

Minding Positive Mental Health: Exploring Theoretical Explanations for Positive Mental Health with Canadian National Surveys

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Abstract

Mental health and mental illness are commonly seen as the opposite of the other, where one is absent the other is present. This has begun to change with the introduction of positive mental health, which has been recognized as a complete state of being. However, positive mental health continues to be measured as the absence of mental illness, where qualities associated with the presence of the latter are used to explain the former. Furthermore, differences in positive mental health using the health inequality theoretical frameworks have largely been ignored. Using logistic regression analysis, differences in positive mental health are explored from the health inequality theoretical frameworks; material deprivation, lifestyle behaviours and psycho-social factors. Canadian data from the National Population Health Survey and the Canadian Community Health Survey enables the use of a full range of indicators to assess a complete state of positive mental health.

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While the research and analysis are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

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Introduction

Positive mental health is a relatively new concept in health care and health promotion strategies. Currently there is no universally agreed upon definition, with many studies operationalizing positive mental health with different measures. Despite inconsistencies in measurement, studies have found that positive mental health has an important impact on physical health, with high positive mental health correlated with good physical health. According to CIHI (2009), positive mental health has been linked to reduced mortality, low blood pressure, and a reduction in the negative effects of stress and trauma. Furthermore, those with high positive mental health are also less likely to report adverse health outcomes, and are more likely to report excellent self rated physical health and mental health (CIHI, 2009). Individuals with high positive mental health are also more likely to report fewer limitations of activity and fewer days of missed work, while individuals reporting low levels of positive mental health are more likely to report activity limitation, poor emotional health, as well as a high number of lost days of work and work cut back (Keyes, 2002).

Until recently, the assumption that mental health is the absence of mental illness has dominated mental health research for the past few decades. For instance psychology studies measuring mental health have often focused on a continuum with mental health and mental illness at opposite ends of another (Raphael, 2005). However, positive mental health should not be measured on the same continuum with mental illness as they are two separate states of being that can co-occur. As Keyes (2002) found in his research, people are able, and do, experience high and moderate levels of positive mental health while experiencing episodes of mental illness. While mental health does tend to improve as symptoms of mental illness decrease, Keyes (2007) found that this connection is relatively weak. Furthermore, only a small proportion of the population that do not have a mental illness are mentally healthy. According to Keyes (2002), of the American population in 1995, who did not have depression,

only 17% had high positive mental health, just over half had moderate positive mental health, and 12.1% had poor positive mental health. Furthermore, of the 14% of the American population who had a depressive episode in 1995, 1% had high positive mental health, 8.5% had moderate positive mental health and less than 5% had poor positive mental health (Keyes, 2002). While those with depression are more likely to have poor positive mental health, this is not always the case, as individuals with depression have been shown to have moderate and even high levels of positive mental health.

According to Keyes (2002), there is a series of economic and social burdens associated with the absence of positive mental health. For instance, it is believed that mental illness and poor mental health cost the economy billions due to lost productivity and health care costs each year. The Canadian Mental Health Association (CMHA) estimates in 1993 alone the economic cost of mental illness and poor mental health was \$7.3 billion (Health Canada, 2002). Over fifteen years later that number has grown to 51 billion in 2008 (Lim, Jacobs, Ohinmaa, Schopflocher & Dewa, 2008). Conversely, in the United States it is estimated in 1999 alone the economic cost of mental illness and poor mental health totaled \$160 billion dollars (Keyes, 2007). The international community has begun to take notice of this substantial economic cost. The World Health Organization estimates by 2020 depression will be the second largest cause of disease worldwide, which is estimated to have a large economic impact across all nations (Herrman et al., 2005). Subsequently a focus on the promotion of positive mental health has begun to take form as a means to curb monetary costs of poor mental health in the future.

As the previous focus on mental health in the literature has been on mental illness, and the prevention of mental illness, there are few studies that focus on positive mental health. Mental health literature is saturated with studies focused on mental illness, depression and anxiety. Positive mental health is largely ignored in the literature, and when included, is often measured as the absence of mental illness. This is problematic as positive mental health and mental illness are two distinct states of being. While they are correlated, social factors associated with the presence of mental illness are not

subsequently associated with positive mental health. Research focusing on positive mental health should use measures of positive states of being such as life satisfaction, well-being, and sense of mastery to measure positive mental health rather than measures of mental illness. Furthermore, while previous research has focused on health benefits associated with positive mental health few studies have examined variations in positive mental health using theories of health inequality. Associations with positive mental health and measures known to be associated with inequality in health such as social support, stress and living arrangement have been examined in previous research, however not within a theoretical framework with full measures of the health inequality theoretical frameworks.

This thesis will fill these gaps in the positive mental health literature. Positive states of being will be used to measure positive mental health instead of measures of mental illness. Seven indicators of positive states of being will be used to measure the various components of positive mental as identified in the literature instead of the absence of depression. This thesis will also concentrate on exploring the concept of positive mental health through three well known health inequality theoretical frameworks: material inequality, lifestyle behaviours and psycho-social factors. Variation in positive mental health will be examined through these three theories of health inequality to assess what inequalities are more influential to positive mental health.

Data from two surveys, the National Population Health Survey (NPHS) cycle 8, and the Canadian Community Health Survey (CCHS) cycle 1.2, will be used for this analysis to assess material, lifestyle and social inequalities with the positive mental health indicators. Two surveys will be used for this analysis to obtain a complete analysis of positive mental health as it encompasses many different positive states of being and cannot be reduced to a single measure. To date no Canadian survey contains all indicators of positive mental health. Consequently, to fully measure and assess positive mental health both the NPHS and the CCHS are used. The NPHS will measure the positive states of happiness, self-esteem, sense of mastery and sense of coherence, while the CCHS will measure psychological well-being, life satisfaction

and the ability to cope with day to day demands. Using the statistical software program SAS, logistic regression analysis will be used to examine the impact that material, lifestyle behaviours and psycho-social inequalities have on the positive mental health indicators. Material, lifestyle behaviour and psycho-social measures of inequality will be regressed with each measure of positive mental health to examine possible relationships. Adjusted odds ratios will be compared across indicators of positive mental health to assess how material, lifestyle behaviours and psycho-social inequalities contribute to variation in positive mental health. Analyses will be further stratified by gender to uncover potential differences in positive mental health between males and females.

This thesis contains seven chapters. The first chapter explores the positive mental health literature and identifies limitations of the previous research. This chapter also discusses the three health inequality theoretical frameworks. The second chapter, "methodology and research design," outlines the data sources used for the analysis, how variables were measured for this analysis and the statistical methods used to analyze the data. The third chapter examines the association of material inequality measures with positive mental health. These findings are also discussed in comparison with previous research. In the fourth chapter, the relationship between lifestyle behaviour measures and the positive mental health indicators are discussed. These findings are also examined within the context of previous positive mental health literature. The fifth chapter will discuss the relationship of psycho-social factors with positive mental health. Additionally, these findings will be examined within the context of previous positive mental health literature. The sixth chapter will discuss the impact that the three health inequality theoretical frameworks have on positive mental health when combined. This chapter will also discuss what theory of health inequality explains the greatest variation in positive mental health. The final chapter summarizes the key findings from the four analysis chapters, and discusses limitations of the study as well as potential areas of future research within the positive mental health field.

This thesis also includes two appendices. Appendix A outlines in greater detail the measurement of the variables used for this analysis as well as characteristics of the sample population and assumptions of logistic regression. Appendix B contains the tables with the odds ratios for males and females from the logistic regression analysis of the positive mental health indicators with the three health inequality theoretical models.

Chapter 1: Review of Positive mental health Literature and Health Inequality Theory

Review of the Positive Mental Health Literature

Despite occupying two separate states of being, mental health and mental illness are often considered to be the same state of being. According to the Canadian Institute for Health Information (CIHI), “56% of Canadians thought mental health and mental illness meant ‘about’ or ‘exactly’ the same thing, while 40% saw the terms as representing two concepts with different meanings” (2009: 8). Previous research and interventions have treated mental health in this way, ignoring that mental health and mental illness are distinct. Support services and treatment for mental illness have often used the term mental health to describe such services, adding confusion to the argument that mental illness and mental health are two different states of being (Herrman, Saxena, Moodie & Walker, 2005). Additionally, previous research measures mental health and mental illness on the same continuum, where the absence of one indicates the presence of the other (Keyes 2005, 2007). Consequently, mental health promotion, intervention, and policy have been assessed through the patterns of mental illness (Zubrick & Kovess-Masfety, 2005). It is problematic to continue to conceptualize positive mental health purely as the absence of mental illness, as according to Keyes (2007), the majority of the population does not possess good mental health. Only 17% of the adult American population has positive mental health, while 10% have poor mental health, and approximately half of the population has moderate mental health (Keyes, 2007). While Keyes (2007) results are of the American population, it is expected that the positive mental health of Canadians follows a similar pattern.

Having poor and moderate mental health however is not indicative of a mental illness. While adults with moderate and poor mental health have a greater likelihood of developing a mental illness than those with good mental health, only 13% of individuals with moderate mental health, and 28% of those with poor mental health have reported a mental illness in the form of depression in the past year

(Keyes, 2002). While analyses have shown that there is an association between improved mental health and a decrease in mental illness this association remains relatively small (Keyes, 2007). Studies have also shown that mental illness and positive mental health do co-occur with one another, that is, individuals with positive and moderate mental health are not precluded from having a mental illness, nor are individuals with mental illnesses precluded from having positive mental health. According to Keyes (2002), 5% of individuals with positive mental health, and 13% of those with moderate mental health, reported having an episode of mental illness (depression) in the same year, while only 28% of individuals with poor mental health reported a mental illness.

While mental illness is characterized as a state of distress and impaired functioning, positive mental health, according to The Public Health Agency of Canada (PHAC) (2006), is a state which enables an individual to function positively, enjoy life, and act in ways that enable an individual to cope with challenges. According to PHAC, good mental health is needed for daily tasks such as “Learning,... working productively, forming and maintaining relationships, contributing to the community...nutrition, physical activity, sleep, recreation and spiritual needs” (2006: 2). Thus positive mental health provides a foundation for successful functioning in daily life. Positive mental health focuses attention to the positive state of mental health and the benefits of this state in aspects of daily life. This new focus of mental health, according to Keyes (2005), explains mental health as a complete state of being in which individuals have high levels of emotional, psychological, and social well-being (Keyes, 2005).

Positive Mental health has an important tie to well-being. According to Herrman et al (2005), positive mental health is the foundation for well-being and allows for an individual to function effectively within the community and in private. The community is an important social environment for where positive mental health can be developed and promoted. Mentally healthy communities have strong social support networks where members work together, and in turn are able to develop a high sense of control, empowerment, self-determination and resilience, which are all characteristics that

contribute to positive mental health (PHAC, 2006). Positive mental health is continuously developed over the course of the life span and is influenced by socio-economic, environmental and individual characteristics. Resources are continuously developed throughout the life span which enables individuals to function positively and to effectively deal with challenges and stress which arise in daily life (PHAC, 2006). While there are arguments that mental health is genetically determined, environmental and social factors do play a large role in the development and maintenance of mental health.

A dominant position in previous mental health research has argued that mental health, subjective well-being, and happiness have a “set point” which is largely influenced by genetic and personality factors. Throughout the life course happiness and subjective well-being are said to fluctuate, but will always revert back to their original state, or “set point,” after a period of adjustment (Easterlin, 2006). The capacity for individuals to adapt to their life circumstances is a main argument guiding set point theory. It is argued that adaption will return an individual to their original “set point” after life events move individuals below or above their normal set point, life events such as marriage, health problems, job loss, increases in income, and death of loved one (Easterlin, 2006). However, mental health, happiness and subjective well-being are influenced by more than genetic and personality factors. While personality and genetics may have some influence over mental health, research has shown that the social environment, the physical environment and economic characteristics have a substantial influence over positive mental health (Herrman, 2005; CIHI, 2009). Social and economic characteristics which have been shown to have an association with positive mental health include, age, gender, education, social support, stress, immigration and ethnicity (Stephens et al., 1999; CIHI 2009; Keyes, 2002, 2005, 2007, 2009).

Benefits of positive mental health are closely tied to physical health. According to CIHI (2009), low blood pressure, reductions in the negative effects of stress and trauma, and reduced mortality and

chronic disease have been linked to positive mental health. Furthermore, maintaining positive mental health is thought to influence the onset of physical and mental illness by acting as a protective influence (Raphael et al., 2005). Individuals reporting high positive mental health were also more likely to report fewer limitations of activity and fewer days of missed work, while those with low positive mental health were more likely to report high activity limitation, high incidences of lost work days, and high poor emotional health (Keyes, 2002). Benefits of positive mental health are not limited to physical health outcomes. According to Lehtinen et al (2005), positive mental health can also have social and economic benefits.

The promotion and inclusion of positive mental health into policy initiatives is important as positive mental health is foundational to healthy well-being with benefits that extend to physical health. A shift towards the promotion of positive mental health has arisen due to numerous ties to physical health, as well as possible economic benefits due to the economic burdens associated with mental and physical ill health. International attention has been drawn to the importance of promoting positive mental health due to the beneficial impact positive mental health has on various aspects of health. An area of focus for the promotion of positive mental health is at the community level. According to PHAC (2006), mentally healthy communities, workplaces, and schools are essential to the development and maintenance of positive mental health.

Defining Positive Mental Health

Presently there is no universally agreed upon definition or measure of positive mental health, however, many conceptualizations of positive mental health do overlap. A brief literature scan has identified that various governments, health agencies and researchers have similar yet different conceptions of positive mental health, and subsequently employ different indicators to measure the positive mental health of the population. In 2004 the World Health Organization (WHO) updated the

definition of positive mental health to reflect the shifting notion to exclude mental illness from defining positive mental health. According to WHO (2004), positive mental health is “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2004: 12). Similar to WHO, the Public Health Agency of Canada (PHAC) conceptualizes positive mental health as the capacity to “act in ways that enhance our ability to enjoy life and deal with the challenges we face, it is a positive sense of emotional and spiritual well-being that respects the importance of culture, equity, social justice, interconnections and personal dignity” (PHAC, 2006: P2).

These two organizations, which produce research intended for the public and governments, have different conceptualizations of the same concept which can impact the indicators researchers use to measure positive mental health. While these two definitions are similar in that they both place a focus on the presence of well-being to indicate positive mental health, the emphasis they place on well-being differs. PHAC (2006) tends to portray well-being as good spiritual and emotional states, whereas WHO (2004) tends to focus on well-being as a state which allows for individuals to function productively. Both definitions also draw upon aspects of coping as aspects of positive mental health. WHO (2004) sees positive mental health as the ability to work through normal stresses in life, whereas PHAC (2006) explains positive mental health as enabling individuals to deal with challenges in life, both of which are main features of coping. The explanation of positive mental health by WHO (2004) focuses on individuals' ability to be productive in society, whereas PHAC (2006) focuses on explaining positive mental health through enjoyment of life and those aspects which make life enjoyable. While WHO (2004) places an emphasis on enabling individuals to “work productively and fruitfully” PHAC (2006) places an emphasis on positive mental health as a state which allows an individual to “enjoy life,” and highlights the importance of cultural, social justice, personal dignity, interconnections and equity to mental health.

