effort to help mitigate the impact of participants loss to follow-up, multiple imputation was employed to handle missing data. A total of 2,188 participants were included in all analyses.

### **Conclusion**

The COVID-19 pandemic has significantly impacted the self-reported mental health and wellbeing of Ontario adults. Specifically, the mental health of Ontario adults reportedly improved over time, while their perceived wellbeing declined in several domains. Participants' satisfaction with their standard of living, physical health, mental health, personal relationships, and spirituality/religion decreased from April 2020 to August 2021, while their satisfaction with community connectedness only decreased from April to August 2020. Moreover, participants' satisfaction with their safety and future security increased over time. Findings from the current study can aid in understanding the long-term impacts that the pandemic has had on Ontario adults and should be taken into account when designing interventions targeting the mental health and wellbeing of Canadians.

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**Chapter 5: ‘When you give kindness out, you get it back ten times more’: Ontario  
Adults’ Prosocial Behaviour During the First 16 Months of the COVID-19  
Pandemic<sup>1</sup>**

**Introduction**

The ongoing COVID-19 pandemic has necessitated public health protections globally (e.g., Public Health Ontario, 2021; World Health Organization [WHO], 2021). Inclusive of physical distancing, mask-wearing, and vaccinations, these protections have required behaviours that largely hinge upon community adherence (Cutler et al., 2021; Van Bavel et al., 2020). Adherence to public health guidelines has been recognized as a form of prosocial behaviour (Slavich et al., 2022), which is defined as “voluntary behaviour intended to benefit another, such as helping, donating, sharing, and comforting” (Eisenberg et al., 2016, p. 1668) and can include many domains (i.e., compassion, caring, love, sympathy, empathy, altruism, and kindness (Dunfield, 2014; Eisenberg et al., 2014).

While the COVID-19 pandemic is associated with much disruption and trauma for adults globally (Masiero et al., 2020), it has simultaneously provided a unique opportunity for people to engage in prosocial behaviour (Slavich et al., 2022). Pre-pandemic, Vollhardt (2009) asserted that experiencing adverse events is associated with an increase in prosocial and helping behaviour. As such, it is possible that the ongoing COVID-19 pandemic has triggered motivation to engage in prosocialness. Prosocial behaviour has been associated with positive wellbeing (Grühn et al., 2008; Martela et al., 2106; Post, 2005) and given the difficulties experienced during the COVID-19 pandemic,

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<sup>1</sup> A version of this chapter has been submitted for publication (see Shillington et al., 2023).

prosocial behaviours appear to contribute positively to wellbeing (Alvis et al., 2022; Varma et al., 2023; Helliwell et al., 2021). For example, Varma and colleagues (2023) investigated the effectiveness of prosocial behaviour as a strategy to promote wellbeing during the COVID-19 pandemic. The authors conducted two studies with 1,623 adults ( $M_{\text{age}} = 26$ ) who were randomly assigned to engage in other- or self-beneficial behaviours (Varma et al., 2023). It was found that, compared to non-prosocial or self-beneficial action, engagement in prosocial behaviour led to significantly increased positive affect, empathy, and social connectedness (Varma et al., 2023). Similarly, Datu and colleagues (2022) investigated the impact of gratitude and kindness interventions on the positive emotions (e.g., happy, joyful) of undergraduate students ( $N = 107$ ) during the pandemic. Participants in the study were randomly assigned to one of three conditions: (1) kindness; (2) gratitude (which is “a felt sense of wonder, thankfulness, and appreciation for benefits received”; Lopez & Snyder., 2003, p. 327); or (3) control (Datu et al., 2022). The authors found that individuals assigned to the gratitude and kindness conditions scored significantly higher on positive emotion measures in comparison to those in the control group (Datu et al., 2022). Moreover, Raposa and colleagues (2016) showed that prosocial behaviour can positively influence one’s neurological system. Specifically, when an individual engages in a kind act, oxytocin—a hormone that helps to mitigate feelings of fear and stress—is released (Raposa et al., 2016). As such, prosocial behaviour may be considered an effective coping strategy for adults experiencing distress during the pandemic (Raposa et al., 2016).

In addition to the psychological benefits associated with kindness, as described above, engagement in prosocial behaviour has been linked to social belonging (Helliwell

et al., 2021). Social belonging has been described as “a sense of deep connectedness, affiliation, and integration with a social group or community” (Masiero et al., 2020, p. 2) and is crucial for wellbeing (Baumeister & Leary, 1995; Oyanedel & Paez, 2021; Ryan & Deci, 2000). During the COVID-19 pandemic, social connection has been limited due to necessary public health protections, such as lockdowns, isolation, and physical distancing practices (Okruszek et al., 2020). It has been found that some of these protections have contributed to feelings of social isolation and loneliness (Ernst et al., 2022), which can be exacerbated by additional pandemic-related stressors (e.g., social, financial, health; Helliwell et al., 2021). Given that engagement in prosocial behaviour can increase feelings of social connectedness (Helliwell et al., 2021), it may also serve as a buffer against pandemic-related loneliness and social isolation. In fact, researchers surveyed 437 undergraduate students in the United States during the early stages of the pandemic (April 2020) and found that being on the receiving end of prosocial behaviour was associated with greater perceptions of belongingness (Alvis et al., 2022).

There have been large variations in pandemic experiences globally and provincially in Canada (e.g., length and degree of public health protections enforced, social isolation, loneliness, decreased wellbeing). Gaining insight into adults’ prosocial behaviour and their lived experiences may be beneficial in creating supports specific to the needs of Ontario adults. To this end, and as a part of a larger ongoing study titled *Health Outcomes for adults during and following the COVID-19 Pandemic (HOPE)*, the purpose of this mixed-methods paper was two-fold: (1) to quantitatively assess adults’ prosocial behaviour over time during the first 16 months of the pandemic in Ontario, Canada (April 2020–August 2021); and, (2) to more deeply explore, via focus groups, a

sub-sample of Ontario adults' lived experiences of prosocial behaviour (assessed March 2022).

## **Methods**

### ***Study Design***

*The HOPE Study* is an ongoing, longitudinal study that aims to assess adults' lifestyle-related health behaviours and outcomes, including physical activity, sedentary behaviour, sleep, diet, mental health, wellbeing, and prosocial behaviour, during and following the COVID-19 pandemic in Ontario, Canada (Shillington et al., 2021; Shillington et al., 2022a; Shillington et al., 2022b). As indicated above, the current mixed-methods paper reports on the prosocial data quantitatively measured via survey and qualitatively explored via focus groups. The methods (i.e., study design, study procedures, recruitment, measures, data analysis) for this research have been detailed elsewhere (Shillington et al., 2021; Shillington et al., 2022a; Shillington et al., 2022b).

### ***Study Procedures***

Participants were primarily recruited for *The HOPE Study* via social media platforms. To be eligible for the study, participants were required to be: (1) an Ontario resident; (2) between the ages of 30–59 years at baseline; and (3) able to read and write in English. *The HOPE Study* included three time points: (1) time point 1 (T1; April 24–July 13, 2020); (2) time point 2 (T2; July 29–August 30, 2020); and (3) time point 3 (T3; July 29–August 30, 2021). When interested participants clicked the online study advertisement, they were directed to a survey that included the letter of information, eligibility, consent process, and the T1 questionnaires. The same questionnaires were administered at T2 and T3, with the exception of some participant demographics.

At T3, participants were invited to participate in a focus group. Those who expressed interest were provided with the letter of information, asked to confirm their eligibility, provide consent, submit their participant ID, and select their availability for a focus group date and time (Appendix L). Per the guidance of Hennink and colleagues (2019) regarding the number of focus groups required to reach theoretical saturation, six focus groups occurred March 6–12, 2022. The focus groups occurred via Zoom with a moderator (KS), assistant moderator (JY), and three note-takers (JC, KF, ZR) and ranged from 60–90 minutes in length. Theoretical saturation was reached by the fourth focus group and confirmed by the sixth focus group. To diminish social desirability bias (Bates, 1992), participants were told there were no right or wrong answers at the beginning of each focus group. To support the credibility of the data, the moderator member-checked between questions and summarized responses at the end of each focus group to confirm that the responses were accurate from participants' perspectives (per Guba & Lincoln, 1989). Focus groups were audio-recorded and transcribed verbatim by Zoom and checked for accuracy by a member of the research team.

### ***COVID-19 Context at the Time of Data Collection***

Data collection at T1 and T2 occurred during the first wave of the pandemic, wherein Ontario was primarily in a lockdown (e.g., closure of schools, businesses, and non-essential services) and case counts were at a peak (Ontario COVID-19 Science Advisory Table, 2021). One year follow-up data collection (T3) occurred from July to August 2021, during which the province had re-opened, meaning indoor services with larger numbers of people could resume (Government of Ontario, 2021). Masks and vaccinations were enforced; however, despite the protection efforts, case counts increased

at the end of August, signalling a fourth wave (Government of Ontario, 2021). As described, the focus groups occurred in March 2022; at this time public health measures lifted which resulted in an increase in COVID-19 transmission, as well as hospital and intensive care unit occupancy, signaling a sixth wave of the pandemic (Ontario COVID-19 Science Advisory Table, 2022).

### ***Tools***

#### **Quantitative.**

***Demographics.*** At T1 demographic questions assessed participants' age, sex, gender, ethnicity, geographic location, employment status, income, educational attainment, marital status, COVID-19 diagnosis, and presence of mental health conditions (Appendix D). The T2 and T3 demographics questionnaires included questions pertaining to the extent to which participants' incomes may have changed over the pandemic, employment status, COVID-19 diagnosis (at any time point), and presence of mental health conditions (Appendix K).

***Prosocialness Scale for Adults.*** A modified 16-item Prosocialness Scale for Adults (PSA; Caprara et al., 2005) was utilized to measure participants' prosocial behaviour on a 5-point Likert scale ranging from 1 (never/almost never) to 5 (always/almost always). The PSA has been previously validated for use with adults and has a Cronbach's alpha of 0.91 (Caprara et al., 2005). The tool was slightly altered from its original form for use in *The HOPE Study* to be more conducive to public health recommendations at the time of administration—six questions were removed and two questions were re-worded (see Shillington et al., 2022a for question details). As such, the



revised tool included eight original and two modified items. The modified PSA had a high level of internal consistency, as determined by a Cronbach's alpha of 0.89.

***Kindness Questions.*** In addition to the PSA, three questions were created by the research team to measure participants' understanding and experiences of kindness during the pandemic, using the same 5-point Likert scale described above. Specifically, participants were asked about the extent to which they: (1) were aware of kindness around them during the COVID-19 pandemic; (2) purposefully engaged in deliberate acts of kindness during the pandemic; and (3) viewed kindness as a crucial component of their COVID-19 pandemic experience.

### **Qualitative.**

***Focus Group Guide.*** A semi-structured focus group guide was followed, with questions pertaining to the prosocial behaviour of Ontario adults, including preliminary quantitative findings (Appendix M). Quantitative findings were used to inform the focus group guide, such that participants were asked to share their insights about the study findings, specifically regarding what resonated or did not resonate with them.

### ***Data Analysis***

**Quantitative.** To determine whether there was a statistically significant difference in participants' self-report prosocial behaviour and kindness during the first 16 months of the COVID-19 pandemic (from T1 to T3), a series of one-way repeated measures ANOVAs were conducted. A Bonferroni correction was applied to account for multiple comparison bias in post-hoc analyses, and multiple imputation was used to handle missing data. All data analyses were completed in SPSS (version 28.0.1.1).

**Qualitative.** Focus group transcripts were organized using Quirkos qualitative analysis software (Quirkos, 2021). Data were analyzed by question (i.e., deductively) using an inductive analysis approach (Patton, 2015), following the method for thematic analysis outlined by Braun and Clarke (2006). To ensure study rigor, data trustworthiness criteria (credibility, dependability, and confirmability) outlined by Guba & Lincoln (1989) were employed by the research team. Two researchers (KS, JY) independently and simultaneously familiarized themselves with the data by reading and re-reading the transcripts while making notes (Braun & Clarke, 2006). Next, the researchers generated initial codes by analyzing the entire dataset and then collating the codes into potential themes (Braun & Clarke, 2006). The two researchers then met to define and name the themes to create a tentative codebook (Braun & Clarke, 2006). To ensure codebook accuracy, five researchers (KS, JY, JC, KF, ZR) were split in dyads and each dyad was assigned one transcript to code using the preliminary codebook, making note of themes/definitions that needed refinement. The use of multiple coders was to support confirmability (per Guba & Lincoln, 1989). Prior to meeting with the larger group, each dyad met individually to discuss the coding structure, following their individual review of the transcripts. The five researchers then met to review the codebook themes to ensure they related to the coded extracts (step 1) and then to the entire dataset (step 2); refinements were made to themes and definitions as necessary (Braun & Clarke, 2006). Using the revised codebook, researchers were again split into dyads and each dyad coded two transcripts. Once analysis was complete, all Quirkos files were merged and exported. To support dependability, the methods and study procedures were documented to enable researchers to replicate the study (per Guba & Lincoln, 1989).

To help elucidate the popularity of specific examples of prosocial behaviours in which participants engaged, an additional analysis was deemed suitable and was therefore conducted within one of the themes. Specifically, a summative content analysis (per Hsieh & Shannon, 2005) was conducted independently and simultaneously by two researchers (KS, JY), to determine the frequency of prosocial behaviours in which participants engaged. Initially, the researchers reviewed the transcripts and noted the frequency of prosocial behaviours mentioned by participants. Behaviours were then categorized into common groupings and assigned working titles. Upon finalizing the themes independently, the researchers met to agree upon final themes and count the number of examples of prosocial behaviours in each theme.

## **Results**

### ***Quantitative***

**Demographics.** A total of 2,188 ( $M_{\text{age}} = 43.15$ ;  $SD = 8.82$ ) Ontario adults completed the survey. The majority identified as female ( $n = 1,743$ ; 89.55%) and Caucasian ( $n = 1,789$ ; 91.55%). The socioeconomic status of the sample was generally high, with the majority reporting full-time employment ( $n = 1,162$ ; 59.22%), an annual household income over \$111,000 ( $n = 845$ ; 43.07%), and college-level education or higher ( $n = 1,741$ ; 88.69%). For full demographic details, refer to Table 1.

**Table 1***Demographic Information of Survey Participants*

<b>Participant Characteristics (N = 2,188)</b>	<b>n</b>	<b>%</b>
Age (years), <i>M (SD)</i>		
Total	43.15 (8.82)	
Sex		
Female	1,749	89.55
Male	200	10.24
I prefer not to answer	3	0.15
Not listed	1	0.051
Gender		
Female	1,743	89.57
Male	198	10.17
Non-Binary	2	0.10
I prefer not to answer	3	0.15
Ethnicity		
Arab	4	0.20
Black	9	0.46
Caucasian (White)/European	1,789	91.55
Chinese	22	1.12
Filipino	5	0.25
Indigenous	20	1.02
Japanese	4	0.20
Korean	3	0.15
Latin American	14	0.72
Maltese	1	0.051
Metis	3	0.15
South Asian	38	1.94
Southeast Asian	5	0.25
West Asian	2	0.10
West Indian	1	0.051
Multiracial	19	0.97
I prefer not to answer	14	0.72
Not listed	1	0.051
Employment Status at T1		
Employed full-time	1,162	59.22
Employed part-time	156	7.95
Casual	33	1.68
Unemployed	204	10.40
I prefer not to answer	10	0.51
Other	397	20.23
Employment Status at T2		
Employed full-time	503	58.15

Employed part-time	82	9.50
Casual	15	1.73
Unemployed	55	6.36
I prefer not to answer	6	0.69
Other	204	23.58
Employment Status at T3		
Employed full-time	489	62.61
Employed part-time	69	8.83
Casual	16	2.05
Unemployed	39	4.99
I prefer not to answer	5	0.64
Other	163	20.87
Income (T1)		
< \$30,000	98	4.99
\$30,000–\$59,000	236	12.03
\$60,000–\$79,999	225	11.47
\$80,000–\$110,999	375	19.11
\$111,000–\$150,000	390	19.88
>\$150,000	455	23.19
I prefer not to answer	183	9.33
Extent That Income Changed Since T1 (T2)		
Reduced	122	14.10
Stayed the same	678	78.38
Increased	65	7.51
Extent That Income Changed Since T1 (T3)		
Reduced	148	18.95
Stayed the same	428	54.80
Increased	205	26.25
Tested Positive for COVID-19 (T1)		
Yes	32	1.63
No	1928	98.37
Tested Positive for COVID-19 (T2)		
Yes	16	1.86
No	844	98.14
Tested Positive for COVID-19 (T3)		
Yes	25	3.20
No	756	96.80
Marital Status		
Single	242	12.33
Married/common law/engaged	1,535	78.20
Divorced/separated	156	7.95
Widowed	18	0.92
I prefer not to answer	12	0.61
Highest Level of Education		
Less than high school	24	1.22
High school	150	7.64

Community college/journeyman apprenticeship	618	31.48
University undergraduate degree	550	28.02
University graduate or degree or higher	573	29.19
I prefer not to answer	6	0.30
Other	42	2.14

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*Note.* Time point 1 (T1) occurred from April–July 2020, time point 2 (T2) occurred from July–August 2020; and time point 3 (T3) occurred from July–August 2021. The total sample size was 2,188 participants; not all categories summed to equal the total sample due to missing data. Age was collected as a continuous variable.

Focus group participants ( $n = 42$ ) were, on average, 42.74 years old ( $SD = 8.48$ ), with most identifying as female ( $n = 30$ ; 85.7%). The majority were Caucasian ( $n = 32$ ; 91.4%) and the geographic location with the largest participant representation was London ( $n = 8$ ; 22.86%). Most focus group participants reported full-time employment ( $n = 18$ ; 51.43%), an annual household income of \$111,000 or above ( $n = 17$ ; 48.58%), and an undergraduate-level education or higher ( $n = 23$ ; 65.71%). For a detailed description of focus group participants, refer to Table 2.

**Table 2***Demographic Information of Focus Group Participants*

<b>Participant Characteristics (n = 42)</b>	<b>n</b>	<b>%</b>
Age, <i>M (SD)</i>		
Total	42.74 (8.48)	
Sex		
Female	31	88.57
Male	4	11.43
Gender		
Female	30	85.71
Male	4	11.43
Non-Binary	1	2.86
Ethnicity		
Caucasian (White)/European	32	91.43
Indigenous	1	2.86
Multiracial	2	5.71
Employment Status		
Employed full-time	18	51.43
Employed part-time	2	5.71
Casual	1	2.86
Unemployed	4	11.43
Other	10	28.57
Income		
< \$30,000	4	11.43
\$30,000–\$59,000	5	14.29
\$60,000–\$79,999	1	2.86
\$80,000–\$110,999	8	22.86
\$111,000–\$150,000	12	34.29
>\$150,000	5	14.29
Highest Level of Education		
Less than high school	1	2.86
Community college/journeyman apprenticeship	10	28.57
University undergraduate degree	7	20.00
University graduate or degree or higher	16	45.71
Other	1	2.86
Marital Status		
Single	5	14.29
Married/common law/engaged	28	80.00
Divorced/separated	2	5.71
Tested Positive for COVID-19		
Yes	3	8.57
No	32	91.43



*Note.* The total focus group sample size was 42 participants; not all categories summed to equal the total sample due to missing data. Age was collected as a continuous variable.

**Prosocial Behaviour.** A one-way repeated measures ANOVA revealed that there was a statistically significant difference in participants' prosocial behaviour over time (see Figure 1). Post hoc testing revealed that participants' prosocial scores decreased significantly from T1–T2 ( $M_{\text{difference}} = 0.29, p = 0.003, 95\% \text{ CI} = 0.079, 0.50$ ), and increased from T1–T3 ( $M_{\text{difference}} = -0.50, p = < 0.001, 95\% \text{ CI} = -0.73 \text{ to } -0.26$ ) and T2–T3 ( $M_{\text{difference}} = -0.79, p = < 0.001, 95\% \text{ CI} = -1.00 \text{ to } -0.58$ ). The mean, standard deviation, and the  $F$ -ratio of the one-way repeated measures ANOVA for the PSA can be found in Table 3.