Researchers also employ different conceptions of mental health within their research. According to Keyes (2005), positive mental health is “a syndrome of symptoms of hedonia and positive functioning, operationalized by measures of subjective well-being, individuals’ perceptions and evaluations of their lives and the quality of their functioning in life” (p: 540). While Stephens et al (1999) conceive positive mental health as “affective/relational and cognitive attributes that permit the individual to carry out valued functions with reserve capacity of resilience and thus to cope effectively with challenges to both mental and physical functioning” (p: 118). These two conceptualizations of positive mental health while similar do differ, and subsequently impact the indicators used to measure positive mental health in research. Keyes (2005) tends to place a greater emphasis on measures of well-being while Stephens et al (1999) focus on measures of coping to explain positive mental health. Similar to definitions from WHO and PHAC, Keyes (2005) incorporates well-being as the main measurement of positive mental health. Consistent with the definition by WHO Keyes (2005) also incorporates the ability to function well in his conceptualization of positive mental health. Stephens et al (1999) does however, similar to definitions by WHO and PHAC, highlights the importance of coping and the ability to cope with challenges as indicative of positive mental health, while Keyes (2005) neglects this component. These different conceptualizations influence the measures used to indicate the presence of positive mental health. These inconsistencies in definitions and measures can impact the results, validity and reliability of research.

Measures of Positive Mental Health

Subsequently the ambiguity that surrounds definitions of positive mental health also surrounds the measurement of positive mental health. Various indicators of positive mental health are used in the literature, however, these indicators are not always consistent from study to study. For instance, previous research on positive mental health by Stephens et al (1999) used sense of coherence, self esteem, mastery and happiness as indicators of positive mental health, while Keyes (2002, 2005, 2007)

measured positive mental health through emotional well being, psychological functioning and social wellbeing. Additionally, research by CIHI (2009) has also identified life enjoyment, coping ability, emotional well-being, spiritual values and social connectedness as measures of positive mental health. According to Zubrick and Kovess-Masfety (2005), there is currently a lack of theory available to guide researchers, policy-makers and practitioners in their choice of indicators to measure positive mental health. Consequently, there is a considerable amount of indicators and measures that researchers use to measure positive mental health.

According to Kovess-Masfety, Murray and Gureje (2005), there are three main components of positive mental health; positive affect, resilience, and quality of life. These three components are considered to be essential to positive mental health and need to be taken into account when measuring this state of being. Furthermore each component can be further broken into various measures. For instance, positive affect is typically measured by self-esteem, mastery, sense of coherence and happiness; coping ability is a common indicator of resilience; and psychological well-being and life satisfaction are general measures of quality of life (Kovess-Masfety et al., 2005).

Positive mental health is therefore comprised of a combination of good self-esteem, mastery, sense of coherence, happiness, coping ability, life satisfaction and well-being. According to Sturgeon and Orley (2005) all seven of these characteristics are needed to maintain satisfying personal relationships, to be able to effectively handle adversities in day to day life, as well as to make meaningful contributions to family, the community and society; which have been identified by WHO as the main components of positive mental health. These measures are also able to capture the presence of a strong sense of self and self-worth, which according to Zubrick and Kovess-Masfety (2005) is essential for positive mental health. Conceptions of a strong sense of self and self-worth are indicated through the measures self-esteem, well-being and life satisfaction. Positive mental health also involves self-realization where individuals are able to use and develop their full potential, feel able to problem

solve, and feel a sense of control over their life and environment (Kovess-Masfety et al., 2005). These three aspects of self-realization are captured by the indicators sense of coherence, mastery and coping ability.

Positive affect: Sense of Coherence, Mastery, Happiness, Self Esteem

Sense of coherence is a measure of a healthy outlook of life. Developed by Antonovsky, sense of coherence is a 29 or 13 item scale that is used to measure aspects of well-being and control. Sense of coherence refers to an outlook on life, “whereby life is seen as comprehensible, manageable and meaningful” (Stephens et al., 1999: 119). As identified by Herrman et al (2005) maintaining a healthy outlook on life is a central aspect of positive mental health. Furthermore, sense of coherence is believed to promote resilience which allows for individuals to cope with day to day demands. It is also closely related to psychological well-being, with some researchers using it synonymously with psychological well-being (Stephens et al., 1999). Sense of coherence has been shown across international studies to be positively associated with physical health and to predict longevity (Stephens et al., 1999). According to Hood (1996), sense of coherence is believed to have physiological health benefits through the stimulation of body systems. Those with high levels of sense of coherence have been found to be more likely to define stressors as challenges rather than problems, and thus have less psychological signs of stress than individuals with low levels of sense of coherence (Hood, 1996).

Mastery typically refers to a sense of control over the forces that affect life, or the perceived control an individual feels they possess over their life or work (Zubrick & Kovess-Masfety, 2005).

Mastery is closely associated with sense of coherence and ability to cope with day to day demands.

Perceived control is associated with general physical and mental health, as well as well-being. It is argued that a sense of control over one’s environment is essential to positive mental health (Kovess-Masfety et al., 2005). A high sense of mastery is believed to be empowering as mastery enables

individuals to develop skills to achieve goals, take risks, to move forward despite anxiety, to handle random setbacks as well as reinforcing a willingness to persist despite difficulty in day to day activity (Zubrick & Kovess-Masfety, 2005). It is through the development of these skills and the empowerment of the self that mastery becomes essential to maintaining positive mental health. A high sense of control has also been found to mediate the impact of social status on mental health (Kiecolt and Hughes, 2009). However, mastery is not evenly distributed across the population. The social structure is argued to have an influence over the distribution of mastery among the population. Individuals occupying high status levels within the class structure are argued to have high levels of mastery as they have greater access to resources and opportunities to achieve goals (Kiecolt and Hughes, 2009). One opportunity which mastery is highly associated with is education. University graduates were found to be twice as likely as high school drop outs to have a high sense of mastery (Stephens et al., 1999).

Happiness is conceptualized as a state of mind in which one likes the life they live (Veenhoven, 2009). Traditionally happiness has been defined as a combination of life satisfaction and a balance between positive and negative affect (Lyubomirsky Tkach & Dimatteo, 2005). Happiness is argued to be an important component of positive mental health as happiness encompasses feelings of joy, love and self-efficacy (Raphael et al., 2005). Despite climbing rates of depression, psychological distress, and mental illness, the population generally remains happy. According to Meyes (2000), while psychologists predicted approximately 20% of the American population to be happy, in actuality 90% reported that they were happy or very happy. High happiness, similar to well-being, is found to be correlated with good physical and mental health. For example, high happiness can add between seven to ten years onto an individual's life, which is comparable to the negative impact that smoking has on longevity (Veenhoven, 2009). The impact of happiness on longevity may be mediated by activities that happy individuals engage in. According to Veenhoven (2009), individuals who report high happiness also reported to be more likely to watch their weight, have high engagement in sports, have moderate levels

of smoking and drinking, and have a good ability to cope with problems. Happiness is also linked with qualities which act as a buffer against illness. While happiness cannot cure disease, high levels of happiness are thought boost the immune system and thus act as a protector from the development of illness and disease (Veenhoven, 2009).

Self-esteem, while often equated as a component of happiness, is a distinct and separate entity. While correlated with happiness, self-esteem refers to feelings of self-worth, adequacy as a person, feelings of self-acceptance, and self-respect (Lyubomirsky, Tkach & Robin 2006; Zubrick & Koves-Masfesty, 2005). Subsequently self-esteem in particular is used as a measure of positive mental health as it is able to capture self-worth, feelings of self acceptance, self adequacy and self-respect, which are crucial components to maintain positive mental health (Koves-Masfesty et al., 2005). Self-esteem is strongly associated with sense of mastery as Lyubomirsky et al (2006) argue that self-esteem is gained through successful navigation of one's environment, where an individual develops capability, competence and a sense of control. Self-esteem is also linked to health, although not as strongly as happiness. High levels of self-esteem have been found to be associated with good self-concept, less vulnerability to depression and anxiety, high resilience to threats against self image, and a high likelihood to perceive negative feedback as a challenge (Lyubomirsky et al., 2006).

Resilience: Coping ability

Resilience, or the ability to cope, is an essential measure of positive mental health. Coping ability refers to an individual's ability to manage problems or stressful events in their life. Good ability to cope with stress signals an individual's ability to find positive meaning in life events and enables them to function productively in society (Folkman & Moskowitz, 2000). Subsequently coping ability is an important aspect of positive mental health as the ability to effectively manage problems promotes positive functioning in the community and the maintenance of relationships. Resilience is a popular

coping skill, which encompasses a “pattern of behaviour and functioning indicative of positive adaption in the context of significant risk or adversity” (Keyes, 2009: 1679). Other popular coping strategies can include reframing stressful events, letting go of unrealistic goals, creating new goals, using spiritual beliefs to handle stress and problems, and taking positive attitudes toward problems and inadequacies (Folkman & Moskowitz, 2000). According to Colaninger (2006) spiritual beliefs in particular have an important role in the development of coping skills, as human spirituality is essential in the enjoyment of life as well as in helping individuals overcome challenges in their lives. Good coping ability is not only beneficial to positive mental health but physical health as well. According to CIHI (2009), coping methods such as problem solving, spirituality, and exercise have all been linked to high levels of excellent self rated physical, general and mental health.

Quality of life: Well-being and Life Satisfaction

Well-being refers to “the emotional quality of an individual’s everyday experience – the frequency and intensity of experiences of joy, fascination, anxiety, sadness, anger, and affection that make one’s life pleasant or unpleasant” (Kahneman & Deaton 2010: 1). According to Keyes (2002), subjective well-being scales are one of the most important indicators of positive mental health as high scores on these scales “imply the quality of an individual’s complete engagement in society and life” (p: 209). Well-being contributes to the maintenance of positive mental health as it is thought to help individuals realize aspirations, satisfy needs and adapt to changing environments (Mittelmark et al., 2005). The ability to remain optimistic is also a component of well-being. According to Zubrick and Kovess-Masfety (2005), optimistic individuals are more likely to have stable problem focused coping strategies than those with pessimistic dispositions. While well-being is associated with low levels of mental illness, the absence of mental illness does not lead to high well-being. Rather, high well-being has been found to be associated with general health, income, equality, and social stability (Eckersly,

2009; Carlisle, 2009). According to an Australian well-being index, those with the highest levels of subjective well-being are older, have higher incomes and are married, while those with low levels of subjective well-being have low incomes, are unemployed, are divorced, live alone, and are single parents (Eckersly, 2009).

Life satisfaction, while often considered to be an aspect of happiness, refers to “‘individuals’ cognitive evaluations of the positivity of their lives as a whole, based on their own standards” (Suldo & Huebner, 2004: 94). According to Lehtinen et al., (2005), early research in positive mental health was measured from the viewpoint of life satisfaction. Life satisfaction is believed to influence positive feelings, skills and capacities, which are also argued to be the products of good positive mental health (Lehtinen, 2005). Life satisfaction, like happiness and well-being, is influenced by many social, economic and environmental factors, and cannot be reduced to genetics (Suldo & Huebner, 2004). Similar to happiness, life satisfaction also acts as a buffer against illness. According to Suldo & Huebner (2004), Life satisfaction has been found to mediate ill health in the face of stressful life events. Individuals who possess high levels of life satisfaction have been found to be less prone to experiencing psychopathological symptoms when faced with stressful life events.

Health Inequality Theory: Material, Lifestyle Behaviour and Psycho-Social Health Inequality

Determinants of positive mental health can be found within the social and economic environment (Walker, Verins, Moodie and Webster, 2005). Social inclusion, stable communities, valued social positions, and access to education and employment have been found to be important determinants of mental health and mental illness, which have lead to the identification of significant disparities within mental health (Walker et al., 2005). Health disparities are those differences in mental and physical health outcomes across major subpopulations within the wider population (Schnittker & McLeod, 2005). Health disparities are argued to arise from social stratification, where individuals in

society are ranked according to their attributes, with higher ranked individuals gaining more access to resources than lower ranked individuals (Keyes, 2009; Aneshensel, 2009). Social inequality is therefore the by-product of social stratification resulting in differential access to resources such as education, income, employment, and housing (Keyes, 2009).

Social and economic conditions associated with health inequalities are typically grouped into three theoretical frameworks; material, lifestyle behaviours and psycho-social. The material theoretical framework seeks to explain health inequality through material conditions. This model focuses on the pathways through which socio-economic positions impact health through material conditions such as housing, living arrangement and home ownership. The lifestyle behaviour framework examines the relationship between health status and lifestyle behaviours such as smoking, drinking, diet, and physical inactivity (Bartley, 2004). This model argues individuals are socialized through their surroundings and culture to engage in behaviours deemed risky to health (Bartley, 2004; Singh-Manoux & Marmot, 2005). In contrast the psycho-social theoretical framework assesses the influence that social factors, such as social support and stress have on health inequality (Bartley, 2004). This framework conceives stress, social support and perceived control as psycho-social risk factors. While these three frameworks of health inequality are distinct it is important to recognize that all three frameworks are connected. Behaviours such as smoking and drinking, and psycho-social factors such as exposure to stress and low social support are embedded within the material context of the social structure.

Material Health Inequality Model

Previous health inequality research typically measures health disparities through socio-economic measures of income, education and occupation. The materialist framework for measuring health inequality however, examines socio-economic status and its relationship to health through a focus on the socio-economic positions individuals hold, specifically the material conditions within these

positions (Raphael, 2009). The materialist framework is primarily concerned with the material advantage or disadvantage associated with each level of the class structure. According to Bartley (2004), the materialist framework for measuring health disparities “identifies the importance of the diffuse consequences of the class structure: poverty, work conditions and deprivation in its various forms in the home and immediate environment, at work, in education and the upbringing of children and more generally in family and social life” (90). Initial measures of the materialist framework included social class, and home and car ownership, which has now expanded to include food, family structure, housing and employment insecurity (Bartley, 2004). Income, while not directly measured in this framework, is connected to material advantage and disadvantage as income is the driving force behind access to material goods. From a materialist perspective, the relationship between income and health status is explained through the ability to purchase material goods.

The materialist framework proposes that the health gradient between social classes, where there are marked differences in health and life expectancy between individuals occupying different levels within the class structure, is explained by differential exposure to material health hazards (Raphael, 2009; Bartley, 2004). Income acts as a mediating force within the class structure which influences exposure to health hazards. According to Bartley (2004), income allows individuals to purchase commodities which may be beneficial to health, however, the amount of income available to individuals to spend on commodities is associated with their position within the class structure. Income also mediates the relationship between material conditions and health status, as income is an indicator of individuals’ placement within the social hierarchy as well as the opportunities and life chances available to them (Bartley, 2004). There are many pathways, and interconnections through which material conditions impact health status. Stress and exposure to harmful substances are a few paths through which material conditions impact health outcomes (Raphael, 2009).

Exposure to stress is just one avenue through which material conditions are argued to impact health status. Exposure to poor material conditions is believed to increase exposure to stress, which in turn produces ill health (Raphael, 2009; Bartley, 2004). Disproportional exposure to stress, with low social status groups experiencing higher levels of stress than high social status groups, is argued to be the cause of high rates of illness among low status groups (Aneshensel 2009; Muntaner et al., 2003). Stress has detrimental effects on health as according to Raphael (2009), the flight or fight response that stressors initiate is hard on a variety of bodily systems such as the nervous, neuroendocrine and metabolic systems. Chronic election of this response is argued to weaken the immune system allowing the body to become susceptible to infections and disease, and increase the likelihood of metabolic disorders (Raphael 2009).

Housing is another avenue through which material conditions are argued to impact health. According to Bartley (2004) the living environment, particularly housing, is where individuals come into contact with health hazards, the extent to which is determined by socio-economic resources available to the individual. Damp, cold housing environments are linked to poor health outcomes such as infection, heart attacks, increased blood pressure and cholesterol levels (Bartley, 2004). Living environments can also include neighbourhoods. Low social-status neighbourhoods tend to have higher rates of exposure to health hazards such as fumes, dusts and chemicals from factories, as well as noise and pollution from traffic than other neighbourhoods (Bartley, 2004). Where individuals reside is largely due to socio-economic resources. Neighbourhoods which have higher exposure rates of these health hazards are also characterized by low income, single parent families.

Employment is a further pathway through which material conditions are believed to explain health inequality. In addition to job strain, which in turn increases stress, the material framework argues that employment can expose workers to health risk factors. Occupations that expose workers to health hazards such as dangerous substances, temperature extremes and increased likelihoods of accidents

tend to be low wage blue collar occupations (Bartley, 2004). According to Bartley (2004), access to a 'good job,' one that has less exposure to health hazards is dependent on individuals' placement within the social structure due to access to life chances and opportunities.

Lifestyle Behaviour Health Inequality Model

Behavioural explanations of health inequality focus on explaining such inequality through socialization that occurs within the class structure. Health is impacted by the daily decisions individuals make regarding food consumption, exercise and consumption of tobacco and alcohol products (Mittlemark, Puska, O'Byrne, and Kwok-Cho, Tang, 2005). Smoking, diet, alcohol consumption and physical activity, are commonly identified health behaviours that play a role in producing health inequalities. While most lifestyle behaviours are argued to be a consequence of socio-economic resources, these resources do not necessarily prevent people from engaging in risky health behaviours. Socialization plays an important role in shaping the social context, and subsequently influencing the behaviours of individuals within these contexts. There are multiple pathways through which the behaviours of individuals are influenced. In particular, the social structure and education are popular avenues which are often attributed with reproducing behaviours that are associated with health inequality.

Income in particular is singled out by this framework as having an influence over the behaviours in which individuals engage in as income directly impacts positions in the class structure. Those occupying less advantaged positions within the social hierarchy are argued to be more likely to engage in risky health behaviours and less likely to engage in health promotion behaviours than those occupying the highest positions within the hierarchy (Bartley, 2004). Smoking status, amount of exercise, and consumption of salty, fatty and sugary foods in the diet are behaviours where differences between positions in the class structure are apparent (Bartley, 2004). These differences are most visible in

regards to smoking status (Bartley, 2004). Despite these findings income cannot fully account for the differences in behaviours between groups in the class structure.

Education is a further pathway through which behaviour is influenced. Similar to income, individuals with less education are seen to be more likely to engage in risky health behaviours. It is proposed by this framework that differences in health behaviours between educational groups can be attributed to intelligence, low self-discipline and low self control. According to Bartley (2004) it is assumed people with low levels of education may engage in risky health behaviours more often than educated individuals because they are not able to understand the health education messages by health professionals and governments. This framework also assumes individuals with low levels of education also have low levels of self-discipline and self-control. It is assumed due to these individuals low levels of self-discipline and self-control that they cannot obey these health education messages, nor understand the long term consequences of these behaviours which give them immediate pleasure (Bartley, 2004).

This framework places an emphasis on the process of socialization as the driving force behind engagement in behaviours. Values and behaviours are reproduced from generation to generation through socialization, and it is through this process that people are influenced by the dominant cultural values. Individuals are influenced by their surroundings by simply being part of the social system as, according to Mansyur, Amick, Harrist, Franzini, and Roberts (2009), whether or not individuals share the values being reproduced, they will be influenced by these value systems. The social context is able to shape attitudes, beliefs and behaviours due to the socio-economic constraints facing a social group. According to Singh-Manoux and Marmot (2005), socio-economic positions condition the way in which people live and work, which in turn influence attitudes, behaviours and values which are linked to health status. Furthermore, as a consequence of the class structure, behaviours are never truly voluntary as they are produced by, and embedded within structures of society (Singh-Manoux & Marmot, 2005).

Socialization through the class structure equips individuals with predisposed class dependent ways of thinking, feeling and behaving. A consequence of this process of socialization is that the social structure is able to produce and reproduce engagement in risky health behaviours such as smoking, alcohol consumption, inactivity and poor diet through generations, using family relations and social structures as agents of socialization (Singh-Manoux & Marmot, 2005).

Psycho-social Health Inequality Model

The psycho-social health inequality theoretical framework is primarily concerned with uncovering the relationship between macro social systems and individual relationships, attitudes, feelings and behaviours (Schnittker & McLeod, 2005). According to Bartley (2004), the psycho-social model also focuses on how feelings that arise due to inequality within the class structure impact health status, as feelings which arise due to inequality, domination, or subordination may directly impact health. Differential placement within the social structure, argues Wilkinson (1999), leads individuals to make comparisons to others, which produces feelings of marginalization, anger and deprivation. Within this model, health is believed to be impacted through stress which is developed and maintained through feelings of domination, marginalization, and subordination. Psycho-social factors can also be beneficial to health. For instance interpersonal relationships, social support, and sense of control have been linked to improvements in health and well-being (Bartley, 2004; Schnittker & McLeod, 2005). For example, while stress can have a negative impact on health, many psycho-social factors can mediate the harmful effects of stress on health; in particular, social support has been consistently shown to protect individuals from health risks associated with stress (Bartley, 2004).

This framework concentrates on how psycho-social factors influence health through three main domains of everyday life; the home environment, the work place and the community (Bartley, 2004). Stress tends to be a common factor in many workplaces. For instance, in 2005, one in three Canadian

workers reported that most of their work days were quite a bit or extremely stressful (Jackson, 2009). As previously discussed, chronic stress is particularly harmful to health, associated with increased risks of heart disease and blood pressure (Raphael, 2009; Schnittker & McLeod, 2005). Stress is also experienced disproportionately within the class structure, with lower status groups experiencing higher rates of stress than high status groups, which according to Bartley (2004), is due to positions held in the workforce, as low social status groups are more likely to work in part-time low salaried positions.

Recognition within the workforce also has an important relationship with health status. According to Bartley (2004), individuals who receive low rewards for their effort in the workplace in terms of pay, job security, promotions and approval by superiors have higher levels of stress and blood pressure. Over the past decade in Canada, average incomes have stagnated and compensation for work among male workers in particular has become polarized (Tompa et al., 2009). Those employed in blue collar positions are also more likely to experience job insecurity and low pay for their work. In addition to raising stress levels, job insecurity is associated with psychiatric disorders, musculoskeletal injuries and psychological morbidity (Tompa et al., 2009). Individuals in lower positions in the class structure are also more likely to be employed in positions with high demands and little control over their work, which according to Bartley (2004) can lead to an increased risk of heart disease. A sense of control is important in the workplace as perceived control often mediates the impact of stress on health. According to Jackson (2009), less than half of Canadian workers in 1994 had the ability to exercise some control over their work. Furthermore, occupations ensuring job security and good job control continue to decrease (Silla, Cuyper, Gracia, Pieró & De witte, 2009).

Social support is an important psycho-social factor as high levels have been found to mediate poor health outcomes. According to Singh-Manoux and Marmot (2005), good social ties provide individuals with a multitude of benefits due to the development of trust, reciprocity and cooperation. Social support has also been found to act as a mediator against ill health. According to Bartley (2004),

social support, particularly in regards to stress, acts as a buffer, serving as a defense against the poor health outcomes stress is often associated with. Subsequently those with good participation ties to the community, and those with good relationships with family and friends have longer life expectancies than individuals who experience social isolation (Bartley, 2004). However, not everyone has equal access to social support. Like stress, social ties and networks are largely influenced by economic standing in the class structure. Individuals in lower socio-economic standings have a greater likelihood of experiencing social isolation than those in high socio-economic standings. According to Bartley (2004), "those in more advantaged social positions tend to receive more social support, especially from outside of their immediate family" (Bartley, 2004: 86). Just as the presence of social support is beneficial to health, the absence of social support poses risks to health. Social isolation has been found to increase the risk of morbidity and mortality at the same rates that smoking increases the risk of morbidity and mortality (Schnittker & McLeod, 2005).

Positive Mental Health and the Health Inequality Theories

While the material, lifestyle behaviour and psycho-social theoretical frameworks of health inequality are common frameworks used to explore disparities in health they have not yet been applied to uncovering disparities in positive mental health. Positive mental health is largely ignored in the literature, and when included, is measured as the absence of mental illness concluding the social factors associated with the development of mental illness as factors associated with mental health. Positive mental health and mental illness are two distinct states of being. While they are correlated, disparities and factors associated with the presence of mental illness does not necessarily indicate that they are also associated with positive mental health.

Previous research measuring mental health has found that lifestyle behaviours such as smoking, physical activity and weight are associated with mental health. Non-smokers have consistently been

found to have higher likelihoods of good mental health than smokers (Chaney & Chaney, 2007; Rohrer et al., 2004). Physical activity has also been consistently linked to greater likelihoods of good mental health, with those reporting weekly exercise having higher probabilities of good mental health than people who do not exercise. BMI however is not as strongly linked to mental health. According to Chaney and Chaney (2007), there is little difference in the probability of good mental health between overweight, obese, or healthy BMIs. Conversely, Rohrer et al (2007) found that individuals with obese BMIs are less likely to report good mental health than those with healthy BMIs. However, these studies use measures of mental illness to measure mental health, and consequently these findings about lifestyle behaviours pertain to mental illness rather than positive mental health. To understand the impact that smoking, physical activity and BMI have on positive mental health, positive mental health needs to be measured with positive states of being such as life satisfaction, well-being, happiness and a sense of mastery, rather than against measures of mental illness. This thesis will fill this gap in the literature by using positive states of being to measure positive mental health.

Previous research examining material inequalities with mental health have found that living with a partner, employment in white collar occupations, and no financial stress is associated with better mental health. For instance, Chaney and Chaney (2007), and Rohrer et al (2004), both found that married individuals had higher odds of good mental health than individuals who were divorced, separated and single. However, mental health in these studies was measured as the opposite of mental illness, and thus not portraying an accurate relationship with positive mental health. Similar results were found by CIHI (2009), when using measures of well-being to indicate positive mental health. Married individuals were found to have a higher probability of positive mental health than those that are single across four indicators of positive mental health (CIHI, 2009). Similar to most positive mental health literature, CIHI (2009) was not able obtain a full assessment of positive mental health; in particular

measures of mastery, coherence, self esteem and happiness are missing. This thesis will fill this gap as two surveys are used to ensure a complete assessment of positive mental health.

Previous mental health research has identified social support and stress as important social factors associated with positive mental health. For instance Stephens et al (1999), found when compared with individuals with low social support, those with high social support had higher likelihoods of sense of coherence, self esteem, mastery and happiness (Stephens et al., 1999). Similarly CIHI (2009) analyses found that individuals with high emotional social support were found to have higher odds of life enjoyment, emotional well-being, coping ability, spiritual values and social connectedness than individuals with low social support (CIHI, 2009). Furthermore when compared with individuals with low tangible support, those with high tangible support are more likely to report higher levels of life enjoyment, coping ability, emotional well-being and social connectedness (CIHI, 2009).

While stress is often associated with mental illness, Stephen et al (1999) and CIHI (2009) also found stress to be strongly associated with positive mental health. According to Stephens et al., (1999), stress was found to be one of the strongest indicators of positive mental health, with high significant relationships across all indicators of positive mental health. Compared to those with high or moderate levels of stress, those with low stress had higher odds of sense of coherence, self-esteem, mastery and happiness (Stephens et al., 1999). Similar to other positive mental health literature, analyses by Stephens et al (1999) and CIHI (2009) did not contain a full assessment of positive mental health. Furthermore, Stephens et al (1999) and CIHI (2009) contained one or two measures of social support and stress. This thesis will fill this gap in the positive mental health literature as the relationship of various sources of social support and stress are examined with positive mental health.

The examination of inequality in positive mental health using the material, lifestyle behaviour and psycho-social theoretical perspectives has been largely ignored within the literature. Furthermore, when the relationship with these three theoretical perspectives is examined, the majority of research

fails to measure positive mental health accurately, instead using measures of mental illness to indicate positive mental health. Few studies examining social factors associated with positive mental health have incorporated measures from the three health inequality theoretical frameworks. Furthermore, these studies have not examined positive mental health using full measures of positive mental health, nor with a complete set of material, lifestyle behaviors and psycho-social indicators.

Chapter 2 Methodology and Research Design

Data Sources

Positive mental health encompasses many positive states of being and therefore cannot be reduced to a single measure. No Canadian survey to date contains all seven indicators of positive mental health. Consequently to fully measure and assess positive mental health both the National Population Health Survey and the Canadian Community Health Survey are used in this study. Data from these surveys are used to obtain a complete assessment of the relationship of positive mental health with material, behavioural and psycho-social health inequality theoretical frameworks.

The NPHS was used in these analyses as this survey is the only Canadian Survey to include measures of happiness, mastery, sense of coherence and self-esteem, which are important components of overall positive mental health. The CCHS cycle 1.2 was also used in these analyses as it is the only Canadian survey to provide a measure of psychological well-being that is not measured as the absence of mental illness. Psychological well-being in this survey is measured through positive aspects of daily living such as feeling self-confident, feeling excited over life, feeling well-balanced and facing situations positively. These measures of psychological well-being are essential to the overall measurement of positive mental health.

National Population Health Survey

The NPHS is a voluntary longitudinal survey which collects information about the health and related socio-demographic information of the Canadian population every two years. The NPHS began in 1994 and collects information from residents living in private dwellings and institutions from all provinces. Residents of remote areas, Aboriginal reserves and Canadian Forces bases were excluded from the survey. The survey collects responses from Canadians of all ages. The NPHS consists of a general household file and a health institutions file, which is primarily used to study the prevalence and

incidence of disease. The health institutions file ended after five cycles. The first two cycles of the NPHS are both longitudinal and cross sectional, however in cycle 3 the survey became strictly longitudinal. Approximately 17,000 respondents comprise the longitudinal panel of the NPHS and are followed every two years (Statistics Canada, 2008).