**Kindness.** In addition to the above, a one-way repeated measures ANOVA revealed that there was a statistically significant difference in participants' awareness of kindness over time (see Figure 2), participants' self-reported engagement in deliberate acts of kindness (see Figure 3), and participants' views of kindness as crucial over time (see Figure 4). Post hoc testing revealed that participants' awareness of kindness decreased significantly from T1–T2 ( $M_{\text{difference}} = 0.27, p = < 0.001, 95\% \text{ CI} = 0.23 \text{ to } 0.31$ ) and from T1–T3 ( $M_{\text{difference}} = 0.22, p = < 0.001, 95\% \text{ CI} = 0.17 \text{ to } 0.27$ ) and increased from T2–T3 ( $M_{\text{difference}} = -0.05, p = 0.012, 95\% \text{ CI} = -0.10 \text{ to } -0.01$ ). Moreover, post hoc testing revealed that participants' engagement in acts of kindness decreased significantly from T1–T2 ( $M_{\text{difference}} = 0.10, p = < 0.001, 95\% \text{ CI} = 0.05 \text{ to } 0.15$ ) and from T1–T3 ( $M_{\text{difference}} = 0.11, p = < 0.001, 95\% \text{ CI} = 0.05 \text{ to } 0.16$ ). Post-hoc testing revealed that participants' views of kindness as crucial decreased significantly from T1–T2 ( $M_{\text{difference}} = 0.18, p = < 0.001, 95\% \text{ CI} = 0.12 \text{ to } 0.23$ ) and from T1–T3 ( $M_{\text{difference}} = 0.15, p = < 0.001, 95\% \text{ CI} = 0.09 \text{ to } 0.21$ ). The mean, standard deviation, and the  $F$ -ratio of the

one-way repeated measures ANOVA for the global kindness questions can be found in Table 3.

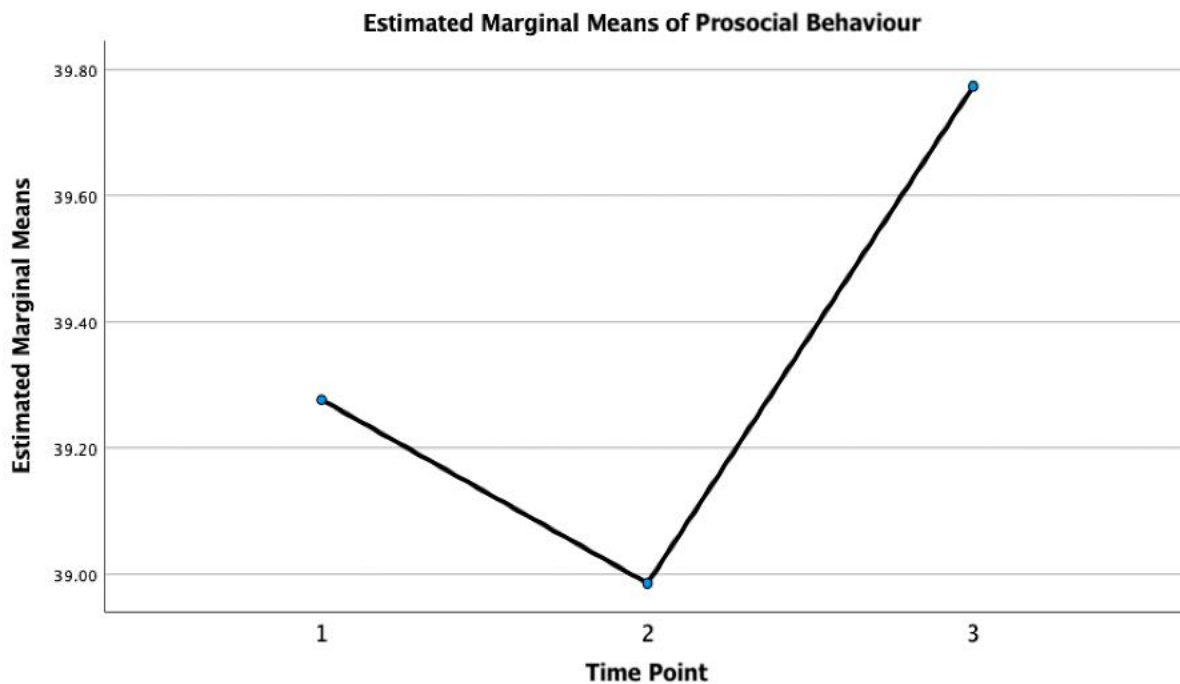
**Table 3***The Prosocial Behaviour and Kindness of Participants Over Time*

<b>Scale</b>	<b>Time Point 1 <i>M (SD)</i></b>	<b>Time Point 2 <i>M (SD)</i></b>	<b>Time Point 3 <i>M (SD)</i></b>	<b><i>F</i>-ratio</b>
<b><i>Prosocialness Scale for Adults</i></b>				
Total Score (out of 50)	39.28 (5.65)	38.98 (5.77)	39.77 (5.62)	$F(1.96, 4296.46) = 38.3, p < 0.001^*, \eta^2_p = 0.017$
<b><i>Global Kindness Questions</i></b>				
I am aware of kindness around me during COVID-19	3.92 (0.79)	3.65 (0.82)	3.71 (0.89)	$F(1.95, 4261.26) = 111.46, p < 0.001^*, \eta^2_p = 0.048$
I purposefully engage in deliberate acts of kindness during COVID-19	3.51 (0.91)	3.41 (0.90)	3.40 (0.95)	$F(1.95, 4263.12) = 18.34, p < 0.001^*, \eta^2_p = 0.008$
I view kindness as a crucial component of my COVID-19 experience	3.87 (0.96)	3.69 (1.12)	3.72 (1.04)	$F(2.00, 4371.32) = 32.44, p < 0.001^*, \eta^2_p = 0.015$

*Note.* All participants were included in data analysis ( $N = 2,188$ ). An asterisk (\*) indicates statistical significance ( $p < 0.05$ ).

**Figure 1**

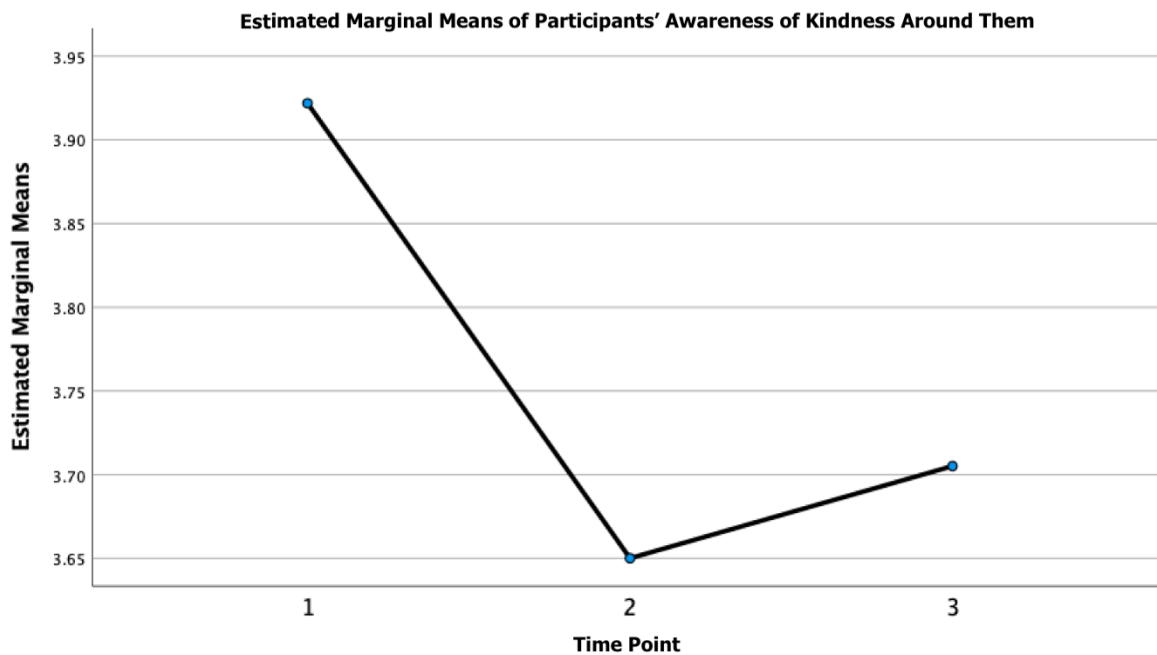
*Participants' Prosocial Behaviour Over Time*



*Note.* Time refers to the three time points (i.e., 1 = time point 1 [April 24–July 13, 2020]; 2 = time point 2 [July 29–August 30, 2020]; and 3 = time point 3 [July 29–August 30, 2021]).

**Figure 2**

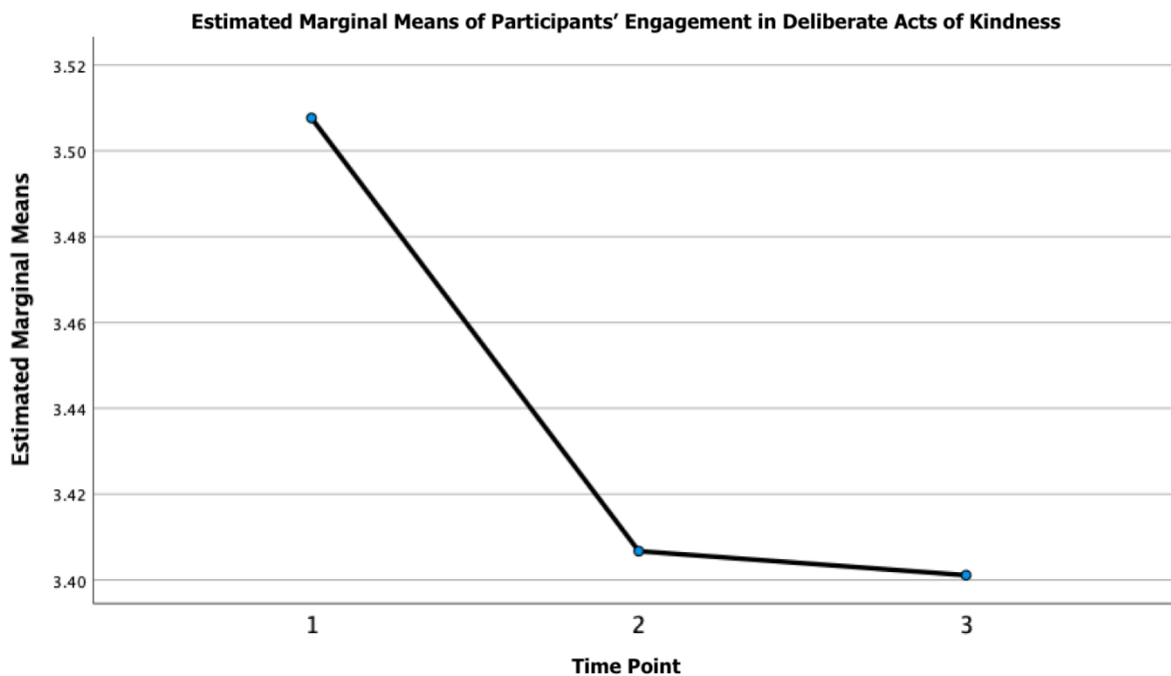
*Participants' Awareness of Kindness Around Them Over Time*



*Note.* Time refers to the three time points (i.e., 1 = time point 1 [April 24–July 13, 2020]; 2 = time point 2 [July 29–August 30, 2020]; and 3 = time point 3 [July 29–August 30, 2021]).

**Figure 3**

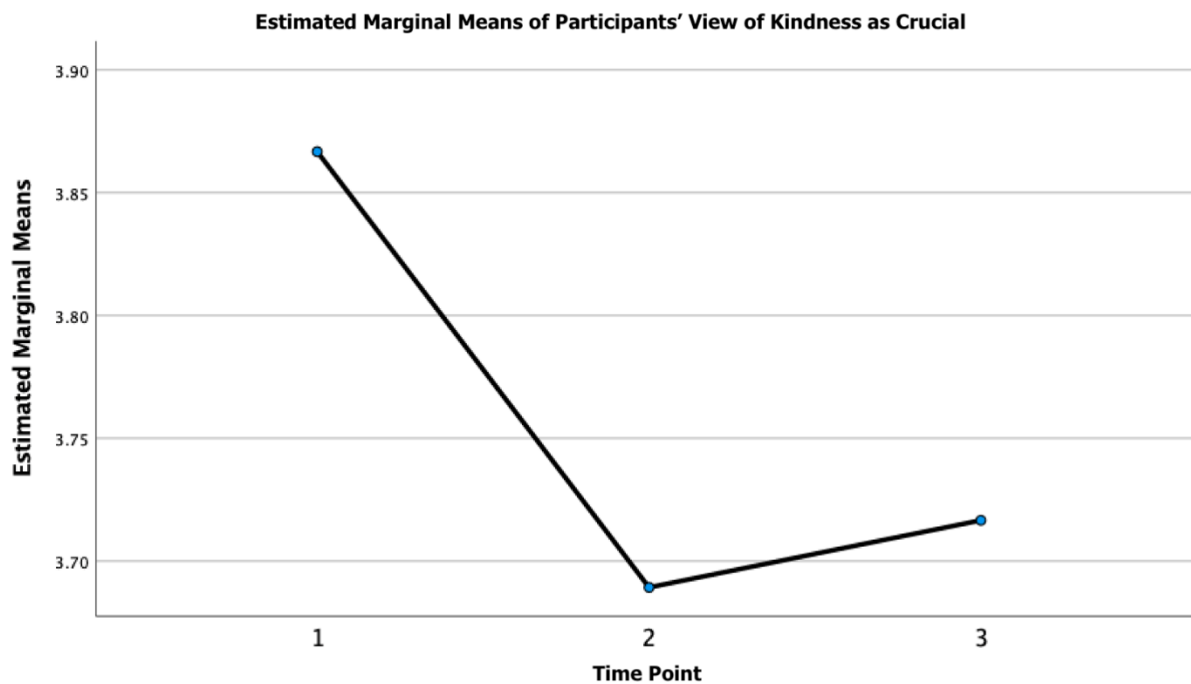
*Participants' Engagement in Deliberate Acts of Kindness Over Time*



*Note.* Time refers to the three time points (i.e., 1 = time point 1 [April 24–July 13, 2020]; 2 = time point 2 [July 29–August 30, 2020]; and 3 = time point 3 [July 29–August 30, 2021]).

**Figure 4**

*Participants' View of Kindness as Crucial Over Time*



*Note.* Time refers to the three time points (i.e., 1 = time point 1 [April 24–July 13, 2020]; 2 = time point 2 [July 29–August 30, 2020]; and 3 = time point 3 [July 29–August 30, 2021]).



### *Qualitative*

Four themes and eight subthemes emerged from the data: (1) kindness from various perspectives (subthemes: receiving kindness, giving kindness, witnessing kindness); (2) shift in prosocial behaviour over the pandemic (subthemes: initial shock of COVID-19, kindness as a global phenomenon, rise of individualism, small-scale acts of kindness, no change in kindness); (3) prosocial burnout; and (4) examples of prosocial behaviour.

**Kindness from Various Perspectives.** Participants described various forms of kindness, including the experience of being on the receiving end of a kind act, the person engaging in the kind act, as well as the impact of witnessing kindness. Regarding the impact of being the kindness receiver, one participant (N23) reflected on how grateful they were for family support, and how much they missed it since the death of a generous loved one. They provided the following example:

...my mom passed away in August, not COVID-related, but totally unexpected. She used to watch my kids, you know, two or three days a week, and my mother-in-law, stepped in and said, 'I'm going to be here on these days so you can work, and you can do whatever you need to do.' And I just remember feeling such an overwhelming, you know, gratitude for that. And I just, I couldn't believe the amount of emotion that I was feeling.

Another participant reflected on how they are more aware of receiving kindness since the start of the pandemic as they routinely yearned for human connection; this participant noted, "I feel like I'm craving that connection or, you know? ... So, when I do receive something, I am very aware that that's super special because I am in need" (N33). While

relatively few participants described the impact of receiving kind acts, the majority of participants emphasized the benefits of being the person engaging in acts of kindness. One participant provided the example of donating clothes, saying, “I was able to donate a whole bunch of clothes to an organization... It was for people who needed clothes if they were in a fire or homeless... And it felt good to give” (N12). Another participant described how volunteering their time provided them with a sense of “purpose” when they did not have employment (N11). A few participants engaged in kindness as a coping mechanism and way to de-stress. This was emphasized by one participant (N34) who said:

I found... the best way to address my COVID despair was doing COVID-related acts of kindness... I did all the grocery shopping for my elderly grandma because it wasn't safe for her...that's kind of my takeaway—COVID-related acts of kindness were like, the best way to deal with my COVID despair and using my privilege in ways that I could help a little bit.

Similarly, another participant described how kindness was a stress reliever, saying, “Everybody that you do these little things [kindness] for are very appreciative and in the long run it's also really good for me because it really helps me to destress” (N36). One individual (N39) decided to shift their focus to what they *could* do during the pandemic, which helped them cope with stressful pandemic experiences:

So, what I found I had to do [was] just focus on what I could do, like to make other people happy. So, a lot of that was just little things like, like, you know, dropping off little surprises to my dad on the doorstep, or you know, to an elderly aunt... And I would send... little surprise gifts to family out of town, like all the

little kids and that kind of thing... Like to get away from all that really stressful negative feelings that was going on within the family. And I really just had to put the focus on, you know, doing good things for other people, and that really helped me to get through all of that.

Another participant highlighted the mutual benefit for both the giver and receiver of kindness, noting, “I realize, you know, in order to make you feel better sometimes it’s making other people feel better too... And then you get that effect where, you know, we build each other up” (N40). Interestingly, many participants reported experiencing benefits when witnessing acts of kindness without actually engaging in them. One participant (N8) described how seeing/hearing about acts of kindness provided them with hope:

It kind of gives you hope. You see all this negative news out there and then when you see, or you hear about those acts of kindness, it just kind reminds you that it’s not all negative news that, there, there is still good out there.

Another participant echoed this sentiment, explaining how “seeing people doing good things, seeing people be kind to others, considerate to others, doing their best just to do everything they can” helped to combat the negativity associated with the pandemic (N38). One participant highlighted that “seeing people being very kind and very good to each other and supporting local businesses and doing everything they can to make other people’s lives better [has been] super pivotal in keeping [them] positive through [the pandemic]” (N37). A few participants emphasized the value of community connectedness experienced when people are kind to one another. One individual stated that “we need

each other [and] we need community in these kinds of times” (N4) while another participant (N9) expressed how kindness has brought people together:

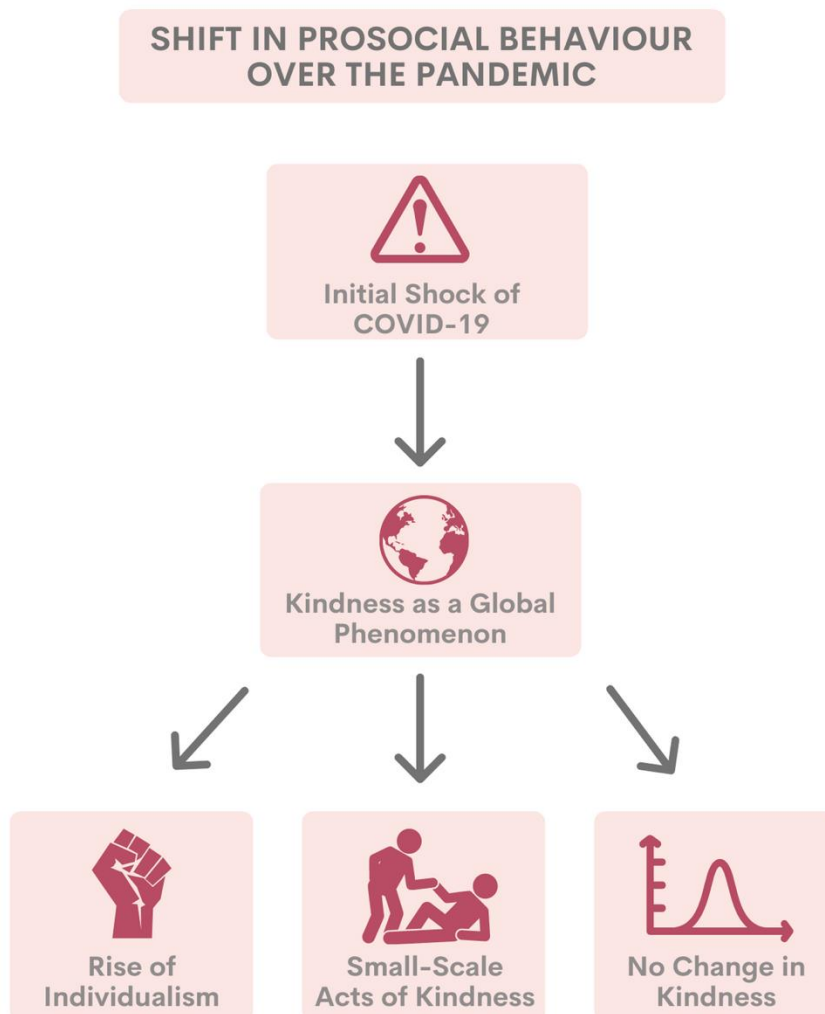
My observation is that we ... tend to live in a very me-centered world. You know, and these acts of kindness, and people gathering in really unique ways and checking on their neighbours and all of these things that we've seen on social media and the news firsthand. It's, it's so affirming and heartwarming and wonderful to see that people do still care. And, you know it took a pandemic for us to see that, you know, there's still a lot of love in the world.