This analysis uses data from the 1994-1995 cycle of the longitudinal square file cycle 8 which contains information for all originally selected panel members who had available information in cycle one, whether or not information about them was obtained in later cycles. The analysis was limited to adults aged 18 years and older due to the measurement of the variables of interest. Bootstrap weights were used for tests of significance, coefficients of variation, odds ratios and confidence intervals to account for survey design effects.

Canadian Community Health Survey

The Canadian Community Health Survey (CCHS) is a cross sectional survey that collects information on the health of the Canadian population every two years. The mental health and well-being cycle of the CCHS was collected between May 2002 and December 2002, and represents 98% of the population aged fifteen or older across all ten provinces that live in private occupied dwellings (Statistics Canada, 2003). This cycle of the CCHS focuses specifically on the mental health of Canadians. The primary objectives of this survey was to provide estimates of mental health determinants, health care system use, and prevalence rates of mental illness as well as to assess disabilities associated with mental health problems (Statistics Canada, 2003). Questions concerning mental health and mental illness were influenced by questions composing the World Mental Health Composite International Diagnostic Interview Instrument (Statistics Canada, 2003). The CCHS is the first Canadian survey to include a measure of psychological well-being, coping behaviours, and self-rated mental health.

The survey excludes Canadians living on Aboriginal reserves and on Crown Lands, residents of health care institutions, residents of the territories, full-time members of the Canadian Armed Forces and residents of remote areas. The survey over sampled youths ages 15 to 24, and seniors (65 or older) to ensure adequate sample sizes for these age groups (Statistics Canada, 2003). This analysis is limited to adults aged 18 years and older due to the measurement of variables of interest which are only available for respondents over the age of 18. The full sample was composed of approximately 37,000 individuals with a response rate of 77% (Statistics Canada, 2003).

Measurement and Variable Selection

Following from the description of positive mental health by Kovess-Masfety et al (2005), indicators of positive mental health for this study include psychological well-being, coping ability, life satisfaction, sense of coherence, sense of mastery, happiness and self esteem. This analysis will use multiple indicators rather than a single indicator as positive mental health is a combination of different positive states of being. Using a single measure of well-being or happiness does not capture the full concept of positive mental health as it is more than a state of general happiness or well-being. Positive mental health is a state of being which combines feelings of happiness and wellbeing with a sense of control over life chances and ability to handle challenges in daily living (Kovess-Masfety et al., 2005; PHAC, 2006). In this study, positive mental health is comprised of three states: positive affect, resilience, and quality of life, which are further broken down into seven measurable indicators, including happiness, self-esteem, sense of coherence, sense of mastery, life satisfaction, coping ability and psychological well-being (Kovess-Masfety et al 2005).

The NPHS measures four indicators of positive mental health, happiness, self-esteem, mastery and sense of coherence, while the CCHS measures three indicators of positive mental health, psychological well-being, life satisfaction and coping ability. The variables associated with material,

behavioural and psycho-social health inequality theoretical frameworks are consistently measured across both surveys. Detailed descriptions of how the indicators of positive mental health, as well as the indicators of the health inequality theoretical frameworks were measured in the NPHS and CCHS can be found in Appendix A.

Measures of Positive Mental health

Positive mental health is assessed through seven indicators, happiness, self esteem, mastery, sense of coherence, psychological well-being, life satisfaction and coping ability. Using data from the NPHS, happiness is measured along a likert scale where respondents are asked to rate their degree of happiness from very happy to unhappy with little interest in life. Respondents are considered to have high happiness if they were very happy and interested in life. Self esteem is measured in the NPHS through responses to questions assessing how the respondent feels about themselves. Respondents with scores of 17 or less are considered to have low self esteem, corresponding to an average score of agree per item (Chen & Millar, 1998; Shields & Shooshari, 2001). Sense of coherence was measured through questions assessing the occurrence of positive feelings about the self and life. A score of 70 or higher indicates a high sense of coherence (Shields & Martel, 2006; Martel, Bélanger, Berthelot & Carrière, 2005). Mastery is measured through questions assessing the level of control respondents feel over their life. Respondents with a score of 20 or greater were considered to have high mastery (Wilkins & Beaudet, 1998; Chen & Millar, 2001).

Using data from the CCHS, coping ability is measured on a likert scale where respondents are asked to rate their ability to cope with day to day demands from excellent to poor. Those who reported an excellent and very good ability to handle day to day demands were considered to have good coping ability (CIHI, 2009). Life satisfaction is also measured on a likert scale where respondents were asked to rate their level of satisfaction with their life from very satisfied to very dissatisfied. Respondents

reporting “very satisfied” were considered to have high life satisfaction. Psychological well-being was measured through responses to twenty five questions assessing positive feelings toward life over the past month. Consistent with the other measures of positive mental health, scores at or above the 75th percentile indicate high psychological well-being, corresponding with an average response pattern of almost always and frequently to most questions.

Demographic control variables

Gender, education, age and health status were included as control variables for this analysis as previous research has shown that health, mental health and mental illness vary by gender, age, health and education. Control variables were included in the analysis to prevent possible confounding relationships. Gender is an important variable to control for as men have been consistently found to have lower rates of mental illness than women (Denton et al., 2004). Education is also an important control variable as those with more education have been found to have lower likelihoods of mental ill health (Bartley, 2004). For this analysis education has been coded into four categories, less than high school, high school education, some postsecondary education and university education or higher. Age is also an importantly identified control variable. Mental health and well-being have been found to vary by age, with young adults and older adults experiencing the highest levels of well-being and mental health, and middle aged individuals experiencing the lowest levels (Easterlin, 2006). Age has been grouped into four categories following from this pattern; ages 18 to 35, ages 36 to 55, ages 56 to 69 and over 70. Additionally physical health is also important to control for as physical health and mental health are closely connected, as mental health is often influenced by physical health (Raphael et al., 2005). In these analyses self rated health is used as a proxy for physical health. In the NPHS and CCHS respondents were asked to rate their health as excellent, very good, good, poor or fair.

Analytical Techniques

Logistic regression analysis was used to examine the relationships between positive mental health indicators and variables associated with material, lifestyle behaviour and psycho-social health inequality. Logistic regression analysis is used to establish a statistical model with a dichotomous dependent variable. The positive mental health variables, as the dependent variables in the analyses, have been coded into dichotomous variables of high and low. This is because continuous measures of positive mental health indicators have skewed distributions with the majority of respondents concentrated at one end of the scale. The skewed distributions of the measures could potentially distort significant tests of statistical estimates in the statistical models. To overcome issues associated with skewed distributions, continuous variables were re-coded into dichotomous variables; cases at the 75th percentile are grouped into a category, the rest into another.

The regression coefficients in logistic regression, unlike linear regression, are interpreted as odds ratios, “that is, the ratio of the probability that an individual is a case to the probability that the person is a noncase” (Cohen, Cohen, West, & Aiken, 2003). The goal of logistic regression analysis is to determine a good model to describe the relationship between the dependent variable and various independent variables. Stepwise regression analysis was used to determine the best predictors for inclusion in a final model, as the procedure creates a model based on the independent variables contribution to improving the amount of variance explained in the dependent variable by the model. *Stepwise regression analysis selects predictors to enter into the model at each stage that makes the largest contribution to R², and stops selecting predictors for the model when no other predictors are statistically significant (Cohen et al., 2003).*

Separate logistic regression analyses are conducted for each theoretical framework of health inequality while controlling for confounders to examine the relationship of material, behavioural and psycho-social health inequalities with positive mental health. Each indicator of positive mental health

will also be regressed individually with each measure of the health inequality theoretical frameworks to examine the individual relationship between measures of health inequality and positive mental health variables. Each logistic regression analysis will also be conducted for males and females to uncover gender differences in positive mental health and health disparities.

Unadjusted and adjusted odds ratios for all analyses will be obtained using the bootvar program and bootstrap weights developed by Statistics Canada. The bootstrap technique is used in analyses to account for survey design effects. Using the bootstrap methods, which involves drawing several different subsamples from the full sample, the bootvar program estimates variances, ratios, percentiles, logistic regression models, and tests of independence (Statistics Canada, 2005). For this analysis five hundred replicates are used to estimate the variance, odds ratios, tests of significance and confidence intervals.

Chapter 3 Positive Mental Health and Material Inequality

Model Description, Research Questions and Hypotheses

This chapter will examine the relationship between material measures of deprivation and positive mental health. Measures of material inequality assess poverty through access to material goods that allow individuals to meet their basic needs (Bartley, 2004). Common measures of material deprivation include access to food, ownership of a vehicle or home, ability to afford participation in social and leisure activities, housing conditions, work conditions, occupational prestige, neighbourhood characteristics and subjective feelings of poverty (Bartley, 2004; Boarini & d'Ercole, 2006). For this analysis, material deprivation is measured through living arrangement, occupation, and financial stress. Models using data from the NPHS (happiness, sense of mastery, sense of coherence, and self esteem) will further measure material deprivation through neighbourhood stress and home ownership.

Due to the strong relationship between physical health and positive mental health it is hypothesized that conditions associated with material deprivation will lower the likelihood of positive mental health. Following from previous physical health research, those who experience conditions of material deprivation are more likely to experience poor physical health than those who do not experience conditions of material deprivation (Bartley, 2004; Boarini & d'Ercole, 2006). Subsequently, it is expected that those who live alone or in single parent households, who experience financial and neighbourhood stress, who rent and are employed in blue collar occupations will have lower probabilities of across the positive mental health indicators than those who live with a partner and children, are employed in white collar occupations, who do not have financial stress, or neighbourhood stress and who own their home.

Logistic regression analyses are used to test the research hypothesis. Measures of material inequality will be regressed separately with each indicator of positive mental health. Reference categories for each material measure were chosen if the group was thought to have the greatest

probability of having positive mental health. Subsequently, living in two parent families with children, white collar occupations, no financial stress, home ownership and no neighbourhood stress were selected as reference categories to serve as the comparative group to all other categories.

For this analysis respondents were coded as living alone, with a partner or spouse without children, with a partner and children, in single parent households, or in other household types.

Occupational groups were coded into white collar and blue collar categories for this analysis.

Management, professional, and technologist or administrative occupations were considered to be white collar occupations, while occupations in sales and service, trades, and primary or manufacturing industry were classified as blue collar occupations (Shields, 2006). Homeownership was measured through self reports of a family member owning the current dwelling. Neighbourhood stress was derived from self reports of wanting to move but cannot, the current neighbourhood being too noisy and polluted, and friends in the neighbourhood as a bad influence. Financial stress is measured as stress arising from not having enough money to buy goods that are needed. Financial stress is often considered an element of psycho-social inequality, however, this analysis includes financial stress as a measure of material inequality. Following from previous research by Boarini and d'Ercole (2006), financial stress was included as a measure of material inequality as it can indicate an inability to purchase needed material goods. Furthermore it can capture subjective perceptions of economic conditions, an important component of material deprivation (Boarini & d'Ercole, 2006). For more information on how these variables were measured and coded please see Appendix A.

Findings and Discussion

Table 3.1 Logistic Regression Analysis of Material Deprivation Measures with the Positive Mental Health Indicators

Material measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Living arrangement														
Partner & children	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Live alone	0.69**	0.65**	0.85**	1.26**	1.20**	1.47**	1.12	0.92	0.81**	0.93	0.64**	0.56**	1.03	0.84**
Partner no children	1.09	1.07	0.92	1.18**	0.93	1.09	1.58**	1.21*	0.98	1.08	1.27**	1.12**	1.49**	1.15**
Single parent	0.60**	0.69**	0.72**	0.91	1.08	1.54	0.64**	0.72**	0.73**	0.83**	0.48**	0.49**	0.79**	0.81*
Other family	0.68**	0.84	0.66**	0.77**	0.62**	0.68**	0.75**	0.75*	0.87*	0.97	0.74**	0.74**	0.91	0.90
Financial Stress														
No	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Yes	0.52**	0.70**	0.68**	0.77**	1.48**	1.68**	0.49**	0.70**	0.81**	0.83**	0.52**	0.58**	0.61**	0.67**
Occupation														
White Collar	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Blue Collar	0.73**	0.91	0.69**	0.81**	0.72**	0.81**	0.81**	0.90	0.74**	0.85**	0.80**	0.91*	1.00	1.10*
Neighbourhood stress														
No	1	1	1	1	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
Yes	0.43**	0.55**	0.67**	0.75**	1.13*	1.12	0.40**	0.53**	n/a	n/a	n/a	n/a	n/a	n/a
Home ownership														
Yes	1	1	1	1	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
No	0.63**	0.84**	0.77**	0.87**	0.86**	0.80**	0.66**	0.87	n/a	n/a	n/a	n/a	n/a	n/a
Gender														
Male	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Female	1.07	1.02	0.95	1.01	1.17**	1.25**	1.01	0.98	0.87**	0.91**	1.02	1.05	0.93*	0.96

Material measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.86*	0.98	0.80**	0.90	0.82**	0.85	0.80**	0.90	0.81**	0.86*	0.86**	0.92	0.79**	0.87*
High school	0.83**	0.94	0.73**	0.85*	0.83*	0.89	1.02	1.11	0.78**	0.85**	0.84**	0.88**	1.03	1.04
Less than high school	0.66**	0.88	0.48**	0.70**	0.65**	0.80*	1.08	1.03	0.58**	0.70**	0.8**	0.82**	1.06	0.93
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.66**	0.59**	0.59**	0.69**	0.92	0.89	0.72**	0.66**	1.20**	1.14**	0.89**	0.88**	0.80**	0.82**
Poor Health	0.33**	0.31**	0.30**	0.41**	0.43**	0.42**	0.60**	0.46**	0.53**	0.54**	0.52**	0.52**	0.60**	0.58**
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.08	0.83*	1.19*	1.03	1.16	0.93	0.73**	0.70**	1.33**	1.06	0.99	0.83**	1.27**	1.14*
Age 36-55	1.03	0.64**	1.55**	1.14	1.28**	0.75**	0.49**	0.53**	1.40**	0.88	0.78**	0.61**	0.75**	0.64**
Age 18-35	0.94	0.61**	1.76**	1.40**	1.22*	0.72**	0.33**	0.40**	1.32**	0.83**	0.73**	0.59**	0.51**	0.44**

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Material Deprivation Measures and the Positive Mental Health Indicator Happiness

Analysis of data from the National Population Health Survey demonstrates that material deprivation has an important impact on the positive mental health indicator happiness. The material deprivation measures living alone, living in a single parent family, financial stress, neighbourhood stress and home ownership were found to have statistically significant lower odds of happiness when adjusted for gender, education, health status, and age. For instance, respondents who experience financial stress were 30% less likely to have high happiness than respondents who do not experience financial stress after adjustment for all material inequality and demographic measures. Similarly the odds of high happiness were 45% lower for respondents who experience neighbourhood stress than the odds of those who do not have neighbourhood stress after adjustment. Additionally, respondents who rent their homes were 16% less likely to have high happiness than respondents who own. Likewise, Individuals who live alone were 31% less likely, and respondents living in single parent homes were 40% less likely to have high happiness than respondents who live with a partner and children after adjustment for all factors in the model.

While employment in blue collar occupations was not found to have a significant impact on the positive mental health indicator happiness when all contributing factors were included in the model, when unadjusted for other contributing factors employment in blue collar occupations did significantly lower the odds of happiness. When unadjusted, respondents employed in blue collar occupations were 27% less likely than respondents employed in white collar occupations to have high levels of happiness. This relationship however failed to remain statistically significant when other material measures were entered into the model.

While gender and education were not found to be significantly associated with the positive mental health indicator happiness, this analysis found the odds of happiness to increase with age. Individuals between the ages of 18 to 35, 36 to 55, and 56 to 69 had significantly lower likelihoods of

high happiness than individuals who are over the age of 70 when all contributing factors were included in the model. Respondents between the ages of 18 to 35 were 39% less likely, while respondents between the ages of 36 to 55 were 36% less likely, and respondents between the ages of 56 to 69 were 17% less likely to have high happiness than individuals older than 70, after adjustment for all factors in the model. Health status was also found to be associated with happiness, where respondents with good health and poor health had significantly lower odds of having high happiness than individuals with excellent health. Respondents in good physical health were 41% less likely, while respondents in poor physical health were 69% less likely to have high happiness than those in excellent health after all contributing factors were included in the model.

When the impact of material deprivation measures on the positive mental health indicator happiness was analyzed separately for gender it was found that both male and female respondents who experience material deprivation had significant low odds ratios of happiness.¹ For instance females who live alone were 23%, and females who live in single parent homes were 28% less likely to experience high happiness than females who live with a partner and children when all contributing factors were entered into the model. Females who experience financial stress were also 37% less likely to have high happiness than females who do not experience financial stress. Similarly, females who experience stress over where they live were found to be 49% less likely to have high happiness than females who do not experience stress over their living environment after all contributing factors were entered into the model.

Males were also found to have low odds ratios of happiness across all material measures. For instance the odds of high happiness were 45% lower for males who live alone, and 33% lower for males who live in a single parent households than the odds of males who live with a partner and children after all contributing factors were included in the model. Similarly males who experience financial stress were

¹ Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

21% less likely than males who do not experience financial stress to have high happiness. Males who experience stress toward their living environment were 40% less likely to have high happiness than males who do not experience stress toward their living environment, and males who rent their homes were 22% less likely to have high happiness than males who own their homes after adjustment for all contributing factors.

While both males and females were found to have significant low odds of happiness across the measures of material deprivation the results suggest that material inequality impacts happiness differently for males and females. For instance, while the material inequality measure home ownership was not found to have a significant relationship with happiness for females, male renters were found to have significantly lower odds of happiness than males who own their homes. This finding suggests that renting one's home may be more disadvantageous to males' happiness than females. Similarly, males who live alone and in single parent households were found to have lower odds of happiness than females who live alone and in single parent households, suggesting that living in these arrangements may be more detrimental to males' happiness than females. In contrast financial stress and neighbourhood stress may have a greater negative impact on females' happiness than males. The analyses found that the odds of happiness for females that experience financial stress and neighbourhood stress were lower than the odds for males who experience the same stress.

Material Deprivation Measures and the Positive Mental Health Indicator Mastery

These analyses demonstrate that material inequality also has a significant relationship with the positive mental health indicator mastery, a sense of control over one's life. The material deprivation measures financial stress, home ownership, occupation and neighbourhood stress have statistically significant low odds of mastery when adjusted for all material inequality and demographic measures. For instance the odds of high mastery were 23% lower for respondents with financial stress than the

odds of those without financial stress after adjustment. Likewise, those who experience stress over their neighbourhoods were 25% less likely to have high mastery than respondents who do not experience such stress after adjustment. Similarly, respondents who rent were 13% less likely to have a high sense of mastery than respondents who own their homes when all contributing factors are included in the model. Furthermore, the odds of high mastery were 19% lower for those who are employed in blue collar occupations than the odds of those who are employed in white collar occupations when adjusted for gender, education, health status and age.

Contrary to the research hypothesis, the material deprivation measure living alone was found to have a positive relationship with mastery when adjusted for all other factors in the model. Those who live alone were found to be 26% more likely than respondents who live with a partner and children to have a high sense of mastery after all contributing factors were included in the model. However, when unadjusted for other factors in the model, living alone was found to have significant low odds of mastery. When unadjusted, respondents who live alone were found to be 15% less likely to have high mastery than those who live with a partner and children.

Education, health status and age were found to have significant associations with sense of mastery when unadjusted for other contributing factors in the model. Respondents between the ages of 18 to 35, 36 to 55, and 56 to 65 were all found to have significantly higher odds of mastery than individuals aged 70 and over. However, this relationship did not remain when all factors were included in the model. When adjusted for all contributing factors the only age group to retain a significant relationship with mastery was those between the ages of 18 to 35. In contrast, sense of mastery was found to increase with education. All education groups were found to have significantly lower odds of high mastery than respondents who completed a university degree. The relationship with physical health and mastery remained significant when adjusted for all contributing factors in the model. Respondents with poor physical health were 59% less likely to have a high sense of mastery, and

respondents with good physical health were 31% less likely to have a high sense of mastery than those with excellent health.

When the association of material inequality with the positive mental health indicator mastery was analyzed separately for gender, differences between males and females became apparent.² While both males and females with financial stress and neighbourhood stress experienced significant low odds of mastery, employment in blue collar occupations and home ownership contributed to significant low odds of mastery for males only. Living in a single parent home and living alone were not found to be significantly associated with mastery for either males or females.

While both males and females who experience financial stress and stress toward their neighbourhoods were found to have significant low odds of mastery, females were found to have lower odds of mastery than males. The odds of mastery were 33% lower for females who experience neighbourhood stress than the odds of females who do not experience such stress, while the odds of mastery for males who experience neighbourhood stress were only 17% lower than the odds of males who do not experience this type of stress. Similarly the odds of high mastery were 31% lower for females who experience financial stress than the odds of females who do not experience this type of stress, while the odds of mastery for males who experience financial stress were only 17% lower than the odds of males who do not experience such stress. These results indicate that experiencing neighbourhood and financial stress may be more disadvantageous to the positive mental health of females than males. In contrast, the odds of high mastery were significantly lower for males who are employed in blue collar occupations and who rent their homes than for females. This finding suggests that employment in blue collar occupations and renting may be more disadvantageous to males' positive mental health than females.

² Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

Material Deprivation Measures and the Positive Mental Health Indicator Self-Esteem

Adding further support to the research hypothesis, analysis of data from the National Population Health Survey demonstrates material measures of deprivation have significant relationships with the positive mental health indicator self-esteem. Home ownership, living alone, financial stress and occupation were found to have statistically significant relationships with self-esteem when all material inequality and demographic variables are included in the model. However, occupation and home ownership were the only material measures found to have significant low odds of self-esteem. The odds of high self-esteem were 19% lower for respondents working in blue collar occupations than the odds of those employed in white collar occupations after adjustment for all factors in the model. Similarly the odds of high self-esteem are 20% lower for respondents who rent their homes than the odds of those who own their home when adjusted for all contributing factors.

Living alone and financial stress had the opposite relationship with self-esteem. Respondents who live alone were 47% more likely to experience high self-esteem than those who live with a partner and children when adjusted for all contributing factors. Likewise respondents who experience financial stress were 68% more likely to have high self-esteem than those without financial stress after all contributing factors are included in the model.

Education was found to have a significant relationship with self-esteem, however, this relationship was not maintained when other contributing factors were included in the model. When unadjusted, respondents with less than a high school education, a high school education and some university education were found to have significant low odds of self-esteem. When all contributing factors were included in the model, the only education group to maintain a significant relationship with self-esteem was those with an education of less than high school. Similarly, having good and poor physical health was found to have a significant relationship with self-esteem. Respondents in good physical health and poor physical health had lower odds of self-esteem than those who are in excellent

physical health when unadjusted for other contributing factors in the model. However, when adjusted for all material inequality measures only respondents in poor health maintained significant low odds of self-esteem. Age was also found to have a significant relationship with self-esteem when unadjusted and adjusted for all factors in the model. When unadjusted, respondents between the ages of 18 to 35 and 36 to 55 were found to have significantly higher odds of self esteem than respondents aged 70 and older. However, when all factors were included in the model both age groups were found to have significant low odds of self-esteem. Respondents aged 18 to 35 were 28% less likely, and respondents aged 36 to 55 were 25% less likely to have high self-esteem than those aged 70 and older.

When the relationship between material deprivation and self-esteem was analyzed separately for gender, differences between males and females were found.³ While females who experience neighbourhood stress were found to have significant low odds of self-esteem, males who experience the same stress were found to have significant high odds of self-esteem. Similarly, females employed in blue collar occupations were found to have significant low odds of self-esteem, while employment in blue collar occupations was not found to be significantly associated with self-esteem for males. Conversely, the odds of high self-esteem were significantly lower for male renters than for males who own their homes, while renting ones home was not found to be significantly associated with self-esteem for females. Conflicting with the research hypothesis, both males and females who live alone and experience financial stress were found to have significantly higher odds of self-esteem than males and females who live with a partner and children and do not have financial stress. While living in a single parent household for males actually increased the odds of high self-esteem, the relationship between living in a single parent household and self-esteem was not significant for females. These results suggest, consistent with previous findings for the positive mental health indicators happiness and

³ Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

mastery, that neighbourhood stress has a greater negative impact on females' self-esteem than males.

Similarly renting ones home is more disadvantageous for male's self-esteem than females.

Material Deprivation Measures and the Positive Mental Health Indicator Sense of Coherence

Further analysis of the National Population Health Survey also finds that material deprivation has a significant relationship with the positive mental health indicator sense of coherence. The material deprivation indicators single parent households, financial stress and neighbourhood stress were found to have significant low odds of sense of coherence when all material inequality and demographic variables are included in the model. For instance the odds of having a high sense of coherence are 28% lower for respondents living in single parent households than the odds of those who live with a partner and children after adjustment. Similarly respondents with financial stress have odds 30% lower of experiencing a high sense of coherence than the odds of respondents who do not have financial stress, and the odds of having a high sense of coherence are 47% lower for those who experience neighbourhood stress than respondents who do not feel stress over their neighbourhoods after adjustment.

Home ownership and employment in blue collar occupations were not found to not have significant relationships with sense of coherence when all contributing factors were included in the model. However, when unadjusted, these material measures have significant relationships with sense of coherence. When unadjusted, employment in blue collar occupations, compared to employment in white collar occupations, lowers the likelihood of a high sense of coherence by 19%. Similarly, when unadjusted, renting decreases the likelihood of experiencing a high sense of coherence by 34% when compared to those who rent their homes. These relationships however, fail to remain significant when adjusted for all factors in the model.

While gender and education were not found to have a significant relationship with sense of coherence when all measures of material inequality were included in the model, physical health status and age were found to maintain significant relationships with sense of coherence when adjusted for all material inequality measures. For instance, the odds of a high sense of coherence were 54% lower for respondents in poor physical health and 34% lower for respondents in good physical health than the odds of respondents who reported excellent health when adjusted for all factors in the model. Similarly, likelihoods of high sense of coherence seem to improve with age. Respondents between the ages of 18 to 35 were 60% less likely to have a high sense of coherence than respondents aged 70 and over, while respondents between the ages of 35 and 55 were 47% less likely, and those between the ages of 56 and 59 were 30% less likely to have a high sense of coherence than respondents aged 70 and older.

When analyzed separately by gender, material deprivation was found to have different associations with sense of coherence for males and females.⁴ For instance while the material deprivation measure living alone did not have a significant relationship for either gender, living in a single parent home was found to significantly lower the odds of sense of coherence for females only. When unadjusted, employment in blue collar occupations contributed to lower odds of sense of coherence for females only. The odds of a high sense of coherence were 26% lower for females employed in blue collar occupations than the odds of females employed in white collar occupations. However this relationship was not maintained when all contributing factors were included in the model. While both males and females with financial stress had significant low odds of sense of coherence, females with financial stress had lower odds of sense of coherence than males. The odds of a high sense of coherence were 36% lower for females with financial stress than the odds of females without such stress, while males with financial stress were only 25% less likely to have a high sense of coherence than males without financial stress after all contributing factors are included in the model. Both males and

⁴ Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

females reporting neighbourhood stress were found to have lower odds of sense of coherence.

However, males with neighbourhood stress were found to have lower odds of high sense of coherence than females when adjusted for all contributing factors. These results suggest that while employment and living alone are not significant for males and females sense of coherence, stress over finances and where one lives has a significant impact on sense of coherence. Contrary to the positive mental health indicators happiness, mastery and self esteem, neighbourhood stress seems to have a larger impact on males' sense of coherence than females' sense of coherence.

Material Deprivation Measures and the Positive Mental Health Indicator Coping Ability

Demonstrating support for the research hypothesis, analysis of data from the Canadian Community Health Survey found significant relationships with material measures of deprivation and the positive mental health indicator coping ability. Those who live in single parent homes, who experience financial stress, and who are employed in blue collar occupations were found to be less likely to have good coping skills to solve day to day demands than respondents who live with a partner and children, who do not experience financial stress and who are employed in white collar occupations when all material and demographic variables are included in the model. For instance, the odds of having a high ability to cope with day to day demands were 17% lower for respondents living in single parent homes than the odds of those who live with a partner and children. Similarly respondents with financial stress were 17% less likely to have a high coping ability than those who do not have financial stress, and the odds of having high coping ability were 15% lower for respondents employed in blue collar occupations than the odds of respondents employed in white collar occupations. While living alone was not found to have a significant relationship with coping ability when adjusted for all contributing factors in the model, when unadjusted, living alone was found to have significantly lower odds of coping ability than the odds of those who live with a partner and children. When unadjusted, respondents who live alone were 19%

less likely to have a high ability to cope with day to day demands than individuals who live with a partner and children.

Education, physical health and age were all found to have significant relationships with coping ability when unadjusted and adjusted for contributing factors in the model. For instance, the likelihood of a good ability to cope was highest among older age groups. However, respondents between the ages of 18 to 35 were the only age group to maintain a significant relationship with coping ability when all contributing factors were included into the model. Respondents between the ages of 18 to 35 were found to be 14% less likely to have good coping abilities than respondents aged 70 and over. Respondents in excellent physical health were more likely to have good coping ability than those in poor health. However, respondents in good health were found to have significantly higher odds of coping ability than respondents in excellent health. A good ability to cope with day to day demands tended to increase with education as respondents with a university education demonstrated the highest odds. For instance, the odds of good coping ability were 14% lower for respondents with some university education than the odds of respondents with a university education, while those with a high school education were 15% less likely, and respondents with an education of less than a high school were 30% less likely to have a good ability to cope with day to day demands than respondents with a university education after adjustment for all contributing factors in the model.