To summarize the sentiments of participants regarding the profound impact of engaging in acts of kindness, one participant stated, “kindness is always something that when you give it out, you get it back ten times more” (N41).

**Shift in Prosocial Behaviour Over the Pandemic.** Participants across all focus groups discussed how prosocial behaviour (inclusive of acts of kindness) looked different as the pandemic continued. This shift in prosocial behaviour is depicted in the flow diagram found in Figure 5.

**Figure 5**

*Flow Diagram Depicting Shift in Prosocial Behaviour Over the Pandemic*



Participants highlighted that initially there was a shock associated with COVID-19, which impeded their ability to engage in prosocial acts. This was emphasized by one participant (N24) who said:

...we witnessed hoarding at the beginning of the pandemic which made me supremely uncomfortable, and made me wonder if there was something more that I could be doing. I think the other thing is, I mean at the very beginning of the pandemic, it felt paralyzing, like you couldn't even do anything. So, when you say that... the study found that people felt they could do more or be more as it [the pandemic] went on [regarding prosocial behaviour increasing over time], that doesn't surprise me. Given how, you know, paralyzed in fear... our experience was at the beginning. As things began to open up, we could do more, we could pick up more supplies, we could at least drop something off on a doorstep...

Another participant (N34) explained how they perceived prosocial behaviour to evolve following the initial shock of the pandemic:

At the very beginning of the pandemic we're like, it's a mess and everybody's locked down, nobody knows what to do, you know, and then once we started to kind of learn what this virus is and what [to] do and, like, people start learning how to help.

In a similar sentiment, a participant compared prosocial behaviour to the pandemic, explaining that prosocial behaviour seemed to happen in waves: "So at first, everybody sort of hunkered down, and then once they kind of got their bearings everybody wanted to know what they could do so there was a lot of prosocial behaviour" (N30). Following the initial shock of the COVID-19 pandemic, participants identified a

rise in prosocial behaviour and described this as a “we’re all in this together” mentality. Some referenced prosocial behaviour as a collective phenomenon as emphasized by one participant (N5) who said:

I think what I’ve noticed as the shift is, at the beginning it was very global in the prosocial behaviour. So, I live very close to [city hospital], and I remember being slightly annoyed [at the beginning of the pandemic], but also really happy, with the week-long parade days that we had. There was a week where one day it was the ambulances that did the parade by the hospital, and through the hospital, and the university campus, and then by my house... And then the next day it was fire trucks, and the next day it was the city dump trucks, and the next day it was just other big trucks. And... I was like, ‘oh, my, how many groups of people are going to be driving down [by] my house?’ And also how incredible is the support being shown for the healthcare workers who are putting themselves in danger every single shift, right?

This sentiment was shared by another participant who reflected that, “in the beginning we needed each other, as like a global community” (N18). Similarly, one participant said, “I feel like in the beginning we were a really unified group, you know? Back in the 14 days to flatten the curve we were all, ‘Rah! Rah! We’re in this together!’” (N27). Another participant reminisced on the acts of kindness that took place at the beginning of the pandemic by providing an example, “I remember at the beginning too, when everyone was putting the signs out for healthcare heroes and nurses and everything” (N25). The rise in prosocial behaviour and acts of kindness during the early stages of the pandemic was a shared sentiment as another participant (N21) noted:

And then we did have some families in our neighbourhood who did get hit with COVID, and there was a lot of sharing, there was a lot of support, it's like [modulates tone], 'oh do you need anything, let me drop it off at your doorstep, you know, and I'll text you and then I'll run away so that we don't actually have to see each other and I'll make sure that it's all clean and sanitized'... And we have a community Facebook group and we have a local elementary school and of course at the beginning there was a lot of tracking of cases and reporting, and we'd hear that things were being cancelled... and I just felt like in our little neighbourhood anyways, there was a lot of coming together, and a lot of trying to figure out how do we help each other through this.

While participants described how kindness started as a global phenomenon, many emphasized how prosocial behaviour changed over the course of the pandemic. For some, they recognized the rise of individualism and subsequent decrease in kindness, while others acknowledged that prosocial behaviour was still apparent, but had shifted to be more personal/small-scale. A small number of participants felt as though prosocial behaviour did not change, but rather people got used to witnessing and engaging in it. One participant (N26) noted that the "external behaviours, prosocial behaviours, were a lot more at first [at the beginning of the pandemic]", and another participant (N34) echoed this comment, saying:

...at the beginning you saw a lot more kindness [compared to now], whether it was directly by witnessing it among the people you know, or... stuff you see that goes viral online or stuff in the news... acts of kindness were really prominent and they were really part of the COVID narrative at the beginning.



Similarly, another participant (N25) noted how kindness shifted from a global phenomenon to one of individualism:

It just feels like, yeah, everybody was really united at the beginning and getting through this and then, you know, you would see lots of it in the media, or I did at least, and really now I don't see any of that, maybe I'm just missing it, maybe I'm watching the wrong things, I don't know but all I'm seeing is, you know, convoys and this huge division of, you know, [sigh] people calling other people anti-maskers and people throwing out all of these judgments towards other people. It's like you're either on this side, or you're on this side, with like a few people in the middle... Like I don't see this 'togetherness' that we saw at the beginning. It just seems like everyone is, 'We're smarter than you' or 'You should do it our way'... Like everyone's in their own little camp now, whereas before it felt like this is new, this is scary, we all need to work together... What can we do to help each other get through this? I just, I don't really see that at all anymore. I can't even remember the last time I saw, you know, people coming together.

One participant described how kindness is no longer at the forefront, noting, "I just feel like overall, it's kind of fallen off the radar a bit. And I've been seeing a fair bit of unkindness in social media, particularly in my day-to-day interactions with people" (N37). The unkindness experienced by this participant was not uncommon, as another individual noted that "it feels as though a lot of people are in it for themselves" (N25). Another participant (N21) reflected on the change in media headlines, saying:

I think at the beginning, there was a lot more mass media attention to how we were banding together and being kind to each other. And then as the pandemic

went on and, you know, like it was just, it was just sad, and it just got really hard to take, so there might have been more kindness, but it was getting kind of quashed and hidden under everything else.

The feeling of kindness being overshadowed by negativity was shared among many, as another participant (N34) reflected on how kindness was hindered with the change in public health measures:

Once people stop wanting to do public health measures, which essentially to me communicates like, I don't care about other people, it's harder. Even if the quantity of prosocial behaviour hasn't changed it's harder to see it, because it is almost like it's outweighed by the exponential increase of, it feels like, the anti-vax, anti-science, anti-COVID group.

Despite some participants witnessing a decline in prosocial behaviour or feeling as though kindness was no longer at the forefront of their pandemic experience, several participants acknowledged that kindness shifted from a global phenomenon to small-scale acts. Specifically, one participant (N37) noted that rather than prosocial behaviour being overshadowed by unkindness, they perceived kindness to take a new form:

I think that there's other types of kindness happening for sure... People are supporting local businesses, and a lot of people are trying their best to, you know, wear their masks and get vaccinated, and encourage their friends and family to do likewise which I appreciate. But I'd say overall there's less of that initial like 'we're in this together' feeling.

Another participant (N5) suggested that prosocial behaviour became more personal and small-scale over time, saying:

What's happening now is prosocial [has become a] personal behaviour... The tolerance for people who are different than you, the little rocks in your neighbourhood, keeping the magic alive for all these holidays for kids, which is wonderful. So, this week my kid is on spring break and I'm having to work because our plans fell through because my parents from the States got COVID and they can't come and they were planning to come to help. So, all of my friends are pitching in to help me take care of and keep my kid occupied, and we're trading off days because they're also working and have kids at home. So the prosocial behaviour, I think, has gone from a really big picture down to personal interactions.

The experience of prosocial behaviour shifting from more of a "big picture" phenomenon to personal interactions was a commonality among participants. Namely, one participant noted that "it [prosocial behaviour] just has kind of shifted maybe a little bit from, so much of a community support to kind of just supporting individuals" (N27). Another participant (N11) recognized that while they were seeing kindness less in the news, they were more aware of the small-scale acts saying:

...we see less in the news but then, if you look around you like I think there's more awareness of the little acts of kindness that people are doing... I think that it shifted from a global vision to a neighbourly vision.

These smaller acts of kindness described by participants took many forms. Specifically, one participant (N5) emphasized the genuine nature of small acts of kindness saying:

So now they [acts of kindness] are no longer big and grand with the parades, and the blue ribbons around the trees, but they are small, and they are pointed, and

they are genuine, which I think is important from a perspective of everybody who's involved... Whether it's tolerating your family members who feel differently than you but you're still having them over for dinner because you love them or it's cutting those folks free from you because it's easier for everybody to not have the tension of that relationship.

On the topic of this apparent shift in prosocial behaviour from more global to more individual, many participants viewed tolerance towards others with different viewpoints as a personal act of kindness. This shift was described by one participant (N4) who emphasized:

At the beginning it was more of those overt actions. Looking around how I could give, even with my church community... But I'm learning in all of this how to be more patient with other people. [I'm] less likely to maybe get upset that something isn't going my way, or a line's too long, or like whatever the things that were that would typically just kind of just get on my nerves. It's not to say that they don't get on my nerves now, they still do, but there's kind of this piece at the forefront of everything that everyone's kind of suffering right now. And everyone is kind of trying to persevere through this and aiming for this light at the end of the tunnel whatever it's going to be.

Having tolerance for others was viewed as an individual form of kindness by another participant who highlighted that the pandemic has given them more perspective in that sense. This participant (N8) noted:

I'm just more cognizant of if someone is not kind [compared to the beginning of the pandemic], or if I see a lack of kindness, I maybe understand or take a step

back and say ‘You know what? Maybe they’re just having a bad day, or maybe this is affecting them in such a negative way that I just have to be a bit more understanding of that.’ Whereas I think before the pandemic if someone would have been unkind, I just would have thought, ‘Oh what a jerk!’ and I would just move on... Whereas I think, for me anyway, it’s [the pandemic] given me a bit more perspective that way.

While most participants described how kindness shifted over the pandemic, some individuals suggested that there was no change in kindness. One participant suggested that “the sense of decrease [in kindness] is just that we’re not seeing this level of ‘newness’ that we saw at the beginning of the pandemic” (N4). This same participant noted living in a “new normal” that they are “not as attuned with anymore as [they were] at the beginning [of the pandemic]” (N4). Similarly, another participant highlighted that while it may feel as though prosocial behaviour has declined, perhaps “we are comparing it to what it could have been or used to be” (N21). The feeling of kindness being a ‘new normal’ was common as another participant (N38) noted:

I’m not sure it means that they’ve [acts of kindness] actually really slowed down... I think a lot of it just became sort of normal. People sort of found their support groups and maybe there just wasn’t as much a need to... for lack of a better word, advertise that that’s what was happening, right? It just kind of became ‘Okay, we’re in this groove now and here we go.’

This same participant described how kindness became “routine” such that “we maybe now do it without even really thinking too hard about it” (N38).

**Prosocial Burnout.** Some participants experienced what was referred to by N15 as prosocial burnout over time. Specifically, prosocial burnout might help to explain some participants' perceptions about prosocial behaviour reducing over the course of the pandemic. This was underscored by one participant who said, "I think that at the beginning of the pandemic people had a lot more capacity to hold space for other people because they were scared but not exhausted at that point" (N25). Several participants expressed feeling fatigued, with one individual (N24) summarizing sentiments from their focus group as follows:

...at the beginning [of the focus group] you asked how we were, and we said we were burnt out, and we were tired, and we were numb. I don't know how easy it is for me in that state to recognize kindness or pull out the moments in my day where I experienced kindness, because I'm just so frazzled and tired.

Another participant (N10) described feelings of exhaustion due to the length of pandemic and the toll it continues to have on those in the medical field:

I think just people are exhausted. I think they're starting to get drained. I have a lot of family members that are in the medical field, and they are just burnt out, you know? They appreciated all these acts of kindness in the beginning, but it's just three years in now, it's a lot for them.

Similarly, one individual felt as though kindness had "receded" due to "exhaustion from being two years into the pandemic and some of the other challenging negative storylines" that were in the news (N35). Another participant described being in "survival mode", such that while there may have been kindness around them, they had a

hard time “seeing the bigger picture” (N23). Lastly, one participant (N15) described the toll that engaging in kind acts had on them:

I think that part of it is that... the fatigue is so relevant now that it's almost like we still have to do these things, not that we shouldn't be kind to each other all the time, but the fact that we're still in this crisis pandemic and having to think outside the box to have these prosocial interactions, is a bit fatiguing itself. The fact that this has been going on for two years, that, whereas these prosocial acts are not less valid now, but they just seem a little less impactful.

**Examples of Prosocial Behaviour.** Participants described various examples of prosocial behaviours engaged in throughout the COVID-19 pandemic. Summative content analysis revealed the following examples: messages of support (e.g., encouraging signs in windows;  $n = 15$ ), assisting loved ones (e.g., babysitting for family members;  $n = 21$ ), compassion towards others (e.g., tolerance of differing views;  $n = 22$ ), preparing or providing food to others (e.g., grocery shopping for other households;  $n = 23$ ), and giving back to community members and organizations (e.g., ‘free stuff’ Facebook groups;  $n = 45$ ). The size of each icon in Figure 6 represents the number of times the corresponding example of prosocial behaviour was mentioned by participants, in relation to one another.

**Figure 6**

*Examples of Participants' Prosocial Behaviour Described During Focus Groups (n = 42)*





## Discussion

The purpose of this mixed-methods research was two-fold: (1) to quantitatively assess adults' prosocial behaviour over time during the first 16 months of the pandemic in Ontario, Canada; and, (2) to more deeply explore, via focus groups, a sub-sample of Ontario adults' lived experiences of prosocial behaviour. Quantitatively, participants' prosocial behaviour increased significantly from April 2020 to August 2021; however, participants' awareness of kindness, engagement in deliberate acts of kindness, and view of kindness as crucial during the pandemic decreased significantly over time. Qualitatively, participants also described a shift in prosocial behaviour throughout the pandemic, although some felt the shift was based on perception versus reality.

While many participants expressed in the focus groups that they witnessed less engagement in deliberate acts of kindness over time, their overall PSA scores indicated that participants' engagement in prosocial behaviour increased from April 2020 to August 2021. This finding aligns with work conducted by Viera and colleagues (2022) who conducted a study with 600 adults in the United States and found that those who perceived COVID-19 to be a threat were more likely to engage in everyday altruism. It is thus possible that participants' self-reported increase in prosocial behaviour over time can be explained by the rise in COVID-19 cases during the data collection period, such that participants in the current study felt threatened by the pandemic and engaged in prosocial behaviour to combat this feeling. It is worth noting that prosocial behaviour and participants' experiences of it might have aligned with the stressors experienced during different waves of the pandemic, and their emotional responses to COVID-19 case count fluctuations (Ontario COVID-19 Science Advisory Table, 2021; Ontario COVID-19

Science Advisory Table, 2022). Some participants expressed how kindness shifted over the pandemic, suggesting that perhaps it did not decline; rather, acts of kindness were smaller or less apparent because individuals got used to them. While there are no longitudinal studies to date that report on prosocial behaviour over the pandemic, Tekin and colleagues (2021) compiled altruistic stories during COVID-19 from individuals in various countries (i.e., India, Australia, United States, and England). After conducting a qualitative content analysis of 104 altruistic stories, the authors found that community members and volunteers engaged in prosocial behaviour during the COVID-19 pandemic, with material resources representing a common type of support (Tekin et al., 2021). This finding aligns with the current study, as participants self-described as volunteers and offered support to other community members. Similarly, participants in the current study offered material resources by donating clothes, providing public health supplies (e.g., masks) to others, and buying groceries for individuals who were unable to do so. Participants also described support that was shown for frontline workers and provided examples such as seeing signs in front of houses for healthcare heroes and parades for frontline workers outside of hospitals. This finding aligns with Tekin and colleagues' (2021) study findings as the authors noted that frontline workers were among the groups that received the most support during the pandemic globally. The authors suggested that there was an increase in community-based support during the pandemic, which took the form of individual volunteers aiding community members (Tekin et al., 2021). Similarly, in the current study participants described kindness as a global phenomenon and expressed a collective 'we're all in this together' mentality at the

beginning of the pandemic, pointing towards community-connectedness and supporting one another during the early stages.

The quantitative findings revealed that prosocial behaviour increased over the course of the first year of the pandemic, while qualitatively participants felt as though it had shifted/decreased by the second year. The qualitative findings might help to explain the quantitative increase in prosocial behaviour, as participants described a global prosocial movement of sorts at the beginning of the pandemic, which transitioned to less grand and more individualized gestures. Although some participants reported feeling as though prosocial behaviour decreased over time, other individuals noted that perhaps people became too exhausted to recognize prosocial behaviour in the same ways they did at the start of the pandemic. This finding is not surprising given that Haktanir and colleagues (2021) explored pandemic fatigue among adults ( $N = 516$ ) and found a significant correlation between pandemic fatigue and intolerance of uncertainty, fear of COVID-19, and self-care. Moreover, engaging in prosocial behaviour can decrease one's stress levels and feelings of depression while increasing optimism, especially when the act of kindness is done out of concern for the wellbeing of others (Crocker et al., 2017). Therefore, it is not surprising that when reflecting on their engagement in acts of kindness, some participants in the study described prosocial behaviour as a stress reliever and/or coping mechanism during the pandemic.

During the focus groups, participants described various acts of kindness engaged in over the course of the COVID-19 pandemic. Many participants noted ways that they gave back to their communities and local organizations, with most describing online communities as one method of support (e.g., donating resources in 'free stuff' Facebook

groups). Though less frequent, participants also described acts that involved physical contact with other people, including offering childcare to family members and preparing food for others. These findings align with the work conducted by Aresi and colleagues (2020), who explored adults' ( $N = 2,562$ ) patterns of prosocial behaviours during collective quarantine conditions in Italy. The researchers found four classes of prosocial behaviour: (1) money donors; (2) online and offline helpers; (3) online health information sharers; and (4) neighbour helpers (Aresi et al., 2020). Of the four classes, offering help to others both online and in-person was reported most frequently (Aresi et al., 2020). This finding aligns with the current study as giving back to community members and organizations was reported most often, which included online interactions and support of others.

As noted above, some participants described a rise in individualism over the course of the pandemic, as well as prosocial burnout due to exhaustion. Specifically, participants noted a shift in what was being presented in the media, recognizing that at the beginning of the pandemic what was being reported in the media was more positive; however, over time, participants noted that they were seeing an increase in 'unkindness' and divisiveness portrayed in the media. Many participants described that their consumption of negative news impacted how they viewed kindness and prosocial behaviour. This finding is not surprising and corresponds with work conducted by Buchanan and colleagues (2021), who investigated the emotional consequences of exposure to COVID-19-related news among adults in England. The authors conducted two studies ( $N_{\text{study 1}} = 402$ ;  $N_{\text{study 2}} = 813$ ) and participants in each study were assigned to one of three groups: (1) COVID-19 information; (2) COVID-19 kindness; or, (3) no

information (control; Buchanan et al., 2021). The authors found that consumption of COVID-19-related news resulted in immediate and significant reductions in optimism and positive affect, when compared to the no information exposure group (Buchanan et al., 2021). Further, they found that exposure to COVID-19-related acts of kindness did not elicit the same negative consequences (Buchanan et al., 2021). Thus, it may be the case that participants in the current study felt as though the shift in media consumption towards more COVID-negative news impacted their views of kindness and contributed to prosocial burnout/exhaustion. Furthermore, it is possible that the perceived rise in individualism and prosocial burnout was due to ongoing stress associated with the COVID-19 pandemic (Statistics Canada, 2021). It is plausible that during the earlier stages of the pandemic (2020-2021; when the quantitative data was collected) participants were distressed coupled with high case counts, contributing to prosocial burnout. Although case counts were no longer at the forefront of the media at the time that qualitative data were collected (March 2022), it is possible that being two years into the pandemic created exhaustion for many and a de-sensitization of sorts.

### ***Limitations***

Although the PSA tool was previously validated for use with adults (Caprara et al., 2005), it was altered slightly to account for the public health recommendations during the COVID-19 pandemic. Thus, the tool was not validated for the way in which it was administered in the current study, which needs to be considered when interpreting the study findings. Further, the researchers created the three global kindness questions that were asked, and therefore, the three questions were not validated. Moreover, *honesty demands* (per Bates 1992) were employed, however, the self-reported data collected in

this study still lends itself to social desirability bias. When interpreting study findings, it is also worth noting that the quantitative data were collected at a different timeframe than the qualitative data (April 2020–August 2021 vs. March 2022, respectively). While the focus groups served to supplement quantitative findings by capturing participants' lived experiences of prosocial behaviour throughout the pandemic, participants spoke to their prosocial behaviour at the different time points (i.e., when the survey data was collected versus when the focus group data was collected). This served as a limitation as the COVID-19 context differed across time points, which could impact the interpretation of study findings. Furthermore, because the quantitative findings informed the focus group guide, it is possible that participants' responses were biased, given that they were told the survey data prior to sharing their personal experiences. While this was done intentionally, future studies may wish to separate quantitative and qualitative data.

### **Conclusion**

Participants' prosocial behaviour increased from April 2020 to August 2021. Further, participants described a shift in their prosocial behaviour over the course of the pandemic, from kindness being a global phenomenon to more small-scale acts of kindness, with some participants noting a rise in individualism and prosocial burnout contributing to a decline in prosocial behaviours. Participants also recognized kindness from various perspectives and reflected on the impacts of receiving, giving, and witnessing acts of kindness. This is the first study to provide insight into the long-term effects of the pandemic on adults' prosocial behaviour and should be leveraged to help understand how individuals respond in times of crises.

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## Chapter 6: Summary, Discussion, and Conclusion

### Summary

The overall purpose of this dissertation was to provide a detailed assessment of the mental health, wellbeing, and prosocial behaviour of Ontario adults during the COVID-19 pandemic (April 2020–August 2021). This chapter will provide a brief overview of the province of Ontario’s pandemic-related context at each of this dissertation’s program of research data collection time points as they pertain to the inter-related outcome variables. Then, a summary of each of this dissertation’s chapters/articles will be provided along with their major contributions to the literature as it relates to this dissertation’s overall purpose. Thereafter, a discussion of the four studies’ findings as they relate to one another will be presented, followed by the overall study-related limitations, recommendations for future directions, and conclusion.

The ongoing COVID-19 pandemic has disrupted the lives of people globally, nationally, and provincially. The early stages of the pandemic in Ontario, Canada—wherein time points 1 (April–July 2020) and 2 (July–August 2020) of the *Health Outcomes for Adults During and Following the COVID-19 Pandemic (HOPE)* study’s data collection occurred—were associated with the strictest of the pandemic’s public health protections (e.g., lockdowns, physical distancing, closure of non-essential businesses and organizations; Canadian Institute for Health Information, 2022) and with experiences of social isolation and loneliness (Su et al., 2023), mental health problems (Statistics Canada, 2021), poor psychological wellbeing (Zajacova et al., 2020), and exacerbated pre-existing inequities (Warren & Bordoloi, 2020). Over time, the Ontario government lifted public health protections (e.g., reopening of schools, recreational

facilities, restaurants, and retail facilities) during which, time point 3 data collection of *The HOPE Study* occurred, making engagement in COVID-19-related health-promoting behaviours largely voluntary. Engagement in some public health practices has been considered a form of prosocial behaviour during the pandemic (Cheng et al., 2022; Syropoulos & Markowitz, 2020) and there is evidence to suggest that prosociality can buffer against negative mental health consequences (Layous et al., 2014). However, prior to the current dissertation's program of research, it remained unknown how Ontario adults' mental health, wellbeing, and prosocial behaviour changed over time, if at all. Understanding longitudinal changes is critical, from a health promotion perspective, in order to identify the extent to which intervention might be needed to help support Ontario adults already at an increased risk for losing years of healthy life due to chronic disease (World Health Organization, 2005). To this end, a total of 2,188 participants were included in *The HOPE Study* that included the completion of a survey assessing their mental health, wellbeing, and prosocial behaviour at three time-points during the first 16 months of the COVID-19 pandemic. In addition to the surveys, a sub-sample of adults from *The HOPE Study* participated in one of six focus groups (March 2022). Four distinct articles were written to provide insight into Ontario adults' (aged 30–59): mental health and wellbeing during the first few months of the COVID-19 pandemic, as well as the difference between participants' mental health and wellbeing in relation to their physical activity levels; prosocialness during the first few months of the pandemic and the difference in participants' prosocial behaviour based on their geographic location (i.e., urban vs. rural); and mental health, wellbeing, and prosocial behaviour over time as

well as participants' lived experiences of prosocial behaviour during the pandemic. These four articles correspond with Chapters 2 to 5 in this dissertation.

**Article 1**, presented in Chapter 2, focused on Ontario adults' mental health and wellbeing early in the pandemic. It was found that during the first few months of the COVID-19 pandemic, in general, individuals' mental health and wellbeing were poor. The average score for participants' mental health was concerning and indicative of them experiencing some mental health problems during this time frame. With respect to wellbeing, participants' scores were below the "normative" range for statistical means in Western populations in several of the domains (per the International Wellbeing Group, 2013). Specifically, participants scored below what was deemed "normal" when asked about their satisfaction with their physical and mental health, respectively, as well as their satisfaction with feeling part of their communities and their future security. Further analysis revealed that participants who engaged in moderate-to-vigorous physical activity during the initial stages of the pandemic reported significantly higher levels of positive mental health and wellbeing, compared to those who did not engage in moderate-to-vigorous physical activity.

In **Article 2** (Chapter 3), which focused on Ontario adults' prosocial behaviour during the first few months of the pandemic, the majority of participants scored high on prosocial behaviour, as well as on the three kindness-related questions pertaining to their awareness of kindness around them; engagement in deliberate acts of kindness; and view of kindness as crucial to their pandemic experience. There was no statistically significant difference in participants' prosocialness based on geographic location (urban vs. rural).



With respect to **Article 3**, that assessed Ontario adults' mental health and overall wellbeing during the first 16 months of the pandemic, presented in Chapter 4, it was clear that participants' mental health significantly improved over time, though their average scores at each time point indicated that they might have been experiencing mental health problems throughout the first 16 months of the COVID-19 pandemic. There were also statistically significant changes in participants' wellbeing on several domains, although not all in a desirable direction. Specifically, participants' satisfaction with their standard of living, physical health, mental health, personal relationships, and spirituality/religion significantly decreased over time, while their satisfaction with their safety, community connectedness, and future security significantly decreased during the first few months of the COVID-19 pandemic and increased thereafter.

In **Article 4**, which explored adults' prosocial behaviour over the first 16 months of the pandemic as well as individuals' lived experiences of prosocial behaviour, presented in Chapter 5, quantitative data analysis revealed that participants' prosocialness significantly increased over time; concomitantly, their awareness of kindness around them, engagement in deliberate acts of kindness, and view of kindness as crucial to their pandemic experience significantly decreased over time. Additionally, participants described their experiences receiving, giving, and witnessing kindness, their perspectives on how prosocial behaviour shifted throughout the pandemic, their experiences of prosocial burnout, and they provided several examples of how they engaged in prosocial behaviour during the pandemic.

## Discussion

It is evident, based on the findings from this program of research, that the mental health, wellbeing, and prosocial behaviour of Ontario adults has been impacted during the COVID-19 pandemic timeframe. Specifically, participants' mental health improved, and their prosocial behaviour increased during the first 16 months of the pandemic (Shillington et al., 2021b; Shillington et al., 2022a; Shillington et al., 2022b; Shillington et al., 2023). While these findings are noteworthy on their own, together they tell an interesting story given the established relationship between these variables and other related constructs. Specifically, it has been found that engagement in prosocial behaviour can lead to increased happiness (Layous et al., 2012; Lyubomirsky et al., 2005; Nelson et al., 2015), resilience (Shillington et al., 2021a), positive affect (Raposa et al., 2016; Varma et al., 2023), and positive mental health and wellbeing (Layous et al., 2014; Lyubomirsky et al., 2004; Pressman et al., 2015; Shillington et al., 2020). Therefore, it is thus possible that participants' improvement in mental health during the pandemic, in part, can be attributed to their engagement in prosocial behaviour. Further, it is not surprising that participants' satisfaction with community connectedness increased from time points 2 to 3 (Chapter 4; Shillington et al., 2022a) because social connectedness has been positively related to prosocial behaviour (Su & Wang, 2022). It is plausible that as public health mandates lifted and individuals interacted with others more regularly or were more used to alternative approaches to in-person interacting, participants were able to engage in prosocial behaviours that enhanced their community connectivity. Further, it is important to note that social and community connection has been previously linked to improvements in mental health (Leach, 2014).

Another reason for participants' improvement in mental health during the pandemic might have been due to engagement in physical activity, as it was established at baseline that participants who engaged in physical activity experienced greater mental health benefits and wellbeing, compared to non-active participants (Chapter 2; Shillington et al., 2021b). It is possible that as the public health mandates became less strict and parks and gyms reopened, participants' engagement in physical activity increased and, in turn, positively affected their mental health. That said, this hypothesis is inconsistent with the larger *HOPE* study's longitudinal findings on movement behaviour, as participants' physical activity significantly decreased overtime (Contini et al., 2023). While recreation facilities reopened, many participants may have chosen not to return to these facilities due to on-going safety concerns (Howe et al., 2021). If so, this helps to explain the above-mentioned decline in physical activity over time. Additional research is needed to more thoroughly appreciate reasons for the decline in physical activity as that is outside the scope of this dissertation's focus.

While participants' prosocial behaviour quantitatively increased, participants described a distinct shift in the type of prosocial behaviours with which they engaged over the course of the first 16 months of the pandemic (Chapter 5; Shillington et al., 2023). It is possible that the reason participants' awareness of kindness, engagement in deliberate acts of kindness, and view of kindness as crucial decreased over time was due to the fact that engagement in prosocial/kind behaviours became more small-scale or individualistic, and perhaps less deliberate. That is, qualitatively, participants described experiencing prosocial burnout due to pandemic fatigue, feelings of exhaustion, and negative storylines in the media. Ergo, it is possible that the fatigue described by

participants impacted the type of prosocial behaviours with which they engaged, such that there was a noticeable shift from large-scale actions to more individualistic ones. This also helps to explain why participants' satisfaction with their mental and physical health declined over time (Chapter 4; Shillington et al., 2022a); it is possible that the length of the pandemic and its many varied impacts have taken a negative toll.

It has been established that the COVID-19 pandemic has widened pre-existing inequities for sexual and gender minorities (including women), people of colour, those of low socioeconomic status, and people with disabilities (e.g., Connor et al., 2020; Goggin & Ellis, 2020; Kantamneni, 2020; Slemon et al., 2022). Findings from the current program of research revealed that participants' satisfaction with their standard of living and personal relationships decreased during the first 16 months of the COVID-19 pandemic (Chapter 4; Shillington et al., 2022a). Such findings are important to consider within the context of participant demographic characteristics. While the majority of participants in *The HOPE Study* identified as having high socioeconomic status, most also identified as female. With respect to gender disparities during the pandemic, Collins and colleagues (2020) concluded that in the United States from February to April 2020, mothers with young children reduced their work hours 4–5 times more than fathers. It is worth noting that during the early stages of the pandemic in Ontario, daycare services were closed (Canadian Institute for Health Information, 2022). This is particularly noteworthy, as women traditionally and frequently serve as the primary caregiver in households (Gausman & Langer, 2020); this results in many women taking time away from work to care for their children during the pandemic (Carli, 2020). Specifically, Clark and colleagues (2020) interviewed 30 working mothers during the COVID-19

pandemic in Ireland and concluded that women were tasked with additional responsibilities during the pandemic, including childcare and domestic labour, which placed strain on the family unit. It is plausible that given the majority of participants in the current study were women, they faced additional stressors during the pandemic timeframe covered in this dissertation's research. Such stressors might have negatively impacted their home environment and family dynamic, helping to explain the decline in participants' satisfaction with their standard of living and personal relationships.

Findings from this dissertation's program of research revealed a significant decline in participants' satisfaction with their spirituality/religion (Chapter 4; Shillington et al., 2022a). This finding aligns with reports from Statistics Canada (2022), which concluded that there was a decline in participation in group religious activities in 2020; however, it does not explain the continued decline in participants' satisfaction with their spirituality/religion as public health mandates lifted and religious services reopened. It is possible that throughout the pandemic participants lost faith in humanity (Kale, 2021) which, in turn, might have impacted their religion/spirituality. This can be explained, in part, by participants' focus group responses, wherein many participants noted an increase in divisiveness, judgement, self-centred actions as the pandemic continued (Chapter 5; Shillington et al., 2023).

Interestingly, participants' safety and future security significantly decreased during the initial stages of the pandemic (Chapter 2; Shillington et al., 2021b), and increased at one year follow-up (Chapter 4; Shillington et al., 2022a). This aligns with the findings pertaining to prosocial behaviour, as participants' engagement in prosocial behaviour decreased from time points 1 to 2 and increased thereafter (Chapter 5;

Shillington et al., 2023). At the beginning of the pandemic (wherein time point 1 data collection occurred) there was little information available regarding the threat of the virus likely contributing to feelings of fear and potentially impacting participants' perceptions of safety and future security (Harper et al., 2021). This aligns with what participants described during the focus groups (Chapter 5; Shillington et al., 2023) when some participants shared that there was an "initial shock" at the beginning of the pandemic, wherein participants felt "paralyzed" and did not know what to do. It is possible that this "initial shock" not only impeded participants' abilities to engage in prosocial behaviour, but also impacted their satisfaction with their safety and future security. It is equally plausible that the subsequent increase in participants' satisfaction with their safety and future security can be attributed to the release of evidence-informed information and data surrounding COVID-19 (Dryhurst et al., 2020).

### ***Limitations and Future Directions***

While *The HOPE Study* is one of the first studies in Ontario, Canada to report longitudinal data regarding adults' mental health, wellbeing, and prosocial behaviour during the first 16 months of the COVID-19 pandemic, there are limitations in this work that must be acknowledged. First, though all of the tools selected for use were validated previously, some of the scales were altered to reflect the nature of the pandemic. Specifically, at the time of study creation a provincial state of emergency was declared and Ontario entered a lockdown wherein childcare facilities, schools, non-essential services, and recreational facilities were closed (Canadian Institute for Health Information, 2022). Further, the government recommended avoiding gatherings larger than five people and individuals were encouraged to self-isolate (Canadian Institute for

Health Information, 2022). These mandated public health protections precluded physical interaction outside of one's immediate household (Canadian Institute for Health Information, 2022), making engagement in some types of prosocial behaviour a challenge. To this end, two of the previously validated tools—the Prosocialness Scale for Adults (PSA) and the Personal Wellbeing Index-Adult (PWI-A)—were adapted to reflect the restrictions on in-person interactions in line with the COVID-19 context at the time of study creation. While the adaptation strengthened the suitability of the tools for the pandemic timeframe, doing so might have altered the psychometric properties of those tools rendering them potentially less valid. Another limitation that must be considered are the time points during which data collection occurred. Data collection time points were determined from Ontario's Framework for Reopening (Government of Ontario, 2020), such that time point 1 was to take place during Stage 1 of Ontario's Framework for Reopening, time point 2 was to occur during Stage 3 of reopening, and time point 3 was to occur one year follow-up. At the time of study creation there were no known dates associated with the anticipated stages of reopening. However, during data collection Ontario entered the various stages by region, meaning that some participants who completed time point 1 were in Stage 1 of Ontario's Framework for Reopening, while others were in Stage 2. Similarly, some participants completed time point 2 in Stage 2 of Ontario's Framework for Reopening, while others completed it during Stage 3, as intended. Governmental decisions being made at the time were based on available evidence and as such, the decision to enter the stages by region could not have been anticipated at the time of study creation. This was a limitation as participants' responses to questions might have differed based on the COVID-19 climate at the time of survey

completion. Additionally, it was not anticipated that the stages for reopening would occur so close together. Although this limitation was unavoidable, it is important to note that it is possible that some participants completed time point 1 and 2 within weeks of each other, wherein survey responses would not likely differ or differ appreciably.

Another unavoidable limitation was due to the timeframe, and political unrest, taking place when the prosocial focus group data were collected (Chapter 5; Shillington et al., 2023). The focus group guide was informed by the longitudinal, quantitative prosocial data which was collected April 2020–August 2021; however, the focus groups took place during March 2022, wherein the political climate surrounding COVID-19 was divisive (e.g., misinformation sparked an anti-vaccination movement, wherein people from across Canada occupied the country’s capital to protest COVID-19 mandates; Mitchell & Stacey, 2022). Therefore, during the focus groups participants were asked to reflect back to the time of previous data collection; however, the COVID-19 context at the time of the focus groups influenced participant responses. Additionally, while the sample size of *The HOPE Study* was a strength, there was attrition between the time points. To combat this, multiple imputation, which involves generating replacements for the missing values based on plausible models for data (He, 2010), was used to handle missing data and maintain sample size. Lastly, a major limitation of the research presented in this dissertation is the lack of generalizability because the sample was primarily comprised of White, female-identifying individuals of high socioeconomic status. Given that the COVID-19 pandemic disproportionately has affected minoritized individuals and those of low socioeconomic status, findings from the current study are not representative of such voices and experiences. In the future, researchers might



consider stratifying their sample by targeting groups of diverse ethnic origins, genders, and socioeconomic status in order to achieve greater diversity and representation among the population.

Findings from the program of research presented in this dissertation might inform the development of interventions to support Ontario adults during and following the pandemic. Specifically, survey and focus groups data helped the research team to understand that the behavioural and environmental factors associated with the COVID-19 pandemic have influenced the mental health, wellbeing, and prosocial behaviour of the priority population (Phase 1 of the Generalized Model; McKenzie et al., 2022). Given that it is possible participants' increased engagement in prosocial behaviour contributed, in part, to their improved mental health during the COVID-19 pandemic, such findings might be used to inform the development of a health promotion intervention aimed at providing opportunities for Ontario adults to practice prosociality. This said, it is imperative that the supports developed do not create additional stress or burden for Ontario adults since participants described experiencing prosocial burnout during the pandemic (Chapter 5; Shillington et al., 2023). Thus, creating an intervention wherein multiple evidence-based prosocial strategies are offered and participants have the autonomy to select one or multiple strategies based on their needs, would be essential to program success (Layous & Lyubomirsky, 2014). Providing a variety of prosocial activities would not only aid in meeting participant needs, but might also contribute to greater positive emotions (Layous & Lyubomirsky, 2014) and, in turn, improve Ontario adults mental health and wellbeing.

## Conclusion

Over the past three-plus years, individuals around the world have experienced the pervasive impacts of the COVID-19 pandemic; its health repercussions have been devastating globally with illness in varying degrees of severity and deaths that continue to plague populations worldwide and, concomitantly, their health care systems (Barrett et al., 2020; Pollard et al., 2020; WHO, 2023). The time-event boundaries of this dissertation encompass the pandemic's earliest years, ones that witnessed global adaptations and restrictions in attempting to mitigate the severity of health issues (Canadian Institute for Health Information, 2022). Of necessity, most of the foci during this period were on medical interventions, especially developing vaccinations and advocating for preventive measures like physical distancing (Canadian Institute for Health Information, 2022; Chu et al., 2020; Government of Canada, 2020). In retrospect then, designing and implementing this study concerning the mental health, wellbeing, and prosocial behaviour of Ontario adults have been proactive and instructive in analyzing the mental health and wellbeing of a specific population subset and of underscoring the significance of prosocial behaviour as a critical coping mechanism during a health crisis.