Similar patterns were found between males and females when the association of material deprivation measures with the positive mental health indicator coping ability were analyzed separately for gender.⁵ While both males and females who experience financial stress have low odds of coping ability, males with financial stress have lower odds of coping ability than females who experience the same stress. Similarly, males employed in blue collar occupations have lower odds of good coping ability than the odds of females employed in blue collar occupations. While living alone or in a single parent

⁵ Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

household did not have a significant relationship with coping ability for males, females who live in single parent households were 15% less likely to have a high ability to cope with day to day demands than females who live with a partner and children. These results suggest that employment in blue collar occupations and financial stress may have a greater negative impact on males coping ability than females coping ability. In contrast living in a single parent environment has a greater negative impact on females coping ability than males.

Material Deprivation Measures and the Positive Mental Health Indicator Life Satisfaction

Analysis of data from the Canadian Community Health Survey further demonstrates support for the research hypothesis. The material deprivation measures living alone or in single parent household, financial stress and employment in blue collar occupations were all found to have significant low odds of life satisfaction when all material inequality and demographic variables were included in the model. For instance, the odds of high life satisfaction were 44% lower for respondents living alone, and 51% lower for those living in single parent households than the odds of respondents who live with a partner and children, after adjustment for gender, age, health status and education. Similarly the odds of high life satisfaction were 47% lower for respondents who experience financial stress than those who do not experience such stress. While the odds of high life satisfaction were only 9% lower for those who are employed in blue collar occupations than the odds of those employed in white collar occupations after adjustment for all contributing factors, when unadjusted, employment in blue collar occupations had odds of high life satisfaction 20% lower than the odds of white collar employees.

Gender, education, physical health status and age were found to have significant relationships with life satisfaction when unadjusted and adjusted for other contributing factors in the model. The odds of high life satisfaction were just 5% higher for females than for males when all contributing factors were included in the model. Respondents with high school and less than high school educations were

found to have significantly lower odds of life satisfaction than respondents with university educations. Respondents with some university education were found to have significantly lower odds of life satisfaction than their university educated counterparts when unadjusted, however, when adjusted for other contributing factors in the model this relationship failed to remain significant.

Consistent with previous health and well-being research, the likelihood of life satisfaction increased with age and good physical health. For instance, when adjusted, the odds of high life satisfaction were 48% lower for respondents with poor physical health and 12% lower for respondents with good physical health, than the odds of respondents with excellent health. Similarly, the odds of high life satisfaction were 41% lower for those between the ages of 18 to 35, while the odds were 39% lower for respondents aged 36 to 55, and only 17% lower for those between the ages of 56 to 69 than the odds of those aged 70 and over when all contributing factors were included in the model.

Similar patterns emerged between males and females when the relationship between material deprivation measures and life satisfaction were analyzed separately for gender.⁶ Both males and females were found to have low likelihoods of high life satisfaction if they live alone, live in a single parent household, and experience financial stress. However, females experiencing financial stress were found to have lower odds of life satisfaction than males. The odds of high life satisfaction were 50% lower for females who experience financial stress than the odds of females who do not experience such stress, while the odds of high life satisfaction were 35% lower for males who experience financial stress than the odds of males who do not experience the same stress after adjustment for all factors in the model. The same pattern is seen with the material measure living in a single parent household. For instance, when adjusted, the odds of high life satisfaction were 54% lower for females who live in single parent households than the odds of females who live with a partner and children, while males who live in single parent households were 43% less likely to have high life satisfaction than males who live with a partner

⁶ Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

and children. The material measure employment in blue collar occupations was found to have a significant relationship with life satisfaction for males only. The odds of high life satisfaction were 13% lower for males employed in blue collar occupations than the odds of males employed in white collar occupations after adjustment for all contributing factors. Females employed in blue collar occupations were only found to have significant low odds of life satisfaction when no other contributing factors were included in the model.

These results suggest that material deprivation measures have a negative impact on the positive mental health indicator life satisfaction, however, the impact is not experienced equally by males and females. Employment in blue collar occupations negatively impacts life satisfaction for males, but not for females. However, females who live alone or in single parent households, and with financial stress, were found to have lower likelihoods of life satisfaction than males. These findings suggest that financial stress, living alone and living in a single parent household may have a greater negative impact on the positive mental health of females than males.

Material Deprivation Measures and the Positive Mental Health Indicator Psychological Well-Being

Analysis of data from the Canadian Community Health Survey also demonstrates that material deprivation has a significant relationship with psychological well-being, adding support to the research hypothesis. Living alone or in a single parent household, financial stress and employment in blue collar occupations were all found to have significant relationships with psychological well-being when all material inequality and demographic variables were included in the model.

While all four measures of material deprivation have significant relationships with psychological well-being, only living alone, living in a single parent household and financial stress had significant low odds of psychological well-being. While living alone did not have a significant relationship with psychological well-being when unadjusted, when all material inequality measures were included in the

model living alone became a significant predictor of psychological well-being. The odds of high psychological well-being were 16% lower for respondents living alone and 19% lower for those living in single parent households than the odds of respondents who live with a partner and children after adjustment for all factors in the model. Similarly the likelihood of high psychological well-being was 33% lower for those who have financial stress than for those who do not have this stress. Employment in blue collar occupations, contrary to the research hypothesis, was found to increase the odds of psychological well-being by 10% when other contributing factors were included in the model.

Physical health status and age were found to have significant relationships with psychological well-being, both when unadjusted and adjusted for contributing factors. While gender was not found to have a significant relationship with psychological well-being when adjusted for all factors in the model, when unadjusted the odds of psychological well-being were 7% lower for females than males. While respondents with high school and less than high school educations were not found to have significant relationships with psychological well-being, respondents with some university education were found to have significantly lower odds of psychological well-being than respondents with a university education when adjusted for all contributing factors. The odds of high psychological well-being were 13% lower for respondents who had some university education than the odds of respondents with a university education after adjustment for all factors in the model. The odds of high psychological well-being were also found to increase with health. For instance, the odds of high psychological well-being were 42% lower for respondents in poor physical health and only 18% lower for those in good health than the odds of respondents in excellent health when all contributing factors are in the model.

While the odds of high psychological well-being were found to be 14% higher for respondents aged 56 to 69 than the odds of respondents aged 70 years and older when adjusted for all contributing factors, the likelihoods of psychological well-being for the two youngest age cohorts were significantly lower than the odds of those aged 70 and over. For instance, the odds of high psychological well-being

were 56% lower for respondents between the ages of 18 to 35, and 36% lower for respondents aged 36 to 55 than the odds of high psychological well-being for respondents 70 years and older when adjusted for all contributing factors in the model.

Similar patterns also emerged between males and females when the relationship of material measures of health inequality with psychological well-being was analyzed separately for gender.⁷ Both males and females were found to have low likelihoods of high psychological well-being if they experienced financial stress, while neither gender was found to have significant low odds of high psychological well-being if they were employed in blue collar occupations. Unlike other positive mental health indicators the odds of psychological well-being were quite similar for both males and females who experience financial stress. The odds of high psychological well-being were 36% lower for females with financial stress than the odds of females who do not have such stress, and males with financial stress were only 31% less likely to have high psychological well-being than males who do not have financial stress when all contributing factors are included in the model.

Differences between males and females did occur with the material measures living alone and living in a single parent household. Females who live in single parent households were found to have significant low odds of high psychological well-being while males did not, and males living alone were found to have significantly low odds of high psychological well-being while females did not. These results suggest that while employment in blue collar occupations may not be important to either male or females psychological well-being, the measures financial stress, living in a single parent household and living alone are significantly associated with poor psychological well-being. Experiencing financial stress tends to impact males and females likelihoods of psychological well-being almost equally, while living alone significantly lowers the odds of males' psychological well-being, and living in a single parent household significantly lowers the likelihood of females' psychological well-being.

⁷ Results for this analysis can be found in tables 9.1 and 9.2 in Appendix B.

Discussion

Material deprivation indicators financial stress, neighbourhood stress, home ownership, occupation, and living alone or in single parent households have been identified as circumstances which put individuals at a greater likelihood of experiencing poor health outcomes (Boarini & d'Ercole, 2006; Bartley, 2004). These analyses have demonstrated that measures of material deprivation contribute to lower likelihoods across the positive mental health indicators measured in the NPHS and the CCHS adding a further poor health outcome material deprivation is associated with to the literature, poor positive mental health.

Financial Stress

These analyses have linked financial stress to poor positive mental health, demonstrating support for the research hypothesis. Respondents from the NPHS and the CCHS who reported financial stress were found to have significantly lower likelihoods across six positive mental health indicators than respondents who do not experience such stress; happiness, mastery, sense of coherence, coping ability, life satisfaction and psychological well-being. These findings are similar to those by Starrin et al (2008) who found that increased financial stress was associated with a reduction in psychological well-being, a central component of positive mental health. Starrin et al (2008) argue financial stress coupled with shame, which in most cases is caused by financial stress, is responsible for increased likelihoods of reduced psychological well-being. Populations that are more likely to experience financial stress are disproportionately from low income groups, who are also more likely to be exposed to various physical health risks and stressful situations compared to other population groups (Boarini & d'Ercole, 2006; Bartley 2004). In particular women and unskilled workers had greater reductions in psychological well-being when exposed to financial stress (Starrin et al., 2008). According to Starrin et al (2008) the proportion of unskilled workers exposed to financial stress with reduced psychological well-being was

twice as large as the proportion of upper ranking salaried employees. Furthermore, reductions in psychological wellbeing were 7 to 12 times higher for women exposed to financial stress and shaming experiences compared to women with little financial stress (Starrin et al., 2008: 292).

When examined separately for gender, financial stress tended to have a greater negative influence over females positive mental health than males. Both males and females with financial stress were found to have significant low likelihoods across the same positive mental health indicators, however, females were consistently found to have lower likelihoods than males across the positive mental health indicators, except one indicator, coping ability. Consistent with Starrin et al (2008), who found that women in particular had greater reductions in psychological well-being when exposed to financial stress, these results further demonstrate that while positive mental health is negatively impacted by financial stress for both genders, females' positive mental health may be impacted to a greater extent by financial stress than males.

Neighbourhood stress and Home Ownership

Similar to previous research that has linked renting and stressful or poor living conditions to poor health outcomes, this study has also linked stress over living location and renting ones home to low positive mental health. Supporting the research hypothesis, these analyses demonstrate that individuals who experience stress over their neighbourhoods were significantly less likely than those who do not experience stress over their neighbourhoods to have high happiness, a high sense of mastery and a high sense of coherence. Similarly those who rent their homes were found to have significantly lower likelihoods than those who own their homes across three of four indications of positive mental health measured in the NPHS; happiness, mastery, and self esteem.

These results are consistent with physical health literature where home ownership and stress over living location are linked to poor physical health, which was expected due to the strong link

between physical health and positive mental health (Bernard et al, 2007; Bartley 2004; Stafford and McCarthy, 2006). According to Stafford and McCarthy (2006), the impact of stressful or poor quality neighbourhoods on mental health is fairly immediate. Neighbourhoods are argued to impact positive mental health through differences in the distribution of resources, as neighbourhoods characterized by low economic resources have a greater negative impact on mental health than affluent neighbourhoods (Bernard et al., 2007). Stressful neighbourhoods are more likely to be characterized by high crime rates, vandalism and violence, and are typically populated with individuals with fewer economic resources (Araya et al., 2006, Stafford and McCarthy, 2006; Bernard et al., 2007). It is these “run-down” neighbourhoods which are associated with poor physical health and depression (Stafford and McCarthy, 2006).

Neighbourhood stress was found to negatively impact positive mental health for both males and females, however to a greater extent for females. For instance, while males who experience stress from their living environment were found to have low likelihoods across three positive mental health indicators, females were found to have low likelihoods across all four indicators measured in the NPHS. Furthermore females were also found to have significantly lower likelihoods than males across all indicators of positive mental health, except the indicator sense of coherence. Females may feel more stress about their safety in stressful neighbourhoods than males, leaving them to feel greater stress toward where they live which may contribute to lower likelihoods of positive mental health.

Similar to neighbourhood stress, renting ones home has consistently been linked to poor health outcomes (Cairney, 2005; Stafford and McCarthy, 2006). Consistent with the literature, these analyses demonstrate that home ownership is also an important predictor of positive mental health. Renters were found to have significantly lower likelihoods across three of the four positive mental health indicators measured in the NPHS (happiness, sense of mastery and self esteem) than home owners. Similar to neighbourhood stress, most individuals who rent their homes are predominantly occupants of

low social status positions with few economic resources. According to Shapcott (2009) the average income of renters is less than half the annual income of homeowners. Furthermore, according to Cairney (2005), rental homes are usually of poorer quality than those that are owned which leads to negative consequences on both mental health and physical health.

Home ownership does not impact positive mental health similarly for both males and females. Rather, home ownership is associated with positive mental health for males only, as female renters did not have a significant relationship with any of the four indicators of positive mental health measured in the NPHS, while male renters were found to have significant low likelihoods of three positive mental health indicators measured in the NPHS; happiness, self esteem, and mastery. These results demonstrate that the impact of home ownership on positive mental health is disproportionately experienced by the male gender, where renting one's home significantly reduces males, but not females likelihood of positive mental health.

Occupation

Adding further support to the research hypothesis, these analyses have found employment in blue collar occupations to lower the likelihoods of positive mental health. Employment in blue collar occupations was found to have significant low likelihoods across four of seven indicators of positive mental health, two from the NPHS (mastery and self esteem) and two from the CCHS (coping ability and life satisfaction). Employment in blue collar occupations does not have a significant impact over likelihoods of happiness, sense of coherence, and psychological well-being.

Marchand, Demers, and Durand (2006) attribute the difference in mental health between blue and white collar workers to differences in working conditions. Working conditions such as skill utilization, decision authority, gratification and social support contribute positively or negatively to psychological distress (Marchand et al., 2006). However, these positive working conditions are not

distributed evenly among occupations. Working conditions where employees have greater chances to exercise decision authority, to use their skills, that offer high job security and receive gratification and support from co workers are more often characteristic of white collar occupations. As can be seen in the psycho-social analyses, respondents with high job security, high job control and good support from co-workers were found to have high likelihoods across the seven indicators of positive mental health. Occupations with low ability to exercise control over work load, poor job security and poor skill utilization are often characteristic of blue collar occupations. It is these characteristics which Marchand et al (2006) link to poor mental health, psychological distress and poor physical health. Similar to Marchand et al (2006), these analyses found an association between positive mental health and blue collar occupations, with respondents employed in blue collar occupations having lower likelihoods of experiencing positive mental health.