At the onset of the COVID-19 pandemic it was largely unknown how individuals' lifestyle-related health behaviours would be impacted, if at all. This dissertation's program of research was among the first set of studies to provide a longitudinal overview of Ontario adults mental health, wellbeing, and prosocial behaviours during the COVID-19 pandemic. Specifically, during the early stages of the pandemic, participants' mental health and wellbeing were, in general, poor. And yet, at the same time they reported high levels of prosocialness. These findings provide an important overview of Ontario adults

lifestyle-related health behaviours during the early stages of the pandemic, wherein at the time of data collection, limited evidence-based information was available about such behaviours. As the pandemic continued, findings revealed that participants' mental health and prosocial behaviour improved, while their wellbeing declined in several domains. Participants' improvement in mental health may be explained, in part, by their high levels of prosocialness. These findings are particularly salient as prosocial behaviour might be an approach worthy of further investigation as a mental health and wellbeing practice during and following health crises like the pandemic. Thus, policy makers and health promoters might wish to leverage findings from this program of research to aid in understanding and potentially ameliorating the long-term impacts that the pandemic has had on Ontario adults. From the findings of this research, it is postulated that prosocial behaviour should be taken into account and advocated when designing interventions targeting the mental health and wellbeing of Canadians (and, by implication, population groups globally).

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## Appendix A

### Ethics Approval



**Date:** 24 April 2020

**To:** Dr. Jennifer Irwin

**Project ID:** 115827

**Study Title:** Health Outcomes for adults during and following the COVID-19 Pandemic: The HOPE Study

**Application Type:** HSREB Initial Application

**Review Type:** Delegated

**Meeting Date / Full Board Reporting Date:** 05/May/2020

**Date Approval Issued:** 24/Apr/2020

**REB Approval Expiry Date:** 24/Apr/2021

Dear Dr. Jennifer Irwin

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

**Documents Approved:**

Document Name	Document Type	Document Date	Document Version
HOPE - 1-Year Survey	Online Survey	22/Apr/2020	1
HOPE - Baseline Survey	Online Survey	22/Apr/2020	1
HOPE - Baseline Survey_April 24, 2020	Written Consent/Assent	24/Apr/2020	2
HOPE - Email Survey	Online Survey	22/Apr/2020	1
HOPE - Followup Survey Script_revised	Email Script	24/Apr/2020	2
HOPE - Immediate Survey	Online Survey	22/Apr/2020	1
HOPE - Recruitment_revised	Recruitment Materials	24/Apr/2020	2
HOPE - Recruitment2_revised	Recruitment Materials	24/Apr/2020	2
The HOPE Study Protocol_April 24	Protocol	24/Apr/2020	2

**Documents Acknowledged:**

Document Name	Document Type	Document Date	Document Version
HOPE Ethics - Study Rationale References	References	20/Apr/2020	1

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from Western HSREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

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

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

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

Sincerely,

Patricia Sargeant, Ethics Officer [REDACTED] on behalf of Dr. Philip Jones, HSREB Vice-Chair

*Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).*

## Appendix B

## Study Advertisements

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**Western** **HEALTH OUTCOMES FOR ADULTS DURING AND  
FOLLOWING THE COVID-19 PANDEMIC: HOPE**

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**H**  **PE****IF YOU...**

- live in Ontario
- aged 30-59



You're invited to participate in a survey-based research study assessing the impact of the COVID-19 physical distancing regulations on the lifestyle-related behaviours, overall wellbeing, and development of chronic disease of Ontario adults

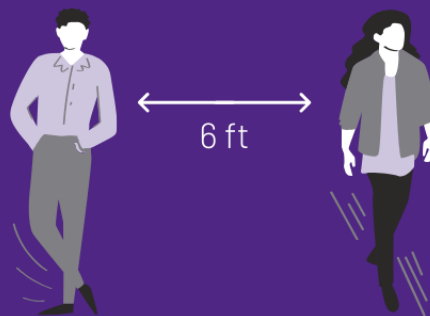
VISIT THE LINK TO LEARN MORE & ACCESS THE SURVEY: [https://uwo.eu.qualtrics.com/jfe/form/SV\\_01bpt1wZAymYfz](https://uwo.eu.qualtrics.com/jfe/form/SV_01bpt1wZAymYfz)



## HEALTH OUTCOMES FOR ADULTS DURING AND FOLLOWING THE COVID-19 PANDEMIC: HOPE

### IF YOU...

- live in Ontario
- aged 30-59



You're invited to participate in a survey-based research study assessing the impact of the COVID-19 physical distancing regulations on the lifestyle-related behaviours, overall wellbeing, and development of chronic disease of Ontario adults

H  PE



SCAN TO LEARN MORE OR VISIT THE LINK BELOW TO ACCESS THE SURVEY:

[https://uwo.eu.qualtrics.com/jfe/form/SV\\_01bpt1wZAymYfz](https://uwo.eu.qualtrics.com/jfe/form/SV_01bpt1wZAymYfz)



Do you have  
~15 minutes?



Do you live in  
Ontario?



Are you aged  
30-59?

*If so, you are invited to participate in:*

## **HOPE: Health Outcomes For Adults During and Following the COVID-19 Pandemic**

*A survey-based research study assessing the impact of COVID-19 physical distancing on lifestyle-related behaviours, overall wellbeing, & chronic disease development in Ontario adults*



←  
Scan to start the  
survey

→  
Or visit the link to  
begin!

[https://uwo.eu  
.qualtrics.com  
/jfe/form/SV\\_0  
1bpt1wZAym  
Yfz](https://uwo.eu.qualtrics.com/jfe/form/SV_01bpt1wZAymYfz)



## Appendix C

### Letter of Information, Eligibility, and Consent – Survey

### The HOPE Study – Baseline

#### Welcome to The HOPE Study

**Study Title:** Health Outcomes for Adults During and Following the COVID-19 Pandemic: The HOPE Study

**Principal Investigator:** Dr. Jennifer Irwin [REDACTED]

**Co-investigator:** Ms. Katie Shillington [REDACTED]

Thank you for your interest in participating in The HOPE Study. Before you decide whether to participate, the researchers would like you to read some important information about the study. If you choose to participate, the "consent" button can be found at the end of this letter of information, following confirmation of eligibility.

*\*Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.*

#### Invitation to Participate

You are invited to participate in The HOPE Study; a study assessing the impact of the COVID-19 physical distancing regulations on the lifestyle-related behaviours, overall wellbeing, and development of chronic disease of Ontario adults.

#### Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research study.

#### Purpose of this Study

The aims of the study are three-fold: (1) to explore if lifestyle-related health behaviours of Ontario adults during the public health physical distancing mandate of the COVID-19 pandemic impact future incidence of chronic conditions (primary objective); (2) to explore the lifestyle-related health behaviours and overall wellbeing among Ontario adults infected (diagnosed/suspected) versus not-infected with COVID-19 (secondary objective); and (3) to assess the impact of physical distancing on the lifestyle-related behaviours and overall wellbeing of Ontario adults during and following the pandemic (secondary objective).

#### Inclusion Criteria

You are eligible to participate in this study if you are: (1) an Ontario resident; (2) between the ages of 30 and 59; and (3) able to read and write in English.

#### Exclusion Criteria

Individuals will be excluded from the study if they are not an Ontario resident, if they are outside of the desired age range (30-59), and if they are unable to read and write in English.

### **Study Procedures**

We are aiming to recruit 10,000 participants for this study. If you consent to participate in this study, you will be asked to complete an online survey at three time points: baseline, immediate post-physical distancing mandate, and 1-year following the mandate's cessation. It is anticipated that the survey will take approximately 15-20 minutes to complete. You will be able to complete the survey on your own time at a location of your choice (where internet is available). At the end of the baseline survey you will be asked to submit your email address. This will, in no way, be linked to your survey data. It will strictly be used to contact you to invite you to complete the survey at the follow-up time points.

### **Possible Benefits**

While there are no direct benefits to participation in this study, a reflection of your own lifestyle-related health behaviours, overall wellbeing, and risk for chronic disease development may be beneficial. Findings from this study could also underscore what health care providers should be prepared for regarding chronic disease at a population level following the COVID-19 physical distancing mandate.

### **Potential Risks**

There are no known risks or harms to participating in this study; however, the study deals with topics regarding lifestyle-related behaviours, overall wellbeing, and chronic disease, and therefore, may be triggering to some. Thus, we have included a list of mental health support services:

- General Mental Health Support: <https://www.ontario.ca/page/find-mental-health-support>
- Mental Health Helpline: 1-866-531-2600 (toll-free)
- 211 Ontario: 1-877-330-3213 (toll-free)

### **Compensation**

You will be invited to submit your email address where you will be entered in a draw to win one of three grocery store gift cards valued at \$100 each if you complete the survey at all three time points. You may only win one draw. If you win a draw, you will be notified by email and the gift card will be sent to you electronically. Email addresses will be collected and stored separately from research data and will be used to notify you of winning the prize; this information will be destroyed or permanently deleted after winners receive their prize electronically.

### **Voluntary Participation**

Participation in this study is voluntary. The majority of the questions are voluntary; however, there are some screening questions or required fields that are mandatory in order to participate. If you do not want to respond to the mandatory questions, please close the browser before the survey is submitted. You may refuse to participate or

withdraw from the study at any time. You may request to withdraw your information up until the point of data analysis.

### **Confidentiality**

Your survey responses will be collected through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. The data will then be exported from Qualtrics and securely stored on a Western University server behind institutional firewalls. Study data will be de-identified in the study database and direct personal identifiers will be retained in a master list, stored separately from the study database. Any identifiable study information (e.g., master list, email addresses, etc.) will be stored on an institutional drive and will be accessed remotely (via Pulse Secure) by Ms. Katie Shillington (co-investigator). Additionally, Katie will be storing de-identified study data on her password-protected personal computer in order to begin data analyses. The computer is not shared with anyone else and the data files/folders pertaining to the study will be password protected. Katie's personal computer is a MacBook, which is encrypted through security features called Firewall and FireVault. All data collected will remain confidential and accessible only to the investigators of this study. While we do our best to protect your information, there is no guarantee that we will be able to do so. We are collecting some sensitive information. For example, you will be asked to create a self-generated participant ID by answering a series of questions: (1) the first letter of your first name; (2) your day of birth; (3) the first letter of the town/city you were born in; (4) the first letter of your mother's maiden name; and (5) the last two digits of your phone number. This information will strictly be used to link your data across time points and will only be available to the research team. Email addresses are being requested as you will be contacted at the follow-up time points to complete the same survey and will be entered in a draw to win one of three grocery store gift cards if all surveys have been completed. We are also collecting demographic information such as: (1) age; (2) sex; (3) gender; (4) ethnicity; (5) city/town of residence; (6) if you have tested positive for or have been suspected to have COVID-19; and (7) number of people in household who tested positive for or have been suspected to have COVID-19. These identifiers will be collected for the purposes of descriptive statistics and understanding the population/cohort that is being studied.

After a minimum of 7 years, all data will be destroyed, including the master list of participant IDs. By participating in this research, you agree that the results may be used for scientific purposes, including publication in scientific journals. No individual information will be reported. Only group-level and aggregated data will be reported.

### **Contacts for Further Information**

If you require further information regarding this research project or your participation in the study, you may contact Ms. Katie Shillington [REDACTED] or Dr. Jennifer Irwin [REDACTED].

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics [REDACTED]. For non-

local participants you may contact: [REDACTED], email: [REDACTED].

### **Eligibility and Consent**

Prior to participating in this study, you will be asked to confirm your eligibility and give consent. If you do not provide consent, you will not be able to proceed to the survey.

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*Thank you for considering participation in this study. We ask you to please answer the following questions as honestly as possible. There are no right or wrong answers to any of the questions. Whatever you truly think or feel is the answer you should pick.*

### **Eligibility**

Are you between the ages of 30-59 (inclusive)?

- Yes  
 No

Can you read and write in English?

- Yes  
 No

Are you an Ontario resident?

- Yes  
 No
- 

### **Consent**

If you do not consent and do not wish to participate in the study, please select the appropriate option. You will not be penalized in any way if you choose not to participate.

By clicking "I consent to begin the study", you acknowledge that you understand the terms and conditions of participating in this study and are making an informed decision to participate. Further, submitting the survey is an indication of your consent to participate in the study.

- I consent to begin the study  
 I do not consent, I do not wish to participate
- 

### **Participant ID**

By answering the following questions you are creating a unique participant ID for yourself. This is necessary for the research team to link your data across time points. The information that you provide will be kept confidential and will only be available to the

research team. You will be asked to submit the **exact same** responses in the follow-up surveys.

What is the first letter of your first name? (E.g., If your name is John, select 'J')

Dropdown menu options A-Z

What is your **day** of birth? (E.g., If your date of birth is January 30th, select '30')

Dropdown menu options from January-December (month)

Dropdown menu options from 1-31 (day)

What is the **first letter** of the **town/city** where you were **born**? (E.g., If you were born in Chatham, select 'C')

Dropdown menu options A-Z

What is the **first letter** of your **mother's maiden name**? (i.e., Her last name at birth; e.g., If Smith, select 'S').

Dropdown menu options A-Z

What are the **last two digits** of your **home phone number**? (E.g., If your phone number is 123-456-7890, select '9' and then '0')

Dropdown menu options from 0-9 (first digit)

Dropdown menu options from 0-9 (second digit)

## Appendix D<sup>1</sup>

### Demographic Questionnaire at Time Point 1

#### The HOPE Study – Baseline

##### Demographics

The following questions pertain to demographic information. Information provided will be confidential and used strictly for data analysis.

What is your age? (years)

---

What is your sex? (Refers to sex assigned at birth)

- Female  
 Male  
 Not listed - please specify:

---

I prefer not to answer

To which gender do you most identify? (Refers to current gender which may be different from sex assigned at birth and may be different from what is indicated on legal documents)

- Female  
 Male  
 Non-binary  
 Not listed - please specify:

---

I prefer not to answer

What is your ethnicity?

- Indigenous  
 Caucasian (White)  
 South Asian (e.g., East Indian, Pakistani, Sri Lankan, etc.)  
 Chinese  
 Black  
 Filipino  
 Latin American  
 Arab  
 Southeast Asian (e.g., Vietnamese, Cambodian, Laotian, Thai, etc.)

---

<sup>1</sup> In the large-scale *HOPE* study, participants responded to 14 demographic questions. The 11 demographic questions relevant and included in this dissertation's program of research are presented in this Appendix.

- West Asian (e.g., Iranian, Afghan, etc.)
- Korean
- Japanese
- Multiracial
- Not listed - please specify:

---

I prefer not to answer

What is your city/town of residence?

---

What is your current work employment status **during the COVID-19 physical distancing mandate?**

- Employed full-time
- Employed part-time
- Unemployed
- Casual
- Other - please specify: \_\_\_\_\_
- I prefer not to answer

What is your current marital status?

- Single
- Married/common law/engaged
- Divorced/separated
- Widowed
- I prefer not to answer

What is the highest level of education that you have completed?

- Less than high school
- High school completed
- Community college and/or journeyman apprenticeship completed
- University undergraduate degree completed
- University graduate degree or higher completed
- Other - please specify: \_\_\_\_\_
- I prefer not to answer

What is your best estimate of your total family income, before taxes and deductions, from all sources during the year? (Income can come from various sources such as from work, investments, pensions or government; e.g., Employment Insurance, Social Assistance, Child Tax Benefit and other income such as child support, spousal support (alimony) and rental income)

- Less than \$30,000

- \$30,000 to \$59,999
- \$60,000 to \$79,999
- \$80,000 to \$110,999
- \$111,000 to \$150,000
- Greater than \$150,000
- I prefer not to answer

What chronic conditions do you currently have? (Please select all that apply)

- Mental illness
- Mood and anxiety disorders
- Schizophrenia

Have you tested positive for or have been told by a medical professional that they suspect you have/had COVID-19?

- Yes
- No



## Appendix E

### Global Physical Activity Questionnaire (GPAQ)

### The HOPE Study – Baseline

### Global Physical Activity Questionnaire (GPAQ)

The next set of questions will ask you about the time you spend doing different types of physical activity in a typical week **during the COVID-19 physical distancing mandate**. **Some of the examples provided in each question are there to illustrate activity intensity levels, and may not be the exact activities you could engage in during this time-frame.** Please answer these questions even if you do not consider yourself to be a physically active person.

The following questions ask you about sports, fitness and recreational activities (leisure).

Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like running or football for at least 10 minutes continuously?

- Yes
- No

In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?

- 1 day/week
- 2 days/week
- 3 days/week
- 4 days/week
- 5 days/week
- 6 days/week
- 7 days/week

How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?

- Dropdown menu for hours
- Dropdown menu for minutes

Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that causes a small increase in breathing or heart rate such as brisk walking, cycling, swimming, or volleyball for at least 10 minutes continuously?

- Yes
- No

In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?

- 1 day/week
- 2 days/week
- 3 days/week
- 4 days/week
- 5 days/week
- 6 days/week
- 7 days/week

How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?

- Dropdown menu for hours
- Dropdown menu for minutes

The following questions are about sitting or reclining at work, at home, getting to and from places, or with friends including time spent (sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television), but do not include time spent sleeping.

How much time do you usually spend sitting or reclining on a typical day?

- Dropdown menu for hours
- Dropdown menu for minutes

How much time do you usually spend watching TV or using a computer, tablet or smartphone on a typical day?

- Dropdown menu for hours
- Dropdown menu for minutes

## Appendix F

### Starting the Conversation (STC)

## The HOPE Study – Baseline

### Starting the Conversation (STC)

The next set of questions asks you about your diet over the past few months **during the COVID-19 physical distancing mandate.**

Over the past few months, how many times a week did you eat fast food meals or snacks?

- Less than 1
- 1-3 times
- 4 or more

Over the past few months, how many servings of fruit did you eat each day?

- 5 or more
- 3-4 times
- 2 or less

Over the past few months, how many servings of vegetables did you eat each day?

- 5 or more
- 3-4 times
- 2 or less

Over the past few months, how many regular sodas/pop or glasses of sweet tea did you drink each day?

- Less than 1 time
- 1-2 times
- 3 or more times

Over the past few months, how many times a week did you eat beans (like pinto or black beans), chicken or fish?

- 3 or more
- 1-2 times
- Less than 1

Over the past few months, how many times a week did you eat regular snack chips or crackers (not low fat)?

- 1 time or less
- 2-3 times
- 4 or more times

Over the past few months, how many times a week did you eat desserts and other sweets (not the low fat kind)?

- 1 time or less
- 2-3 times
- 4 or more times

Over the past few months, how much butter or margarine (or meat fat) do you use to season or put on vegetables, potatoes, or bread?

- Very little
- Some
- A lot

## Appendix G

### Mental Health Inventory (MHI-5)

### The HOPE Study – Baseline

### Mental Health Inventory (MHI-5)

Please read each question and select the statement that best describes how you have been feeling the past month **during the COVID-19 physical distancing mandate.**

How much of the time during the last month have you been a very nervous person?

- All of the time
- Most of the time
- A good bit of time
- Some of the time
- A little bit of the time
- None of the time

How much of the time during the last month have you felt so down in the dumps that nothing could cheer you up?

- All of the time
- Most of the time
- A good bit of time
- Some of the time
- A little bit of the time
- None of the time

How much of the time during the last month have you felt calm and peaceful?

- All of the time
- Most of the time
- A good bit of time
- Some of the time
- A little bit of the time
- None of the time

How much of the time during the last month have you felt downhearted and blue?

- All of the time
- Most of the time
- A good bit of time
- Some of the time
- A little bit of the time

None of the time

How much of the time during the last month have you been a happy person?

All of the time

Most of the time

A good bit of time

Some of the time

A little bit of the time

None of the time

## Appendix H

### Personal Well-Being Inventory-Adult (PWI-A)

### The HOPE Study – Baseline

### Personal Well-Being Inventory-Adult (PWI-A)

The following questions ask how satisfied you feel, on a scale from 0 to 10, **during the COVID-19 physical distancing mandate**. Zero means you feel no satisfaction at all and 10 means you feel completely satisfied.

Thinking about your own life and personal circumstances, how satisfied are you with your life as a whole?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with your standard of living?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with your physical health?

- No satisfaction at all 0
- 1

- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with your mental health?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with what you are achieving in life?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with your personal relationships?

- No satisfaction at all 0
- 1
- 2
- 3



- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with how safe you feel?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with feeling a part of your community?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with your future security?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5

- 6
- 7
- 8
- 9
- Completely satisfied 10

How satisfied are you with your spirituality or religion?