When examined separately for gender it was found that employment in blue collar occupations may be more significant to maintaining positive mental health for males than for females. Males employed in blue collar occupations were found to have significant low odds across four of seven positive mental health indicators, while females employed in blue collar occupations were found to have significant low odds across only two indicators. The results suggest that while both males and females who are employed in blue collar occupations have low likelihoods of positive mental health, employment in blue collar occupations for males in particular has a greater negative impact on positive mental health.

Living Arrangement

Similar to previous research that has linked living alone and living in single parent households to poor health outcomes, this study further links material inequality to poor positive mental health. While both measures were found to lower the probability of positive mental health, living in a single parent

home is associated with lower likelihoods of positive mental health than living alone. This analysis found individuals who live in single parent homes to have significant low likelihoods across five of seven positive mental health indicators, while individuals who live alone were found to have significant low likelihoods across three indicators.

Marital status and living arrangement have been found in previous research to be connected to both positive mental health and physical health. It has been consistently found that individuals who are married or living with a partner are physically healthier, and are more likely to have higher probabilities of positive mental health than other marital status groups and living arrangements (Stutzer and Frey, 2006; Broussard, 2010, Markey, Markey, Schneider and Brownlee 2005; Fowers, 1991; CIHI, 2009). According to Stutzer and Frey (2006), the benefits of marriage or living with a partner can be largely attributed to financial gains. Marriage or cohabitation with a partner is believed to provide protection against adverse life events and allows protection from economic hardship (Stutzer & Frey (2006).

Consistent with findings by Stutzer and Frey (2006), this study also found respondents in single parent homes as well as those who live alone to have lower odds of having positive mental health than respondents who live with a partner and children. According to Stutzer and Frey (2006), individuals who live with a partner had better physical health, live longer, and have better psychological well-being, a key component of positive mental health, than those who live alone or are single parents; furthermore those living with a partner, either in marriage or cohabitation, reported they were happier and had higher life satisfaction than individuals living alone who were single or unmarried.

When living arrangement was analyzed separately for gender, differences in positive mental health that were identified in this analysis for males and females are also consistent with previous work by Stutzer and Frey (2006). This study found that living in a single parent home negatively impacted females' likelihoods of positive mental health more so than males' likelihoods of positive mental health. This is consistent with previous research which finds that females in single parent homes are more likely

to experience negative health outcomes (Stutzer and Frey, 2006; CIHI, 2009). Females living in single parent households were found to have significant low likelihoods across five positive mental health indicators, while males living in single parent households were found to have significant low likelihoods across only two indicators of positive mental health. While living in a single parent household was found to have significant low likelihoods for both genders, females who live in single parent homes were found to have lower likelihoods across all indicators of positive mental health than males, except for happiness. These results suggest that living in single parent households may negatively impact positive mental health for females to a greater extent than males.

According to Broussard (2010) single parent families headed by a female are more vulnerable to a variety of poor health outcomes than those who live in two parent families. Many single parent female headed families experience financial stress and subsequently occupy low positions in the social structure, placing them at a greater risk for poor health (Broussard, 2010). Female headed single parent families are more likely to experience food insecurity, live in unsafe neighbourhoods, live in poor quality housing, confront violence, and experience environmental health risks (Broussard, 2010). Social support, which has been found in this study to increase likelihoods of positive mental health, as discussed in chapter 5 in this thesis, is more likely to be unavailable to females in single parent homes. Females living in single parent homes have been found to have less contact with friends and other family members, participate in fewer social activities, and perceive less social support than females who do not live in single parent family arrangements (Broussard, 2010). While Broussard (2010) argues that females in single parent households are more vulnerable to low self-esteem, helplessness, and feelings of failure and despair, the results from this study did not find significant associations with the positive mental health indicator self-esteem. These analyses found that females living in single parent families actually had higher likelihoods of the positive mental health indicator self esteem than females living with a partner and children however, these results were not significant. More consistent with the results from

Broussard (2010), this study found that females in single parent homes had lower likelihoods of the positive mental health components happiness, coping ability, life satisfaction, sense of coherence and psychological well-being than those who live with a partner and children.

While living in a single parent home was seen to have a greater impact on females' likelihoods of positive mental health, the opposite is seen for those who live alone. Males who live alone were found to have significantly lower odds across three indicators of positive mental health than males who live with a partner and children, while females who live alone were found to have significant low odds for only two indicators of positive mental health. This finding is not surprising as literature surrounding marriage and health have consistently found that males experience greater social and health benefits when living with a partner than females (Markey, Markey, Schneider & Brownlee 2005; Fowers, 1991).

According to Markey et al (2005), marriage may boost the health of men through health promotion and engagement in positive healthy behaviours. It is believed when males live with a female partner they become more conscious of their health and begin to participate in health promoting behaviours due to the female caretaker role and the encouragement of healthy habits in the home (Markey et al., 2005; Fowers, 1991). Before marriage or cohabitation with a partner, single men who live alone have higher rates of mental illness, substance abuse, cardiovascular functioning and lower longevity than their married and cohabiting counterparts (Markey et al., 2005; Fowers, 1991). Consistent with previous research by Markey et al (2005), and Fowers (1991), who found that men who live alone generally have poorer health outcomes than men who live with a partner, this study found that men who live alone also are more likely to experience the poor health outcome of low positive mental health. Positive mental health and physical health are tied together, where good positive mental health can influence physical health, which could further explain the lower likelihoods of positive mental health of males who live alone. Analyses by CIHI (2009) have found that individuals with good positive mental

health also have reduced mortality, reduced chronic disease, low blood pressure, and a reduction in the negative effects of stress.

Conclusion

Analysis of data from the National Population Health Survey and the Canadian Community Health Survey demonstrate that material deprivation has an important influence over positive mental health. The six measures of material deprivation chosen for this study, financial stress, neighbourhood stress, home ownership, occupation, living alone or in a single parent household were found to have significant low likelihoods across the seven positive mental health indicators. These findings support the research hypothesis and demonstrate that material deprivation lowers the probability of positive mental health.

The material deprivation measures financial stress and living in single parent households lend the strongest support to the research hypothesis, with financial stress having significant low odds across six of seven positive mental health indicators, and single parent households associated with significant low odds across five indicators. Employment in blue collar occupations was found to have moderate support for the research hypothesis with significant low likelihoods across four indicators of positive mental health. Living alone was found to have the weakest support for the research hypothesis, displaying significant low likelihoods across only three indicators. While it was not possible to measure neighbourhood stress and home ownership with all seven indicators of positive mental health these two material measures show strong support for the research hypothesis across the available positive mental health indicators. Both neighbourhood stress and homeownership had significant low likelihoods across three of the four positive mental health indicators for which they are measured.

Not all positive mental health indicators are influenced equally by material inequality. The positive mental health indicator self esteem was found to have the least association with the material deprivation measures as only two measures, employment in blue collar occupations and home

ownership, were found to lower the likelihood of high self-esteem. The positive mental health indicators life satisfaction and happiness were found to have the greatest association, as five measures of material deprivation were associated with significant low likelihoods of happiness, and all material measures were associated with significant low likelihoods of life satisfaction.

When examined separately for gender, differences between males and females were found. Material measures financial stress, living in a single parent household, and experiencing neighbourhood stress were found to have a greater impact on females' positive mental health than males, while employment in blue collar occupations, living alone and homeownership had a greater impact on males' positive mental health. While financial stress was found to lower the likelihoods of positive mental health for both males and females, females' likelihoods were lower than males.

It is important to note that these measures of material deprivation do not impact positive mental health in isolation. Many of these material measures of deprivation overlap with one another to impact mental health. For instance, individuals who live in a single parent household are also more likely to experience financial stress (Broussard, 2010). In turn those who experience financial stress are more likely to rent their home, which is associated with a higher likelihood of living in a poor quality neighbourhood, which in turn is linked to increasing the probability of experiencing stress towards where one lives (Stafford and McCarthy, 2006). Material inequality is also further linked to poor health behaviours and psycho-social disparities. For instance those who are employed in blue collar occupations are more likely to experience measures of psycho-social disparities such as low job security and low job control (Bartley 2004; Marchand et al., 2006). This overlap of health inequality could further decrease likelihoods of positive mental health.

Chapter 4 Positive Mental Health and Lifestyle Behaviours

Model Description, Research Questions and Hypotheses

This chapter will explore the relationship of lifestyle behaviours with positive mental health. Lifestyle behaviours such as smoking, alcohol consumption, physical inactivity and BMI are consistently used in the literature as components of the lifestyle behaviour theoretical framework (Denton et al., 2004; Rohrer et al., 2005) These behaviours in particular have been linked to poor health outcomes (Kaplan, Huguét, Orpana, Feeny, McFarland, & Ross, 2008; Denton et al., 2004; Bartley, 2004; Singh-Manoux and Marmot, 2005).

Due to the strong relationship between physical health and positive mental health it is hypothesized that lifestyle behaviours considered risky to be risky to health will lower likelihoods of positive mental health. Previous research has found that smoking, physical inactivity, heavy drinking, and underweight, overweight and obese BMIs are less likely to be associated with good physical health (Kaplan, 2008). Following from previous physical health research it is expected that smoking, physical inactivity, heavy drinking and underweight, overweight and obese BMIs will be associated with low likelihoods of the seven positive mental health indicators.

Logistic regression analyses are used to test the research hypothesis. Lifestyle behaviour measures will be regressed separately with each indicator of positive mental health. Reference categories for the lifestyle behaviours were chosen if the group was thought to have the greatest probability of having positive mental health. Subsequently, non-heavy drinkers, non-smokers, physically active and normal range BMIs were selected as reference categories to serve as the comparative group to all other categories.

Smoking status in the NPHS is measured by how often a respondent smokes cigarettes. For this analysis, respondents who reported smoking cigarettes daily and occasionally were considered to be smokers. Smoking status in the CCHS is measured through a proxy; however the proportion of smokers

between the two data sets is similar. 29% of the NPHS sample were smokers while 30% of the CCHS sample were smokers. The NPHS and the CCHS calculated physical activity levels through the amount of average daily energy expenditure during leisure time. Active and moderately active respondents were considered to be physically active if they participated in enough daily exercise required for cardiovascular health benefits. Heavy drinking was measured through the frequency of having five or more alcoholic drinks on one occasion. Respondents reporting that this occurred at least once a month, or it had occurred at least twelve or more times a year were classified as heavy drinkers (Shields, 2005). Weight categories were calculated in the NPHS and the CCHS by height and BMI. In this analysis respondents were placed into four BMI groups, underweight, normal weight, overweight or obese. For more information on how these variables were coded please see Appendix A.

Findings

Table 4.1 Logistic Regression Analysis of Lifestyle Behaviour Measures with the Positive Mental Health Indicators

Lifestyle Behaviour measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Type of Drinker														
Not a heavy drinker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Heavy drinker	0.89	0.80**	1.18*	1.10*	1.04	1.21*	0.59**	0.73**	0.85**	0.86**	0.76**	0.85**	0.79**	0.94
Not Applicable	0.81	1.04	0.70**	0.89**	0.70**	0.83*	1.14*	2.27	0.65**	0.72**	0.83**	0.84**	0.95	1.07
Physical Activity														
Active	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inactive	0.74**	0.85**	1.14**	1.16**	2.43**	2.19**	1.26**	1.29**	0.68**	0.76**	0.69**	0.72**	0.69**	0.69**
Smoking Status														
Non-smoker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Smoker	0.81**	0.81**	1.01	0.97	1.11	0.92	0.62**	0.71**	0.81**	0.85**	0.70**	0.78**	0.75**	0.85**
Weight														
Normal Weight	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Under Weight	0.83	0.94	0.75*	0.81	0.67**	0.65**	0.90	0.93	0.86	0.92	0.90	0.98	0.73**	0.87
Over Weight	1.06	1.09	0.97	1.04	1.10	1.14	1.17**	1.08	1.12*	1.13*	1.22**	1.24**	1.22**	1.22**
Obese	0.96	1.14	0.78**	0.93	0.92	1.03	0.97	0.95	1.05	1.12*	1.06	1.12**	1.08	1.09
Missing	0.13**	0.15**	0.19**	0.39**	0.08**	0.22**	0.30**	0.26**	0.85**	1.04	1.22**	1.26**	1.06	0.91
Gender														
Male	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Female	1.07	1.06	0.95	1.00	1.18**	1.15*	1.01	0.93	0.87**	0.91**	1.02	1	0.93*	0.94
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.66**	0.51**	0.59**	0.55**	0.92	0.60**	0.72**	0.57**	1.19**	1.14**	0.89**	0.89**	0.80**	0.82**
Poor Health	0.33**	0.24**	0.30**	0.31**	0.43**	0.26**	0.60**	0.37**	0.53**	0.55**	0.52**	0.53**	0.60**	0.60**

Behaviour measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.86*	0.90	0.80**	0.81**	0.82**	0.78**	0.80**	0.86	0.81**	0.85**	0.86**	0.90	0.79**	0.88
High school	0.83*	0.88	0.73**	0.75**	0.83*	0.80*	1.02	1.08	0.78**	0.84**	0.84**	0.89**	1.03	1.09
Less than high school	0.66**	0.76**	0.48**	0.59**	0.66**	0.70**	1.08	0.98	0.58**	0.68**	0.81**	0.81**	1.06	0.97
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.08	0.96	1.19*	1.04	1.16	1.12	0.73**	0.71**	1.33**	1.15*	0.99	1	1.27**	1.18**
Age 36-55	1.03	0.74**	1.55**	1.06	1.28**	1.03	0.49**	0.44**	1.40**	1.10	0.78**	0.79**	0.75**	0.69**
Age 18-35	0.95	0.64**	1.76**	1.14	1.22*	0.93	0.33**	0.30**	1.32**	1.03	0.73**	0.72**	0.51**	0.48**

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Lifestyle Behaviours and the Positive Mental Health Indicator Happiness

Analysis of data from the National Population Health Survey demonstrates that lifestyle behaviours have a significant impact on the positive mental health indicator happiness. However, being of an unhealthy BMI (underweight, overweight, or obese) was not found to have a significant relationship with happiness when unadjusted and adjusted for all contributing factors in the model. Respondents with underweight, overweight or obese BMIs were not found to have a significant association with happiness. However, lifestyle behaviours heavy drinking, physical inactivity, and smoking were all found to significantly lower the probability of high happiness. For instance, the odds of happiness were 20% lower for heavy drinkers than for those who are not heavy drinkers when adjusted for all factors in the model, however, when unadjusted, heavy drinking was not found to have a significant relationship with happiness. Similarly the odds of happiness were 19% lower for smokers than for non-smokers when adjusted for all contributing factors in the model. Physical inactivity was also found to have significantly lower odds of happiness when adjusted for all factors in the model. Respondents who were physically inactive had odds 15% lower than physically active respondents.