- No satisfaction at all 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Completely satisfied 10

## Appendix I

### Prosocialness Scale for Adults (PSA)

### The HOPE Study – Baseline

### Prosocialness Scale for Adults (PSA)

The following statements describe a large number of common situations. There are no right or wrong answers; the best answer is the immediate, spontaneous one. Read each phrase carefully and fill in the number that reflects your first reaction. Please answer the questions from your vantage point **during the COVID-19 physical distancing mandate.**

I try to help others

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I am empathic with those who are in need

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I intensely feel what others feel

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I am willing to make my knowledge and abilities available to others

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I try to console those who are sad

- Never/Almost Never

- Rarely
- Occasionally
- Often
- Always/Almost Always

I easily put myself in the shoes of those who are in discomfort

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I try to be connected with and supportive of those who are in need

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I easily share with friends any good opportunity that comes to me

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I spend time connecting with those friends who feel lonely

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I immediately sense my friends' discomfort even when it is not directly communicated to me

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

## Appendix J

### Kindness-Related Questions

#### The HOPE Study – Baseline

The following statements describe a large number of common situations. There are no right or wrong answers; the best answer is the immediate, spontaneous one. Read each phrase carefully and fill in the number that reflects your first reaction. Please answer the questions from your vantage point **during the COVID-19 physical distancing mandate.**

I am aware of kindness around me during COVID-19

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I purposefully engage in deliberate acts of kindness during COVID-19

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

I view kindness as a crucial component of my COVID-19 experience

- Never/Almost Never
- Rarely
- Occasionally
- Often
- Always/Almost Always

## Appendix K<sup>1</sup>

### Demographic Questionnaire at Time Points 2 and 3

#### The HOPE Study – 1 Year Follow-Up

The following questions pertain to demographic information. Information provided will be confidential and used strictly for data analysis.

What is your current work employment status?

- Employed full-time
- Employed part-time
- Unemployed
- Casual
- Other - please specify: \_\_\_\_\_
- I prefer not to answer

To what extent has your income changed, compared to one year ago?

- Reduced
- Stayed the same
- Increased

What chronic conditions do you currently have? (Please select all that apply)

- Mental illness
- Mood and anxiety disorders
- Schizophrenia

Have you tested positive for or have been told by a medical professional that they suspect you have/had COVID-19?

- Yes
- No

---

<sup>1</sup> In the large-scale *HOPE* study, participants responded to 9 demographic questions at time points 2 and 3. The 4 demographic questions relevant and included in this dissertation's program of research are presented in this Appendix.

## Appendix L

### Focus Group Letter of Information, Eligibility, and Consent

## The HOPE Study Extension

### Welcome to The HOPE Study Extension

**Study Title:** Health Outcomes for Adults During and Following the COVID-19

PandEmic: The HOPE Study

**Principal Investigator:** Dr. Jennifer Irwin [REDACTED]

**Co-investigator:** Ms. Katie Shillington [REDACTED]

Thank you for your interest in participating in The HOPE Study Extension. Before you decide whether to participate, the researchers would like you to read some important information about the study extension. If you choose to participate, the "consent" button can be found at the end of this letter of information.

*\*Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.*

### Invitation to Participate

You are invited to participate in an extension to The HOPE Study; a study extension assessing Ontario adults' lived experiences of prosocial behaviour, as well as the lifestyle-related health behaviours and overall wellbeing of Ontario adults following the pandemic.

### Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research study extension.

### Purpose of this Study Extension

The aims of the study extension are two-fold: (1) to explore Ontario adults' lived experiences of prosocial behaviour during the COVID-19 pandemic; and (2) to assess the lifestyle-related health behaviours and overall wellbeing of Ontario adults following the COVID-19 pandemic.

### Inclusion Criteria

You are eligible to participate in this study extension if you were a participant in The HOPE Study.

### Exclusion Criteria

Individuals will be excluded from the study extension if they were not a participant in The HOPE Study.

### Study Procedures

If you consent to participate in this study extension, you will be invited to participate in a

virtual (i.e., online) focus group. We are aiming to recruit 8-10 participants for 6 focus groups. The focus groups will last approximately 60 minutes and will serve to explore Ontario adults' lived experiences of prosocial behaviour during the COVID-19 pandemic. Prosocial behaviour can be understood as “voluntary behaviour intended to benefit another, such as helping, donating, sharing and comforting” and can include domains such as “compassion, caring, love, sympathy, empathy, altruism, and kindness” (Shillington et al., 2021). Those interested in participating in a focus group will be asked to sign-up for a focus group at the end of this survey and will be asked to submit their email address. Please note that not all individuals who sign-up and provide their email address will be contacted to participate in a focus group. Additionally, you will be asked to complete an online survey immediately following the COVID-19 pandemic, which will be sent to your inbox at that time. It is anticipated that the survey will take approximately 15-20 minutes to complete. You will be able to complete the survey on your own time at a location of your choice (where internet is available). Please note the surveys will not be monitored as submitted. You will also be asked to submit your email address. Your email address will only be used to coordinate focus group participation and to contact you if you are randomly selected as a gift card winner. This will, in no way, be linked to your study data.

### **Possible Benefits**

While there are no direct benefits to participation in this study, a reflection of your own prosocial behaviour, lifestyle-related health behaviours, and overall wellbeing may be beneficial. Findings from this study could also underscore what health care providers should be prepared for regarding health behaviours at a population level following the COVID-19 pandemic.

### **Potential Risks**

There are no known risks or harms to participating in this study; however, the study deals with topics regarding lifestyle-related behaviours, overall wellbeing, prosocial behaviour, and mental health and therefore, may be triggering to some. Thus, we have included a list of mental health support services:

- General Mental Health Support: <https://www.ontario.ca/page/find-mental-health-support>
- Mental Health Helpline: 1-866-531-2600 (toll-free)
- 211 Ontario: 1-877-330-3213 (toll-free)

### **Compensation**

Individuals who participate in the focus groups will be entered in a draw to win one of three grocery store gift cards valued at \$60 each. Additionally, all participants who complete the immediate post-COVID-19 survey will be invited to submit their email address where they will be entered in a draw to win one of three grocery store gift cards also valued at \$60 each. Please note you may only win one draw. If you win a draw, you will be notified by email and the gift card will be sent to you. Email addresses will be collected and stored separately from research data and will be used to notify you of winning the prize; this information will be destroyed or permanently deleted after winners receive their prize electronically.



### **Voluntary Participation**

Participation in this study is voluntary. The majority of the questions are voluntary; however, there are some screening questions or required fields that are mandatory in order to participate. If you do not want to respond to the mandatory questions, please close the browser before the survey is submitted. You may refuse to participate or withdraw from the study at any time. You may request to withdraw your information up until the point of data analysis.

### **Confidentiality**

If you consent to participate in a focus group, you will be asked to complete a focus group via Zoom, which will take approximately 60 minutes. In order to accurately capture your experiences, the focus groups will be audio-recorded. While Zoom generates both audio and video recordings, only the audio will be used for data analysis purposes and the video will be deleted immediately following the focus group. All data collected will remain confidential and accessible only to the investigators of this study. While we do our best to protect your information, there is no guarantee that we will be able to do so. If you do not wish to be recorded, you do not need to participate in the focus group. The audio recording will be transcribed verbatim by Zoom and checked for accuracy by a member of the research team. All potentially identifying information will be removed. We advise that you limit any identifying information shared during the focus group, including names and locations. No information that can identify you will be used in any publication or presentation of the study results (i.e., only summarized findings will be shared). Participants will be identified in study results by assigned pseudonyms. If direct quotes are used to highlight certain findings, any potentially identifying information will be removed. Unless you decide to disclose to others, only the research team will know that you have completed the focus group.

Your survey responses will be collected through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. The data will then be exported from Qualtrics and securely stored on a Western University server behind institutional firewalls. Study data will be de-identified in the study database and direct personal identifiers will be retained in a master list, stored separately from the study database. Any identifiable study information (e.g., master list, email addresses, etc.) will be stored on an institutional drive and will be accessed remotely (via Western's SharePoint) by Ms. Katie Shillington (co-investigator). Additionally, Katie will be storing de-identified study data on her password-protected personal computer for data analyses. The computer is not shared with anyone else and the data files/folders pertaining to the study will be password protected. Katie's personal computer is a MacBook, which is encrypted through security features called Firewall and FireVault. All data collected will remain confidential and accessible only to the investigators of this study. While we do our best to protect your information, there is no guarantee that we will be able to do so. We are collecting some sensitive information. For example, you will be asked to use the participant ID that you self-generated for The HOPE Study which included: (1) the first letter of your first name; (2) your day of birth; (3) the first letter of the town/city you were born in; (4) the first letter of your mother's

maiden name; and (5) the last two digits of your phone number. This information will strictly be used to link your data across time points and will only be available to the research team.

Email addresses are being requested to coordinate focus groups and will be used to contact you immediately post-COVID-19 to complete the survey. Further, if you participate in a focus group and/or the survey you will be entered in a draw to win one of three grocery store gift cards, respectively. We are also collecting demographic information such as: (1) age; (2) employment status; (3) income; (4) chronic disease conditions; (5) height; (6) weight; (6) if you have tested positive for or have been suspected to have COVID-19; and (7) number of people in household who tested positive for or have been suspected to have COVID-19. These identifiers will be collected for the purposes of descriptive statistics and understanding the population/cohort that is being studied.

After a minimum of 7 years, all data will be destroyed, including the master list of participant IDs, transcripts, and audio files. By participating in this research, you agree that the results may be used for scientific purposes, including publication in scientific journals. No individual information will be reported. Only group-level and aggregated data will be reported.

#### **Contacts for Further Information**

If you require further information regarding this research project or your participation in the study, you may contact Ms. Katie Shillington [REDACTED] or Dr. Jennifer Irwin [REDACTED].

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics [REDACTED]. For non-local participants you may contact: [REDACTED], email: [REDACTED].

#### **Eligibility and Consent**

Prior to participating in this study, you will be asked to confirm your eligibility and give consent. If you do not provide consent, you will not be able to proceed to the survey.

*Thank you for considering participation in this study. We ask you to please answer the following questions as honestly as possible. There are no right or wrong answers to any of the questions. Whatever you truly think or feel is the answer you should pick.*

#### **Eligibility**

Were you a participant in The HOPE Study?

Yes

No

#### **Consent**

If you do not consent and do not wish to participate in the study extension, please select the appropriate option. You will not be penalized in any way if you choose not to participate.

By clicking "I consent to begin the study", you acknowledge that you understand the terms and conditions of participating in this study and are making an informed decision to participate. Further, submitting the survey is an indication of your consent to participate in the study.

- I consent to begin the study  
 I do not consent, I do not wish to participate
- 

### **Participant ID**

At baseline you created a unique participant ID for yourself, in order for the research team to link your data across time points. We ask that you submit the exact same responses you originally submitted in the baseline survey. As a reminder the information that you provide will be kept confidential and will only be available to the research team.

What is the first letter of your first name? (E.g., If your name is John, select 'J')

- Dropdown menu options A-Z

What is your **day** of birth? (E.g., If your date of birth is January 30th, select '30')

- Dropdown menu options from January-December (month)  
 Dropdown menu options from 1-31 (day)

What is the **first letter** of the **town/city** where you were **born**? (E.g., If you were born in Chatham, select 'C')

- Dropdown menu options A-Z

What is the **first letter** of your **mother's maiden name**? (i.e., Her last name at birth; e.g., If Smith, select 'S').

- Dropdown menu options A-Z

What are the **last two digits** of your **home phone number**? (E.g., If your phone number is 123-456-7890, select '9' and then '0')

- Dropdown menu options from 0-9 (first digit)  
 Dropdown menu options from 0-9 (second digit)
- 

### **Focus Group Interest & Availability**

Are you interested in participating in a focus group?

- Yes
- No

Please submit your email address. Your email address will be used to coordinate focus groups and only the research team will have access to it.

---

Please select your availability for the following focus group dates and times. Select all that apply.

- Monday, March 7th from 5:00-6:00PM EST
- Tuesday, March 8th from 7:00-8:00PM EST
- Wednesday, March 9th from 5:30-6:30PM EST
- Thursday, March 10th from 8:00-9:00PM EST
- Friday, March 11th from 6:30-7:30PM EST
- Saturday, March 12th from 10:00-11:00AM EST
- Saturday, March 12th from 2:00-3:00PM EST

## Appendix M

### Focus Group Guide

### HOPE – Semi-Structured Focus Group Guide

**Title: Health Outcomes for Adults During and Following the COVID-19 Pandemic: The HOPE Study Extension**

Thank you so much for your continued participation in The HOPE Study and for taking the time to meet today. Before we begin, I want to ask that everyone change their Zoom name to their preferred name, if it doesn't already state that, and I will invite you to include your pronouns, if you are comfortable. (*Private message Julia email*) I want to begin with a land acknowledgement.

*I acknowledge that I am a settler scholar of White descent, who has grown up in what is currently called Canada. I am both a student and faculty member at Western University, which is located on the unceded territories of the Anishinaabek, Haudenosaunee, Lūnaapéewak, and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum.*

*As an educated White woman I state this from a position of privilege. I am grateful to live, work, and thrive upon these lands at present, and call what is currently London, Ontario, home. As a health promoter and physically-abled person, I often reflect upon the honour it is to take my dog for a walk every day or to go for a run. In the stillness of the morning, while my feet hit the ground, I thank the Indigenous Peoples (e.g., First Nations, Métis, and Inuit) whose land this once was, as they are the original caretakers.*

*I want to acknowledge the privilege I have through my access to post-secondary education. As an academic and life-long learner, I am given the opportunity to share my knowledge with others, while I know this is not always the case of my Indigenous and racialized peers. Often, their voices are excluded from these spaces due to practices grounded in intergenerational trauma, colonialism, and oppression. As an advocate for the health and wellbeing of all, I recognize that we must dismantle our current colonial practices that are entrenched in our School, classrooms, and research. I strive to do this in my teaching, in the research I conduct, and in my everyday interactions. Yet, I recognize that there is still much for me to learn. I accept responsibility to contribute toward revealing and correcting miseducation as well as renewing respectful relationships with Indigenous communities.*

As a reminder, **the purpose of this focus group is to explore Ontario adults' lived experiences of prosocial behaviour during the COVID-19 pandemic.** For the purposes of this focus group, prosocial behaviour can be understood as “voluntary behaviour intended to benefit another, such as helping, donating, sharing and comforting” and can include many domains such as “compassion, caring, love, sympathy, empathy,

altruism, and kindness”. Prosocial behaviour can take many different forms, including actions within your immediate household and/or beyond.

This focus group will serve to clarify or extend our understanding based on our previous quantitative data analyses and to discuss findings to ensure they resonate and encapsulate participant experiences. I want to note that analyses are in group format, so we don't actually know what you individually reported. Your participation in this focus group is voluntary and it will last approximately 60 minutes in length. I want you to know that there are no right or wrong answers and you can refuse to any answer questions you wish. **There is no expectation that everyone will have the same viewpoint and I want to emphasize that everyone's view is respected.** Before you speak, I kindly ask that you use the 'raise hand' function on Zoom, which can be found under 'reactions' at the bottom of your screen. As a gentle reminder, the focus group will be recorded for data analysis purposes and will not be shared with anyone beyond the research team. Before we begin does anyone have any questions?

\*\*\*hit record\*\*\*

### *Focus Group Questions*

1. Although the specific focus of today's discussion is prosocial behaviour, we'd like to start a bit more general. We are now at about two years since COVID-19 started, and we'd like to start with a few minutes of no-pressure chatting about how everyone is doing in general?
2. This question is a two-part question: Earlier in this study we asked a series of questions pertaining to your prosocial behaviour. Data analysis revealed that participants' prosocial behaviour **increased** over time. (1) To what extent does this feel accurate or inaccurate regarding your own personal experiences of engaging in prosocial behaviour over the course of the pandemic? (2) What reasons do you think this might be the case (for you and/or for others)?
  - a. What would you like to add to this?
  - b. Please say more about...
  - c. Please elaborate...
3. What role do you think prosocial behaviour, including acts of kindness, has played in your own personal experience of the pandemic (either by you and/or by others)? What's been/is important about it to you personally?
  - a. In what ways have you seen prosocial behaviour?
    - i. How did witnessing prosocial behaviour influence you?
  - b. What's an example of prosocial behaviour that you experienced?
  - c. In what ways has prosocial behaviour influenced your overall wellbeing during the COVID-19 pandemic?
4. This question is a two-part question: Earlier in this study you were asked the extent to which you were aware of kindness around you during the COVID-19

pandemic. Data analysis revealed that participants' awareness of kindness around them **decreased** over time. (1) To what extent does this feel accurate or inaccurate regarding your own personal awareness of kindness over the course of the pandemic? (2) What reasons do you think this might be the case (for you and/or for others)?

- a. What would you like to add to this?
- b. Please say more about...
- c. Please elaborate...

5. This is a two-part question: As you may recall from our earlier discussion, participants' prosocial behaviour increased over time. Interestingly, participants' self-reported (*explain what this means*) engagement in acts of kindness **decreased** over time. This means, while participants may have perceived that they engaged in less acts of kindness over the course of the pandemic, their prosocial behaviour actually increased. (1) What might be some reasons for this discrepancy? (2) To what extent does this feel accurate or inaccurate regarding your own personal experiences of engaging in prosocial behaviour/acts of kindness over the course of the pandemic?

- a. What would you like to add to this?
- b. How did engaging in acts of kindness (or perhaps not engaging), influence your wellbeing?
- c. Please say more about...
- d. Please elaborate...

*\*Ensure that this question is conversational*

6. This question is a two-part question: Earlier in this study you were asked the extent to which you viewed kindness as a crucial component of your COVID-19 pandemic experience. Data analysis revealed that participants' view of kindness as a crucial component of their pandemic experience **decreased** over time. (1) To what extent does this feel accurate or inaccurate regarding your own personal view of kindness as crucial over the course of the pandemic? (2) What reasons do you think this might be the case (for you and/or for others)?

- a. What would you like to add to this?
- b. Please say more about...
- c. Please elaborate...

7. What else haven't I asked you that I should have?

#### **General Probes:**

- What's an example of...?
- Please say more about...
- Please elaborate...

#### **Speaking Points if Conversation Derails:**

- COVID tends to be a more polarized/political topic and we are going to steer away from that...

- I'm just going to interrupt you for one second – I'm not trying to be rude, I just want to make sure that we are staying on track. It's my job to ensure that this conversation doesn't steer into a political realm. I'm hearing [XYZ] and I'm going to ask you what that feeling is for you?
- One commonality that I am hearing is that many of you are really trying hard to be true to the values that are important to you – shake or nod if this is accurate...
- I'm just going to interrupt you for one second – I'm not trying to be rude and it's not that your point isn't important, but it's just not connected to the purpose of our study.
- [If feeling as though opinion is not validated] I'm so sorry that you have that feeling and I feel like that is real for you. Part of my job is that we stay away from politics that can take us in another direction (away from the purpose of our study)...
- [If someone thinks political views are important] Thanks so much for that view and certainly the political climate is impacting people's lives; however, the focus of this discussion needs to stay narrow so that it's related to the topic...
- Quite honestly, I don't have the skillset or expertise to navigate or negotiate different political views/experience. As such, our conversation needs to stay narrow and focused on the topic.
- While there may be some things that span political lines, maintaining respect on this call is actually more important than getting every single piece of data that we can...



## Curriculum Vitae

**NAME:** Katie J. Shillington

### EDUCATION:

<b>Degree</b>	<b>University</b>	<b>Department</b>	<b>Year</b>
Ph.D.	Western University <i>Dissertation Title:</i> <i>Ontario Adults' Mental Health, Wellbeing, and Prosocial Behaviour During the First 16 Months of the COVID-19 Pandemic: A Longitudinal Study</i>	Health and Rehabilitation Sciences – Health Promotion	2020 – <i>In progress</i>  <i>(Expected completion: July 2023)</i>
M.Sc.	Western University <i>Dissertation Title:</i> <i>Kindness as an Intervention for Student Social Interaction Anxiety, Resilience, Affect, and Mood: The KISS of Kindness Study II</i>	Health and Rehabilitation Sciences – Health Promotion	2020
B.HSc. (Honors)	Western University	School of Health Studies, Faculty of Health Sciences	2019

### SPECIALTY QUALIFICATIONS/CERTIFICATIONS:

<b>Certification</b>	<b>Organization</b>	<b>Date</b>
Universal Design for Learning: Inspiring Equity and Inclusion in Higher Education	George Brown College	2023
Inclusive Research: EDI-D Training	Wilfrid Laurier University	2022
Being an Ally: EDI-D Training	Faculty of Health Sciences (Western University)	2021

Evidence-Informed Motivational Interviewing and Coaching Approaches (Level I)	The Monarch System, Inc.	2019
Teaching Assistant Training Program	Centre for Teaching and Learning (Western University)	2019
safeTALK	Centre for Teaching and Learning (Western University)	2019
CORE Ethics Certificate	Western University	2018
First Aid and CPR Level C/AED	Canadian Red Cross	2018

#### **EMPLOYMENT HISTORY:**

<b>Rank &amp; Position</b>	<b>Institution</b>	<b>Department</b>	<b>Date</b>
Lecturer	Wilfrid Laurier University	Human and Social Sciences	2023-2023
Lecturer	Wilfrid Laurier University	Psychology	2022-2023
Lecturer	Western University	School of Health Studies, Faculty of Health Sciences	2022-2023
Graduate Research Assistant – Dr. Shauna Burke	Western University	School of Health Studies, Faculty of Health Sciences	2022-2023
Lecturer	Wilfrid Laurier University	Kinesiology and Physical Education	2021-2022
Lead Teaching Assistant – HS2250: Introduction to Health Promotion	Western University	School of Health Studies, Faculty of Health Sciences	2020-2023
Graduate Research Assistant – Dr. Tara Mantler	Western University	School of Health Studies, Faculty of Health Sciences	2020-2023

Educational Media Support Coordinator	Western University	School of Health Studies, Faculty of Health Sciences	2020-2022
Student Teaching Support Internship	Western University	School of Health Studies, Faculty of Health Sciences	2020-2021
Graduate Research Assistant – Dr. Jennifer Irwin	Western University	School of Health Studies, Faculty of Health Sciences	2019-2023
Lead Teaching Assistant – HS2700: Health Issues in Childhood and Adolescence	Western University	School of Health Studies, Faculty of Health Sciences	2019-2020
Graduate Student Assistant – Dr. Robert Petrella	Western University	Centre for Public Health and Family Medicine	2019-2020
Undergraduate Research Assistant – Dr. Tara Mantler	Western University	School of Health Studies, Faculty of Health Sciences	2018-2019
Undergraduate Research Assistant – Dr. Jennifer Irwin	Western University	School of Health Studies, Faculty of Health Sciences	2017-2019

### **HONOURS AND AWARDS:**

#### **2023-2024 – Ontario Graduate Scholarship**

(recipient of \$15,000 – declined as an individual is not allowed to hold more than one tri-council scholarship concurrently)

#### **2022-2025 – SSHRC Doctoral Fellowship (Social Sciences and Humanities Research Council)**

(recipient of \$60,000; \$20,000 per year for 36 months)

#### **2022 – Nominated by the Faculty of Health Sciences for the Vanier Scholarship (Western University)**

(one student is selected to move forward in the competition)

#### **2022-2023 – Ontario Graduate Scholarship**

(recipient of \$15,000)

**2020-2021 – Ontario Graduate Scholarship**

(recipient of \$15,000 – declined as an individual is not allowed to hold more than one tri-council scholarship concurrently)

**2020-2021 – Canada Graduate Scholarship (Social Sciences and Humanities Research Council)**

(recipient of \$17,500)

**2020 – Nominated for the Governor General’s Gold Medal (Western University)**

(nominated by Dr. Jennifer Irwin in recognition of master’s or doctoral students who have achieved the highest academic standing in their degree programs)

**2020 - Society of Graduate Students Travel Subsidy Award (Western University)**

(recipient of \$500)

**2019, 2022 – Faculty of Health Sciences Travel Conference Award (Western University)**

(recipient of \$210 and \$250, respectively)

**2018, 2019 - Dean’s Honor List (Western University)**

(recognizes full-time students registered in the faculty of Health Sciences who completed a minimum of 4.0 courses during the previous fall/winter Session [September-April] and earned an average for the session of 80% or more with no failed courses)

**2017- Muskoka Woods Sports Resort’s Jamie Groves Bursary**

(recipient of \$500)

**2015 - Entrance Admission Scholarship (University of Guelph)**

(recipient of \$1500)

**UNDERGRADUATE ACTIVITIES:**

**a) Undergraduate Independent Studies Supervisor (N = 2)**

2. Danielle Bayne – Psychology – Wilfrid Laurier University, *Scoping Review on Prosocial Behaviour Interventions Among Undergraduate Students*. 2023.
1. Manvir Ahluwalia – School of Health Studies - Western University, *The Relationship Between Mental Health and Resilience Among Undergraduate Students: A Scoping Review*. (Independent Study). 2022. \*Co-Supervision with Dr. Jennifer Irwin

**b) Undergraduate Teaching (N = 8)**

Academic Term	Institution	Course Title/ Number	Mandatory (M) or Elective (E)	Responses (Enrolment)	# of Contact Hours	Evaluation ( <i>Effective as a university teacher</i> ; 7-point scale)
2022-2023 (Spring)	Western University	HS1001A: Personal Determinants of Health	M (online course delivery)	(119)	39	TBA
2022-2023 (Winter)	Wilfrid Laurier University	HS314B: Health Promotion	M/E (in-person course delivery)	6 (19)	39	Mean: 6.8 Median: 6.9
2022-2023 (Winter)	Wilfrid Laurier University	PS389A/HE305B: Positive Psychology	E (in-person course delivery)	12 (52)	39	Mean: 6.6 Median: 6.9
2022-2023 (Fall)	Western University	HS1001A: Personal Determinants of Health	M (hybrid course delivery)	123 (649)	39	Mean: 6.0  % who chose (6) or (7): 93%
2022-2023 (Fall)	Wilfrid Laurier University	PS389A/HE305A: Positive Psychology	M/E (in-person course delivery)	21 (51)	39	Mean: 5.31 Median: 6.0
2021-2022 (Spring)	Western University	HS1001A: Personal Determinants of Health	M (online course delivery)	18 (133)	39	Mean: 5.78  % who chose (6) or (7): 83%
2021-2022 (Winter)	Western University	HS 4710B: Palliative and End of Life Care	M/E (hybrid course delivery)	20 (54)	39	Mean: 6.1  % who chose (6) or (7): 85%
2021-2022 (Fall)	Wilfrid Laurier University	KP 219A: Our Health and Wellbeing	E (online course delivery)	19	39	Mean: 6.85 Median: 7.0

**PUBLICATIONS:****I. Publication Summary:**

	<b>Total</b>	<b>First Author</b>
a) Published Articles in Peer-Reviewed Journals	16	8
b) Accepted for Publication (i.e., in press, forthcoming)	2	2
c) Submitted Manuscripts	8	2
d) Articles in Non-Peer-Reviewed Journals, Conference Proceedings, Professional Newsletters, or Technical Writings	2	1
e) Abstracts, Presentations at Professional Meetings/Conferences	22	13
f) Submitted/Accepted Abstracts, Presentations at Professional Meetings/Conferences	1	1
g) Invited Research Presentations: Knowledge Translation	6	5
h) Invited Guest Lectures: Teaching Activities	14	11
i) Workshops Delivered	5	3
j) Other (e.g., translational work, academic blog posts, media)	15	8

## II. Publication Details [listed below in reverse order by date]:

### *Overview:*

*My program of research includes two overlapping and interrelated streams that centre around **resilience-promoting behaviours toward positive mental health**: (1) kindness, prosocial behaviours, and coping strategies during challenging times; and (2) factors that shape the resilience of women who have experienced gender-based violence.*

### **a) Published Articles in Peer-Reviewed Journals (N = 16)**

16. **Shillington, K. J.**, Yates, J., Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2023). ‘When you give kindness out, you get it back ten times more’: Ontario adults’ prosocial behaviour during the first 16 months of the COVID-19 pandemic. *PLOS ONE*, 1-24. <https://doi.org/10.1371/journal.pone.0288720>
15. Pawar N., Majumdar A., Nedungalaparambil N.M., Nair L., Jasimudeen, Gupta S., Johnson A., John N., **Shillington K. J.**, Ng V., Reghunath R., Shaji E.J., Irwin J.D. (2023). COVID-Somnia: A Multicentric Study on Sleep Disturbances During the COVID-19 Pandemic With Spatial Mapping of Hotspots. *Cureus*, 15(5). <https://doi.org/10.7759/cureus.39213>
14. Yates, J., **Shillington, K. J.**, Tryphonopoulos, P., Jackson, K. T., & Mantler, T. (2023). “When I decided to leave, I had nothing”: The Resilience of Rural

Women Experiencing Economic Abuse in the Context of Gender-Based Violence. *Journal of Rural and Community Development*, 18(1), 1–18.

13. **Shillington, K. J.**, Morrow, D., Meadows, K., Labadie, C. T., Tran, B., Raza, Z., Qi, C., Vranckx, D. J., Bhalla, M., Bluth, K., Cousineau, T. M., Cunningham, D. E., Estrada, M., Massey, J., Ncube, N., & Irwin, J. D. (2023). Leveraging Kindness in Canadian Post-Secondary Education: A Conceptual Paper. *College Teaching*, 1-8. <https://doi.org/10.1080/87567555.2023.2181307>
12. Mantler, T., **Shillington, K. J.**, Yates, J., Tryphonopoulos, P., Jackson, K. T., & Ford-Gilboe, M. (2022). Resilience is More than Nature: An Exploration of the Conditions that Nurture Resilience among Rural Women Who Have Experienced IPV. *Journal of Family Violence*. <https://doi.org/10.1007/s10896-022-00479-2>
11. **Shillington, K. J.**, Jackson, K. T., Davidson, C. A., Yates, J., Irwin, J. D., Kaschor, B., & Mantler, T. (2022). Riding on Resilience: Impacts of the COVID-19 Pandemic on Women Experiencing Intimate Partner Violence. *SN Social Sciences*, 2(92), 1-26. <https://doi.org/10.1007/s43545-022-00343-6>
10. Mantler, T., **Shillington, K. J.**, Davidson, C. A., Yates, J., Irwin, J. D., Velker, B., & Jackson, K. T. (2022). Impact of COVID-19 on the Coping Behaviours of Canadian Women Experiencing Intimate Partner Violence. *Journal of Family Violence*, 1-16. <https://doi.org/10.1007/s40609-022-00224-z>
9. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2022). A Cross-Sectional Examination of Canadian Adults' Prosocial Behaviour During the COVID-19 Pandemic. *Journal of Rural Mental Health*. <https://doi.org/10.1037/rmh0000201>
8. Mantler, T., Jackson, K. T., Walsh, E. J., Jackson, B., Baer, J. R., Davidson, C. A., **Shillington, K. J.**, and Parkinson, S. (2021). Promoting Attachment Through Healing (PATH): Results of a Retrospective Feasibility Study. *Global Social Welfare*. <http://doi.org/10.1111/jan.15117>
7. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2021). Ontario Adults' Health Behaviors, Mental Health, and Overall Wellbeing During COVID-19. *BMC Public Health*, 21(1679), 1-15. <https://doi.org/10.1186/s12889-021-11732-6>
6. **Shillington, K. J.**, Johnson, A. M., Mantler, T., Burke, S. M. & Irwin, J. D. (2021). Kindness as an Intervention for Student Social Interaction Anxiety, Resilience, Affect, and Mood: The KISS of Kindness Study II. *Journal of Happiness Studies*, 22(8), 3631-3661. <https://doi.org/10.1007/s10902-021-00379-0>

5. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2021). Not So Sweet Dreams: Adults' Quantity, Quality, and Disruptions of Sleep During the Initial Stages of the COVID-19 Pandemic. *Sleep Medicine*, 91, 189-195. <https://doi.org/10.1016/j.sleep.2021.02.028>
4. Mantler, T., Jackson, K. T., **Shillington, K. J.**, Walsh, E. J., Tobah, S., Jackson, B., & Davidson, C. A. (2021). Factors Influencing Rural Women's Disclosure of Intimate Partner Violence: A Qualitative Study. *SN Social Sciences*, 1(19), 1-19. <https://doi.org/10.1007/s43545-020-00027-z>
3. Mantler, T., Jackson, K.T., Walsh, E.J., Tobah, S., **Shillington, K.**, & Jackson, B. (2020). Sharing Personal Experiences of Accessibility and Knowledge of Violence: A Qualitative Study. *Journal of Interpersonal Violence*, 00(0), 1-20. <https://doi.org/10.1177/0886260520920867>
2. **Shillington, K. J.**, Johnson, A. M., Mantler, T., & Irwin, J. D. (2020). Kindness as an Intervention for Student Social Interaction Anxiety, Affect, and Mood: The KISS of Kindness Study. *International Journal of Applied Positive Psychology*, 6(1), 23-44. <https://doi.org/10.1007/s41042-020-00036-6>
1. Mantler, T., Jackson, K.T., Baer, J., White, J., Ache, B., **Shillington, K.**, Ncube, N. (2020). Changes in Care - A Systematic Scoping Review of Transitions for Children with Medical Complexities, *Current Pediatric Reviews*, 16, 1-11. <https://doi.org/10.2174/1573396316666191218102734>

**b) Accepted for Publication (i.e., in press, forthcoming; N = 2)**

2. **Shillington, K. J.**, Burke, S. M., Mantler, T., & Irwin, J. D. (Accepted with minor revisions March 2023). A Cross-Sectional Examination of Ontario Graduate Students' Levels of Resilience And Health-Related Quality of Life During the COVID-19 Pandemic: The CARE Study. *International Journal of Applied Positive Psychology*.
1. **Shillington, K. J.**, Labadie, C. T., Johnson, A. M., & Irwin, J. D. (Accepted March 2023). PROMoting Resilience During GRADuate School and Beyond (PRO-GRAD): A Motivational Coaching Intervention. *International Journal of Evidence Based Coaching and Mentoring*.

**c) Submitted Manuscripts (N = 8)**

8. Contini, N., **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (Submitted June 2023). Ontario Adults' Health Behaviours During The COVID-19 Pandemic. *Journal of Community Health*.



7. Yates, J., **Shillington, K. J.**, & Mantler, T. (Submitted June 2023). The Development of Program Evaluation Tools for Women and Children at Rural Women's Shelters. *Evaluation and Program Planning*.
6. Jackson, K.T., Tryphonopoulos, P., Yates, J., **Shillington, K. J.**, & Mantler, T. (Submitted June 2023). "Do it for your kid": Resilience and Mothering in the Context of Intimate Partner Violence in Rural Ontario. *Journal of Family Issues*.
5. **Shillington, K. J.**, Yates, J., Jackson, K. T., Tryphonopoulos, P., & Mantler, T. (Revise and resubmit May 2023). "It makes me feel good making other people feel good": How Women Who Experience Intimate Partner Violence Bolster Their Resilience Through Altruism. *Journal of Aggression, Maltreatment & Trauma*.
4. Davidson, C. A., Safar, C., Yates, J., **Shillington, K. J.**, Nncube, N., & Mantler T. (Submitted March 2023). Canadian women's resilience across the lifecourse for women experiencing intimate partner violence. Submitted March 2023 to *Violence Against Women*.
3. Ahluwalia, M., **Shillington, K. J.**, & Irwin, J. D. (Revise and resubmit March 2023). The Relationship Between Resilience and Mental Health of Undergraduate Students: A Scoping Review. *Journal of American College Health*.
2. Mantler, T., Yates, J., **Shillington, K. J.**, Tryphonopoulos, P., & Jackson, K. T. (Submitted February 2023). "If you don't stop the cycle somewhere, it just keeps going": Resilience in the context of structural violence and gender-based violence in rural Ontario. *PLOS Global Public Health*.
1. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (Revise and resubmit January 2023). Ontario Adults' Mental Health and Wellbeing During the COVID-19 Pandemic. *Journal of Prevention and Health Promotion*.

**d) Articles in non-Peer Reviewed Journals, Conference Proceedings or Professional Newsletters, Technical Writings (N = 2)**

2. Gulyani, P., **Shillington, K. J.**, Fish, E., Gorjup, R., Loveless, S., & Bahoti, M. (2018). Environmental Health Promotion 3290B: ReForest London. *Community Engaged Learning Final Projects*, 8. [Article in non-peer reviewed journal]
1. **Shillington, K. J.**, Federovich, E., & Hardy, K. (2017). Health Communication 3210A: Evonne Sullivan. *Community Engaged Learning Final Projects*, 7. [Article in non-peer reviewed journal]

e) Abstracts, Presentations at Professional Meetings/Conferences ( $N = 22$ )

22. **Shillington, K. J.** & Irwin, J. D. (2023). Exploring the relationship between kindness and resilience among gender minority versus cisgender youth (BRAVE). *Child Health Symposium*. Western University, London, ON, May 30, 2023. Oral Presentation.
21. **Shillington, K. J.**, Labadie, C. T., Johnson, A. M., & Irwin, J. D. (Abstract Accepted February 2023). PROMoting Resilience During GRADuate School and Beyond (PRO-GRAD): A Motivational Coaching Intervention. *Western Graduate Research Forum*. Western University, London, ON, March 17, 2023. Poster Presentation.
20. **Shillington, K. J.**, Morrow, D., Meadows, K., Labadie, C. T., Tran, B., Raza, Z., Qi, C., Vranckx, D. J., Bhalla, M., Bluth, K., Cousineau, T. M., Cunningham, D. E., Estrada, M., Massey, J., Ncube, N., & Irwin, J. D. (2023). Leveraging Kindness in Canadian Post-Secondary Education: A Conceptual Paper. *Health and Rehabilitation Sciences Graduate Research Conference*. Western University, London, ON, February 1, 2023. Oral Presentation.
19. **Shillington, K. J.**, Yates, J., Jackson, K. T., Tryphonopoulos, P., Ford-Gilboe, M., Mantler, T. (2022). Understanding Rural Canadian Women Who Have Experienced Intimate Partner Violence and the Factors that Shape Their Resilience: RISE. *Nursing Network on Violence Against Women International Conference*. Durham, North Carolina, USA, June 21-23, 2022. Podium Presentation.
18. Yates, J., **Shillington, K. J.**, Jackson, K. T., Davidson, C., Irwin, J. D., Velker, B., Mantler, T. (2022). Riding on Resilience: Impacts of the COVID-19 Pandemic on Women Experiencing Intimate Partner Violence. *Nursing Network on Violence Against Women International Conference*. Durham, North Carolina, USA, June 21-23, 2022. Project Pitch.
17. Davidson, C., Mantler, T., **Shillington, K. J.**, Yates, J., Irwin, J. D., Velker, B., Jackson, K. T. (2022). Impacts of COVID-19 on the Coping Behaviours of Canadian Women Experiencing Intimate Partner Violence. *Nursing Network on Violence Against Women International Conference*. Durham, North Carolina, USA, June 21-23, 2022. Podium Presentation.
16. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2022). A Longitudinal Analysis of Prosocial Behaviour and Mental Health Among Ontario Adults During the COVID-19 Pandemic. *London Health Research Day*, London, Ontario. May 31, 2022. Poster Presentation.
15. Yates, J., **Shillington, K. J.**, Jackson, K. T., Tryphonopoulos, P., Ford-Gilboe, M., & Mantler, T. (2022). An exploration of resilience among rural women who

have experienced GBV in the context of COVID-19. *London Health Research Day*, London, Ontario. May 31, 2022. Poster Presentation.

14. Burke, S. M., Klassen, E., Feroz, A. S., Irwin, J. D., **Shillington, K. J.**, & Battram, D. S. (2022). Parents' perceptions of children's dietary patterns during the early stages of the COVID-19 pandemic in Ontario, Canada [Recording on demand]. *International Society of Behavioral Nutrition and Physical Activity (ISBNPA) 2022 Annual Meeting*. Phoenix, Arizona, USA. Hybrid Conference. May 18-22, 2022. Oral Presentation.
13. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2022). Ontario Adults' Health Behaviors, Mental Health, and Overall Wellbeing During COVID-19. *IUHPE World Conference on Health Promotion*. May 15-19, 2022. Poster Presentation.
12. Pawar, N., Lakshmi, G., Majumdar, A., Jasimudeen, L. G., Gupta, S., Menon, N., Johnson, A., John, N., Ng, V., **Shillington, K. J.**, Shaji, E. J., & Irwin, J. D. (2022). Physical inactivity and its associated factors during COVID 19 Pandemic with spatial hotspots- findings from the Health Outcomes for adults during and following the COVID 19 Pandemic (HOPE) India study. *The 49th Annual National Conference of IAPSM and 23rd Joint IAPSM & IPHA Conference, Maharashtra Chapter 2022*. March 3-5, 2022.
11. Gupta, S., Majumdar, A., John, N., Jasimudeen, L. G., Pawar, N., Menon, N., Johnson, A., **Shillington, K. J.**, Ng, V., Jothish., & Irwin, J. D. (2022). How did Indian adults perceive their well-being to be during the COVID 19 pandemic? – findings from the Health Outcomes for adults during and following the COVID-19 Pandemic (HOPE India Study). *The 49th Annual National Conference of IAPSM and 23rd Joint IAPSM & IPHA Conference, Maharashtra Chapter 2022*. March 3-5, 2022.
10. Pawar, N., Majumdar, A., Jasimudeen, L. G., Gupta, S., Menon, N., Johnson, A., John N., **Shillington, K. J.**, Ng, V., Jothish., Irwin, J. D. (2022). COVID-somnia: Sleep disturbances during the COVID-19 pandemic with spatial Hot spots - findings from the Health Outcomes for adults during and following the COVID-19 Pandemic (HOPE) India study. *The 49th Annual National Conference of IAPSM and 23rd Joint IAPSM & IPHA Conference, Maharashtra Chapter 2022*. March 3-5, 2022.
9. **Shillington, K. J.**, Burke, S. M., Mantler, T. & Irwin, J. D. (2022). A Cross-Sectional Examination of Ontario Graduate Students' Levels of Resilience And Health-Related Quality of Life During the COVID-19 Pandemic: The CARE Study. *Health and Rehabilitation Sciences Graduate Research Conference*. Western University, London, ON, February 2, 2022. Oral Presentation.

8. Davidson, C., Mantler, T., **Shillington, K. J.**, Yates, J., Irwin, J. D., Velker, B., Jackson, K. T. (2022). Impacts of COVID-19 on the Coping Behaviours of Canadian Women Experiencing Intimate Partner Violence. *Health and Rehabilitation Sciences Graduate Research Conference*. Western University, London, ON, February 2, 2022. Poster Presentation.
7. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (2021). Not So Sweet Dreams: Adults' Quantity, Quality, and Disruptions of Sleep During the Initial Stages of the COVID-19 Pandemic. *London Health Sciences Research Day*. Lawson Health Research Institute, London, Ontario, May 11, 2021. Poster Presentation.
6. Yates, J., **Shillington, K. J.**, Jackson, K. T., Tryphonopoulos, P., Ford-Gilboe, M., Mantler, T. (2021). Understanding Rural Canadian Women Who Have Experienced Intimate Partner Violence and the Factors that Shape Their Resilience: RISE. *London Health Sciences Research Day*. Lawson Health Research Institute, London, Ontario, May 11, 2021. Poster Presentation.
5. **Shillington, K. J.**, Jackson, K. T., Tryphonopoulos, P., Yates, J., Ford-Gilboe, M., Mantler, T. (2021). Understanding Rural Canadian Women who Have Experienced Intimate Partner Violence and the Factors that Shape Their Resilience: RISE. *Legacy Research Conference*. Western University, London, Ontario, May 10, 2021. Oral Paper.
4. **Shillington, K. J.**, Johnson, A. M., Mantler, T., & Irwin, J.D. (2020). Kindness as an Intervention for Student Social Interaction Anxiety, Resilience, Affect, and Mood: The KISS of Kindness Study II. *London Health Sciences Research Day*. Lawson Health Research Institute, London, Ontario, May 5, 2020. Poster Presentation. (*Conference cancelled*)
3. **Shillington, K. J.**, Johnson, A. M., Mantler, T., & Irwin, J.D. (2020). Kindness as an Intervention for Student Social Interaction Anxiety, Resilience, Affect, and Mood: The KISS of Kindness Study II. *The Health and Rehabilitation Sciences Graduate Research Conference*. Western University, London, Ontario, February 3-4, 2020. Poster Presentation.
2. **Shillington, K. J.**, Johnson, A. M., Mantler, T., & Irwin, J. D. (2019). Kindness as an intervention for student social interaction anxiety, affect and mood: The KISS of kindness study. *International Conference on Health, Wellness & Society*. University of California Berkeley, USA, September 18-19, 2019. Poster Presentation.
1. **Shillington, K. J.**, Johnson, A. M., Mantler, T., & Irwin, J. D. (2019). Kindness as an intervention for student social interaction anxiety, affect and mood: The KISS of kindness study. *Western Student Research Conference*. Western University, London, ON, Canada, March 29, 2019. Oral Presentation.

**f) Submitted/Accepted Abstracts, Presentations at Professional Meetings/Conferences (N = 1)**

1. **Shillington, K. J.**, Yates, J., Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. (Accepted March 2023). ‘When you give kindness out you get it back ten times more’: Ontario adults’ prosocial behaviour during the COVID-19 pandemic. *International Positive Psychology Association World Congress*. Vancouver, BC, July 20-23, 2023. Oral Presentation.

**g) Invited Research Presentations: Knowledge Translation (N = 6)**

- 2023                    **Shillington, K. J.** Promoting Positive Academic Climates Through Prosocial Behaviour. An invited talk for the *Centre for Empathy and Social Justice in Human Health and the Faculty of Biological Sciences at UC San Diego*. Zoom-based session, March 27, 2023. N = 10.
- Shillington, K. J.** The Science of Kindness. An invited talk for the Chatham-Kent Health Alliance. Online recorded session, February 3, 2022.
- 2021                    **Shillington, K. J.** & Irwin, J.D. PROMoting Resilience During GRADuate School and Beyond (PRO-GRAD): A Motivational Coaching Intervention for Graduate Students. An invited talk for the *Institute of Coaching – Harvard University*. Zoom-based session, October 12, 2021. N = 75.
- Shillington, K. J.** Health Outcomes for adults during and following the COVID-19 Pandemic: The HOPE Study, Retiring with Strong Minds. Virtual event, January 29, 2021. N = ~10.
- 2020                    Mantler, T., **Shillington, K. J.**, Jackson, K.T., O’Keefe-McCarthy, S., & Parkinson, S. PATH: Promoting Attachment Through Healing, Break the Silence in COVID-19, Canadian Red Cross and the Artists and Artisans Development and Network. Virtual event, November 14, 2020. N = 15,000.
- 2019                    **Shillington, K. J.** Research shared through art and poetry: An artistic interpretation of a novel health care intervention to support at risk women during the antenatal period. A knowledge mobilization community event. Artist, Western University, London, ON, Canada, October 8, 2019.

## h) Invited Guest Lectures: Teaching Activities (N = 14)

- 2022            Yates, J. & **Shillington, K. J.** Evaluating Health Promotion Programs in Rural Communities. An invited guest lecture to students in HS 3010A: Introduction to Rural Communities, Western University, London, ON, Canada. September 8, 2022. N = 60.
- Shillington, K. J.** The Evolution of Health Promotion in Canada. An invited virtual guest lecture to students in HS 2250A: Health Promotion, Western University, London, ON, Canada. Asynchronous recorded session, September 2022. N = 434.
- Shillington, K. J.** Kindness and Resilience: A Mental Health Promotion Approach. An invited virtual guest lecture to students in KINE 1113: Principles of Health, Lakehead University, Thunder Bay, ON, Canada. Zoom-based session, February 7, 2022. N = 73.
- 2021            **Shillington, K. J.** Being Kind to Your Mind: Kindness as a Mental Health Promotion Approach. An invited guest lecture to secondary school students in Dance, Ursuline College Chatham, Chatham, ON, Canada. Virtual, June 14, 2021.
- Shillington, K. J.** Being Kind to Your Mind: Kindness as a Mental Health Promotion Approach. An invited guest lecture to secondary school students in Leadership, Ursuline College Chatham, Chatham, ON, Canada. Virtual, June 11, 2021.
- Chondon, S. & **Shillington, K. J.** Finding Your Passion, Finding Your Future: Healthcare & Education. Dream It Be It Youth Conference. Virtual event, April 23, 2021. N = ~30.
- Shillington, K. J.** Kindness and the Life Course. An invited virtual guest lecture to students in HS 3704B: Population Health and Aging, Western University, London, ON, Canada. Virtual, January 2021. N = 40.
- 2020            **Shillington, K. J.** Health Studies Students' Association Grads Helping U Event. A guest lecture to undergraduate students in the School of Health Studies. Western University, London, ON. Virtual, November 16, 2020. N = ~25.
- Shillington, K. J.** Cultivating Kindness. An invited guest lecture to graduate students in the Speech and Languages Sciences seminar, Western University, London, ON, Canada. Virtual, November 4, 2020. 1-hr. N = 20.

**Shillington, K. J.** Ecological Model of Aging. An invited guest lecture to students in HS 3704B: Population Health and Aging, Western University, London, ON, Canada, January 22, 2020. 2-hr. N = 40.

**Shillington, K. J.** Applied Motivational Interviewing for Health Promoters. An invited guest lecture to students in KIN 2992B: Fitness Assessment and Strength Training, Western University, London, ON, Canada, January 17, 2020. 1-hr. N = 81.

2019 **Shillington, K. J.** Health Studies Students' Association Grads Helping U Event. A guest lecture to undergraduate students in the School of Health Studies. Western University, London, ON. October 17, 2019. N = ~35.

Bhimani, Z., Cuvalo, N., Fuller, K., Gulyani, P., & **Shillington, K. J.** School of Health Studies Upper-Year Student Panelist. A guest lecture to undergraduate students at the first-year tutorial. Western University, London, ON. March 26, 2019. N = ~40.

2018 **Shillington, K. J.**, & Gulyani, P. School of Health Studies Panelist. A guest lecture to undergraduate students at the HS 4995: Health Practicum student orientation. Western University, London, ON. November 28, 2018. N = ~50.

#### i) Workshops Delivered (N = 5)

5. **Shillington, K.**, Davidson, C. A., & Labadie, C. T. Grad School Crash Course: A series of training sessions on the basics of graduate school skills for incoming students. Created and facilitated the workshops. Western University, London, ON, Canada, 2021. N = 5.
4. **Shillington, K.** IBM-SPSS: A training session on the basics of IBM-SPSS for an undergraduate research assistant and two graduate students. Developed manuals on using the program and facilitated the workshop. Western University, London, ON, Canada, October 29, 2019. 1-hr session. N = 3.
3. **Shillington, K.** Undergraduate research assistant training: A training session on the basics of IBM-SPSS and Qualtrics for undergraduate research assistants. Developed manuals on using the programs and facilitated the workshop. Western University, London, ON, Canada, February 28, 2019. 2-hr session. N = 7.
2. Fried, R.R., **Shillington, K.**, & Irwin, J.D. Motivational interviewing Level 1: Booster session. A refresher course for Western University graduate students participating in the study *Breaking Grad: A Motivational Interviewing via Co-Active Life Coaching (MI-via-CALC) Intervention to Address Mental Health and Build Resiliency Among the Western University Graduate Student Population*.

Western University, London, ON, Canada, January 24, 2018. 2-hr session. (Note taker)

1. Fried, R.R., **Shillington, K.**, & Irwin, J.D. Motivational interviewing Level I: Training for motivational interviewing for Western University graduate students participating in the study *Breaking Grad: A Motivational Interviewing via Co-Active Life Coaching (MI-via-CALC) Intervention to Address Mental Health and Build Resiliency Among the Western University Graduate Student Population*. Western University, London, ON, Canada, September 22, 2017. Full-day session. (Note taker)

**j) Other (e.g., Translational work, blog posts, media) (N = 15)**

15. Yates, J., **Shillington, K. J.**, Tryphonopoulos, P., Jackson, K. T., & Mantler, T. (2023, May 12). “Plus de soutien réclamé pour les femmes victimes de violence en milieu rural” ICI Windsor coverage of “When I decided to leave, I had nothing”: The resilience of rural women experiencing economic abuse in the context of gender-based violence. *Journal of Rural Community Development*. <https://ici.radio-canada.ca/nouvelle/1979062/partenaire-conjugal-abus-battu-campagne?depuisRecherche=true>
14. Yates, J., **Shillington, K. J.**, Tryphonopoulos, P., Jackson, K. T., & Mantler, T. (2023, May 10). “Rural women face challenges leaving abusive relationships” London CBC News radio coverage of “When I decided to leave, I had nothing”: The resilience of rural women experiencing economic abuse in the context of gender-based violence. *Journal of Rural Community Development*. <https://www.cbc.ca/listen/live-radio/1-158/clip/15983766>
13. Yates, J., **Shillington, K. J.**, Tryphonopoulos, P., Jackson, K. T., & Mantler, T. (2023, May 8). “Western study uncovers toll of economic abuse on rural women” Western News media coverage of “When I decided to leave, I had nothing”: The resilience of rural women experiencing economic abuse in the context of gender-based violence. *Journal of Rural Community Development*. <https://news.westernu.ca/2023/05/rural-women-resilience-gender-based-violence/>
12. Mantler, T. & **Shillington, K.J.** (2022, December 6). The Impact of the COVID-19 Pandemic on Women Experiencing Intimate Partner Violence. KT for Impacts of COVID-19 on the coping behaviours of Canadian women experiencing intimate partner violence. School of Health Studies Podcast episode.
11. **Shillington, K. J.**, Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, T., & Irwin, J. D. Western News. (2022, July 18). “Ontarians had poor sleep quality in early days of pandemic: Study”. KT for Not So Sweet Dreams: Adults' Quantity, Quality, and Disruptions of Sleep During the Initial Stages of the COVID-19 Pandemic, *Sleep Medicine*. <https://news.westernu.ca/2022/07/ontarians-had-poor-sleep-quality-in-early-days-of-pandemic-study/>
10. Mantler, T., **Shillington, K. J.**, Davidson, C. A., Yates, J., Irwin, J. D., Velker, B., & Jackson, K. T. London Free Press (2022, June 1). “Lockdowns took heavy toll on women facing domestic violence: Study”. KT for Impacts of COVID-19 on the



coping behaviours of Canadian women experiencing intimate partner violence, Global Social Welfare.

9. Mantler, T., **Shillington, K. J.**, Davidson, C. A., Yates, J., Irwin, J. D., Velker, B., & Jackson, K. T. Western News (2022, May 17). "Pandemic restrictions limit women's ability to cope with abusive partners." KT for Impacts of COVID-19 on the coping behaviours of Canadian women experiencing intimate partner violence, Global Social Welfare.
8. Mantler, T., **Shillington, K. J.**, Davidson, C. A., Yates, J., Irwin, J. D., Velker, B., & Jackson, K. T. Radio Interview with CBC London (2022, May 19). KT for Impacts of COVID-19 on the coping behaviours of Canadian women experiencing intimate partner violence, Global Social Welfare. <https://www.cbc.ca/listen/live-radio/1-158-london-morning/clip/15913611-lockdowns-shutdowns-services-things-worse-women-facing-intimate-partner>
7. **Shillington, K.** & Gloger, E. M. (2021, August 8). Building relationships and cultivating community in graduate school. Podcast episode.
6. **Shillington, K.** (2019, May 7). From reactive to proactive: Examining the rise of chronic disease on a global scale. Retrieved from <https://www.ivey.uwo.ca/healthinnovation/blog/2019/05/from-reactive-to-proactive-examining-the-rise-of-chronic-disease-on-a-global-scale/>
5. **Shillington, K.** (2019, May 2). Providing real world experience to students through practicum placements. Retrieved from [https://www.ivey.uwo.ca/healthinnovation/news/2019/05/providing-real-world-experience-to-students-through-practicum-placements/?fbclid=IwAR24F-Itj7v13uGiH-VTfxMu6QcBxZoJV\\_qKqJ1TDodzozpHbvds4wIYo](https://www.ivey.uwo.ca/healthinnovation/news/2019/05/providing-real-world-experience-to-students-through-practicum-placements/?fbclid=IwAR24F-Itj7v13uGiH-VTfxMu6QcBxZoJV_qKqJ1TDodzozpHbvds4wIYo)
4. **Shillington, K.** (2019, March 12). Women's experiences with intimate partner violence and healthcare in rural environments. Retrieved from <https://www.ivey.uwo.ca/healthinnovation/blog/2019/03/women-s-experiences-with-intimate-partner-violence-and-healthcare-in-rural-environments/>
3. **Shillington, K.** Invited by Jess Bechard, Health Sciences Manager of Communication and Technology, to be filmed for Western University's promotional video showcasing student profiles in the faculty of Health Sciences. Western University, London, ON, Canada, February 14, 2019. Retrieved from <https://welcome.uwo.ca/programs/first-entry/hs.html>
2. **Shillington, K.** (2018, December 11). Kindness cures: An innovative approach to reducing burnout in healthcare settings. Retrieved from <https://www.ivey.uwo.ca/healthinnovation/blog/2018/12/kindness-cures-an-innovative-approach-to-reducing-burnout-in-healthcare-settings/>
1. **Shillington, K.** (2018, November 13). Beyond the patch: A person-centred approach to behaviour change for smoking cessation. Retrieved from <https://www.ivey.uwo.ca/healthinnovation/blog/2018/11/beyond-the-patch-a-person-centred-approach-to-behaviour-change-for-smoking-cessation/>

**RESEARCH FUNDING:**

<b>Dates</b>	<b>PI</b>	<b>Co-I</b>	<b>Granting Agency</b>	<b>Title</b>	<b>Amount</b>	<b>Status</b>
2022-2027	Reid, GJ., Kendzierska, T., Pennestri, MH., & Stranges, S.	Ali, S., Anderson, K., Batterink, L., Chaput, JP., Colley, R., Garland, S., .... <b>Shillington, K.,</b> et al.	Sleep Health Research Consortium, Canadian Institutes for Health Research (#473572)	Sleep Equity: Moving towards healthy sleep for all Canadians	\$1,373,426	Not Awarded

**SERVICE – OTHER SCHOLARLY AND PROFESSIONAL ACTIVITIES:****a) Manuscript Reviews**

2023	<i>PLOS ONE</i> <i>Current Psychology</i> <i>BMC Public Health</i> <i>Journal of Health, Population and Nutrition</i>
2022	<i>Current Psychology</i>
2021	<i>Current Psychology</i> <i>Personality and Individual Differences</i> <i>Sleep Health: Journal of the National Sleep Foundation</i>

**b) Other Professional Reviews**

2021	Abstract Reviewer for the 24 <sup>th</sup> Nursing Network on Violence Against Women International Conference
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**c) University Duties****i. Department**

2023	Faculty Judge for the Department of Psychology's Undergraduate Thesis Conference at Wilfrid Laurier University
2022	Coordinator for 2 <sup>nd</sup> Annual School of Health Studies Research Conference
2021	Coordinator for Health Studies Students' Association's Grad School Q & A Panel
2021	Student Committee Member for the Health and Rehabilitation Sciences Graduate Program External Review

2021-2022	Vice President of External Communications on the Health and Rehabilitation Sciences Graduate Student Society
2021	Student Committee Member for the School of Health Studies Director Selection
2021	Student Committee Member for the School of Health Studies Internal Quality Assurance Process
2021	Coordinator for 1st Annual School of Health Studies Research Conference
2020	Student Committee Member for School of Health Studies External Review
2020-2021	Coordinator of Health Studies Students' Association Undergraduate Rediscovering Research Webinar Series
2020-2022	Member of Health Promotion Seminar Leadership Team
2020	Student Committee Member for Health Promotion Candidate Tenure Track Interviews
2020-2021	Research liaison between School of Health Studies faculty and undergraduate students on the Health Studies Students' Association
2020	Judge for Health Studies Students' Association Annual Healthcare Challenge
2019-2022	Senior Advisor on the Health Studies Students' Association
2019-current	Graduate Student Mentor for undergraduate students
2019	School of Health Studies Independent Study Research Forum Judge
2018-2019	Fourth Year Representative on the Health Studies Students' Association
2018-2019.1	Undergraduate Student Mentor for undergraduate students

## **ii. Faculty**

2022-current	Member of the Faculty of Health Sciences Indigenous Committee (subcommittee member for Indigenous Learning Bundles Community of Practice)
2021-current	Member of the Faculty of Health Sciences Anti-Racism Committee

**iii. University**

- 2023 Faculty Judge for Wilfrid Laurier University's Academic, Creative and Engaged Research Showcase (ACERS)
- 2022 Invited Speaker for Wilfrid Laurier University's Medical Science Undergraduate Research Association
- 2022 Student Partner in Western University's Information Literacy Curriculum Review
- 2021 Moderator for the Legacy Research Conference at Western University

**d) Other Professional Activities**

- 2022-current Member of the Global Compassion Coalition
- 2022-current Member of the International Positive Psychology Association
- 2022-current Student Ambassador for the Canadian Positive Psychology Association
- 2022-current Member of the Canadian Positive Psychology Association
- 2021-2022 Ambassador for ParticipACTION

**SIGNED** \_\_\_\_\_

**DATE:** July 2023

**NAME:** Katie J. Shillington