The probability of happiness was found to improve with age when all contributing factors were included in the model. Respondents aged 18 to 35, and 36 to 55 had significantly lower odd ratios of happiness than those who are aged 70 and older after all factors are included in the model. When adjusted, respondents between the ages of 18 to 35 were found to be 36% less likely, and respondents between the ages of 36 to 55 were found to be 26% less likely to have high happiness than those over the age of 70. The association of happiness with respondents between the ages of 56 to 69 was not found to be significant. Poor physical health was also found to decrease the likelihood of happiness. For instance, the odds of high happiness were 76% lower for respondents with poor physical health, and the odds were 49% lower for respondents with good physical health than the odds of respondents reporting excellent health when all contributing factors were included in the model. Education was not found to

have a strong association with happiness. When all behavioural factors were included in the model only respondents with an education of less than a high school were found to have low odds of happiness.

When the association of lifestyle behaviours with the positive mental health indicator happiness was analyzed separately for gender, differences between males and females became apparent.⁸ While both males and females experience significant low odds ratios of happiness, lower odds of happiness are associated with smoking and physical inactivity for females, while heavy drinking is associated with lower odds of happiness for males. Over weight and obese BMIs were found to be associated with happiness for males only, however the association does not support the research hypothesis. The odds of happiness were actually 22% higher for males with overweight BMIs and 42% higher for males with obese BMIs, than the odds of males with a normal BMI when adjusted for all factors in the model. Obese BMIs were found to be associated with low odds of happiness for females only when unadjusted for all factors in the model. These results indicate that the lifestyle behaviours smoking and physical activity have a greater impact on females' happiness than males, while heavy drinking and BMI are more important to males' sense of happiness than females.

Lifestyle Behaviours and the Positive Mental Health Indicator Mastery

Analysis of data from the National Population Health Survey suggests that lifestyle behaviours such as heavy drinking, physical inactivity, smoking and BIM do not have significant relationships with the positive mental health indicator mastery. These lifestyle behaviour measures were not found to have significant low odds ratios of mastery as was predicted in the research hypothesis. The results do however indicate, contrary to the research hypothesis, that physical inactivity and heavy drinking do have significant positive associations with sense of mastery. Heavy drinkers were actually found to be 10% more likely than non heavy drinkers to have a high sense mastery after adjustment for all factors in

⁸ Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

the model. Similarly, when adjusted, the odds of a high sense of mastery are 16% higher for physically inactive respondents than physically active respondents.

The lifestyle behaviour measures smoking and BMI were not found to have a significant relationship with mastery when adjusted for all contributing factors in the model. However when unadjusted, underweight and obese BMIs were found to have significantly lower odds ratios of high mastery than normal range BMIs. The odds of high mastery were found to be 22% lower for respondents with obese BMIs, and 25% lower for respondents with underweight BMIs than respondents with normal range BMIs.

While age was not found to have a significant relationship with the positive mental health indicator mastery, physical health status and education were found to have significant relationships with mastery when adjusted for all behavioural measures and demographic measures in the model. Respondents with poor physical health were found to have lower likelihoods of mastery when adjusted for all contributing factors in the model. For instance, the odds of high mastery were 69% lower for those with poor health and 45% lower for those with good health, than the odds of those with excellent health. Education was found to be significantly associated with the positive mental health indicator when unadjusted and adjusted for all contributing factors in the model. The odds of high mastery were 41% lower for respondents with a less than high school education, 25% lower for respondents with a high school education, and 19% lower for respondents with some university education than the odds of respondents with a university education when adjusted for all factors.

When the association of lifestyle behaviours and the positive mental health indicator mastery was analyzed separately for gender, differences between males and females became apparent.⁹ While these analyses found no significant relationships between any of the lifestyle behaviours with mastery for females, physical inactivity, heavy drinking and an underweight BMI were all found to have

⁹ Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

significant relationships for males after adjustment for all contributing factors in the model. Contrary to the research hypothesis males who were physically inactive, heavy drinkers, and of an underweight BMI were all found to have higher likelihoods of mastery than males who were physically active, were not heavy drinkers and had a normal range BMI when adjusted for all contributing factors in the model. These analyses show while lifestyle behaviours may not have a significant impact on females' sense of mastery, lifestyle behaviours do have a positive impact on males' sense of mastery.

Lifestyle Behaviours and the Positive Mental Health Indicator Self-Esteem

Demonstrating weak support for the research hypothesis, analysis of data from the National Population Health Survey demonstrates that most lifestyle behaviours do not have a negative influence over the positive mental health indicator self-esteem. Lifestyle behaviours heavy drinking, physical inactivity, and smoking were not found to lower the odds of self-esteem, rather they were found to increase the odds. For instance the odds of high self-esteem were 21% higher for heavy drinkers than for non-drinkers after adjustment for all factors in the model, and the odds of high self-esteem are almost twice the odds for physically inactive respondents than those who are physically active after adjustment.

An underweight BMI was the only lifestyle behaviour to have significant low odds of self-esteem when adjusted for all factors in the model. These analyses found that respondents with underweight BMIs were 35% less likely to have high self-esteem than respondents with normal range BMIs after adjustment for all factors in the model. Obese and overweight BMIs did not have a significant relationship with self esteem, nor did the lifestyle behaviour smoking.

While age was not found to be significantly associated with self-esteem when all measures were included in the model, education and physical health status were found to have a significant relationship with the positive mental health indicator when all contributing factors were included in the model. The

odds of self-esteem tend to improve with health status and education. When adjusted for all contributing factors in the model, the odds of high self esteem were 74% lower for respondents with poor health and only 40% lower for respondents with good health than the odds of those with excellent health. The odds of high self esteem were 30% lower for respondents with an education of less than high school, 20% lower for respondents with a high school education, and 22% lower for respondents with some university education than the odds of those with a university education.

When lifestyle behaviours were examined separately by gender it was found that lifestyle behaviours do not lower the odds of self-esteem for females.¹⁰ The behavioural measures smoking, physical inactivity, heavy drinking and BMI were not found to significantly lower the likelihoods of self-esteem for females. Physical inactivity was found to be associated with higher likelihoods of self-esteem for both males and females, however, the odds of self-esteem were much higher for males than for females. Conversely, smoking was only found to have significantly lower odds of self-esteem for males. These findings indicate that lifestyle behaviours generally have a greater impact on males' self-esteem than females.

Lifestyle Behaviours and the Positive Mental Health Indicator Sense of coherence

Data analysis of the National Population Health Survey (NPHS) demonstrates moderate support for the research hypothesis as only two lifestyle behaviours, heavy drinking and smoking, were found to lower the odds of the positive mental health indicator sense of coherence. The odds of developing a high sense of coherence were 29% lower for smokers compared to non-smokers when adjusted for all factors in the model. Similarly the odds of developing a high sense of coherence were 27% lower for heavy drinkers than non-heavy drinkers when adjusted. The lifestyle behaviour measure BMI was not found to have a significant relationship with sense of coherence when adjusted for all factors in the

¹⁰ Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

model. However, when unadjusted, underweight BMIs were found to reduce the odds of sense of coherence by 38% compared to normal range BMIs. Contrary to the research hypothesis, physical inactivity was found to have a positive association with sense of coherence. The odds of developing a high sense of coherence were actually 29% higher for physically inactive respondents than the odds of physically active respondents when adjusted for all variables in the model.

Physical health status and age were found to be significantly associated with sense of coherence, while education was not found to have a significant association with the positive mental health indicator. This analysis found the odds of sense of coherence to improve with age and health. For instance the odds of a high sense of coherence were 70% lower for respondents between the ages 18 to 35, 56% lower for those aged 36 to 55, and 29% lower for those aged 56 to 69 than the odds of respondents who are aged 70 and older when all behavioural factors are included in the model. Similarly, the odds of a high sense of coherence were 63% lower for respondents with poor physical health and 43% lower for those with good physical health than the odds of respondents with excellent physical health.

When the relationship between the lifestyle behaviours and sense of coherence was examined separately by gender slight differences between males and females were found.¹¹ The lifestyle behaviour heavy drinking was found to be associated with low odds ratios of sense of coherence for females only. In contrast to the research hypothesis, overweight BMIs were found to have a positive relationship with sense of coherence for males only. Smoking was found to lower the odds of sense of coherence, while physical inactivity was found to increase the odds of sense of coherence for both males and females when adjusted for all contributing factors in the model. These findings suggest that heavy drinking may have a greater negative influence over females' sense of coherence while smoking influences males and females sense of coherence almost equally.

¹¹ Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

Lifestyle Behaviours and the Positive Mental Health Indicator Coping Ability

Demonstrating support for the research hypothesis, analysis of data from the Canadian Community Health Survey demonstrates that lifestyle behaviours smoking, heavy drinking and physical inactivity are associated with low odds of the positive mental health indicator coping ability. For instance, the odds of a good ability to cope with day to day demands were 15% lower for smokers than non-smokers after adjusting for all factors in the model. Similarly, when adjusted, the odds of good coping ability were 14% lower for heavy drinkers than non-heavy drinkers, and the odds of good coping ability were 24% lower for physically inactive respondents than physically active respondents.

BMI was found to have a significant relationship with coping ability, however, this relationship does not support the research hypothesis. Overweight and obese BMIs were found to have significantly higher odds of coping ability than normal range BMIs. The odds of good coping ability were actually 13% higher for respondents with overweight BMIs and 12% higher for respondents with obese BMIs than the odds of respondents with normal range BMIs after adjusting for all factors in the model.

When adjusted for all contributing factors, education, physical health status, and gender were found to have significant relationships with coping ability. The ability to cope with day to day demands improved with physical health and education. For instance, the odds of having a good ability to cope with day to day demands were 45% lower for respondents with poor physical health than the odds of respondents with excellent physical health. Similarly, the odds of a good coping ability were 32% lower for respondents with an education of less than high school, 16% lower for respondents with a high school education, and 15% lower for respondents with some university education than the odds of respondents with a university education. All age groups were found to be significantly associated with coping ability when unadjusted for all other factors in the model, however, when all factors were included, the only age group found to have a significant relationship with coping ability were those between the ages of 56 and 69. Respondents between the ages of 56 and 69 were found to be 15%

more likely to have a good ability to cope with day to day demands than respondents who are aged 70 and older.

When the impact of lifestyle behaviours on the ability to cope with day to day demands was analyzed separately for gender, differences between males and females became apparent.¹² While smoking and physical inactivity lowered the odds of coping for both males and females, males who smoke and are physically inactive were found to have slightly lower odds of good coping ability than females when adjusted for all contributing factors in the model. The odds of good coping ability were 25% lower for physically inactive males than the odds of physically active males, while the odds of good coping ability were 24% lower for physically inactive females than the odds of physically active females. Similarly the odds of good coping ability were 17% lower for males who smoke than the odds of male non-smokers, while the odds of good coping ability were 13% lower for females who smoke than the odds of female non-smokers.

While Heavy drinking and BMI were not found to be significantly associated with females' ability to cope with day to day demands, heavy drinking and obese BMIs were found to be significantly associated with males' coping ability. Heavy drinking was found to be associated with lower odds of ability to cope with day to day demands for males, while obese BMIs were found to be associated with higher odds of coping ability. These results suggest that lifestyle behaviours deemed risky to health have a greater impact on males' ability to cope with day to day demands than females. Males who engage in the lifestyle behaviours heavy drinking, smoking and physical inactivity were found to have lower odds of the ability to cope with day to day demands than females who participate in similar activities.

¹²Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

Lifestyle Behaviours and the Positive Mental Health Indicator Life Satisfaction

Adding support to the research hypothesis, analysis of data from the Canadian Community Health Survey demonstrates that the lifestyle behaviours smoking, physical inactivity and heavy drinking lower the odds of having a high life satisfaction. For instance, the odds of high life satisfaction were 22% lower for smokers than non-smokers after adjusting for all lifestyle behaviours and control variables in the model. Similarly, when adjusted, the odds of high life satisfaction were 28% lower for physically inactive respondents than physically active respondents, and the odds of high life satisfaction were 14% lower for heavy drinkers than non-drinkers. Contrary to the research hypothesis, the analyses found a significant positive relationship between life satisfaction and BMI, with overweight and obese BMIs having high odds of life satisfaction. While underweight BMIs were not found to have a significant relationship with life satisfaction, overweight BMIs were found to have odds of high life satisfaction 24% higher, and obese BMIs had odds 12% higher than the odds of normal range BMIs.

The odds of life satisfaction were also found to improve with physical health status and age. For instance, the odds of high life satisfaction were 47% lower for respondents with poor physical health and 11% lower for respondents with good physical health than the odds of respondents with excellent physical health after adjusting for all contributing factors in the model. Similarly, respondents between the ages of 18 and 35 were found to be 28% less likely, and those aged 36 to 56 were 21% less likely to have high life satisfaction than respondents aged 70 years or older when adjusted for all factors in the model. Education was also found to be significantly associated with high life satisfaction with lower odds of life satisfaction reported among respondents with a high school, or less than high school education. The odds of high life satisfaction were 19% lower for respondents with less than a high school education, and 11% lower for respondents with a high school education than the odds of respondents with a university education after adjustment for all contributing factors in the model.

When the impact of lifestyle behaviours on life satisfaction was analyzed separately for gender a similar pattern could be seen for both males and females.¹³ The lifestyle behaviours smoking, physical inactivity and heavy drinking were all found to be associated with low odds of life satisfaction for both males and females. However, females who engage in these lifestyle behaviours were found to have slightly lower odds of life satisfaction than males who participate in the same lifestyle behaviours. For instance, the odds of high life satisfaction are 30% lower for inactive females than the odds of physically active females, while the odds of high life satisfaction are 25% lower for physically inactive males than the odds of physically active males. Similarly, the odds of high life satisfaction are 24% lower for female smokers than the odds of female non-smokers, while male smokers are 21% less likely to have high life satisfaction than male non-smokers. Additionally, females who are heavy drinkers were found to be 16% less likely than non-heavy drinkers to have high life satisfaction, while the odds of high life satisfaction were only 13% lower for male heavy drinkers than the odds of non-heavy drinkers after adjustment for all contributing factors in the model. These results suggest that lifestyle behaviours smoking, physical inactivity, and heavy drinking have a negative influence over life satisfaction. Males and females who smoke, who are physically inactive and are heavy drinkers were found to have lower likelihoods of life satisfaction than males and females who do not participate in these activities.

Lifestyle Behaviours and the Positive Mental Health Indicator Psychological Well-being

Analysis of data from the Canadian Community Health Survey demonstrates moderate support for the research hypothesis, as the lifestyle behaviours physical inactivity and smoking were found to be associated with lower likelihoods of the positive mental health indicator psychological well-being. For instance, the odds of high psychological well-being were 31% lower for physically inactive respondents

¹³ Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

compared to physically active respondents after adjustment for all factors in the model. Similarly, when adjusted, the odds of high psychological well-being were 15% lower for smokers than non-smokers.

The lifestyle behaviour heavy drinking was not found to have a significant relationship with psychological well-being when adjusted for all factors in the model. However, when unadjusted for all factors in the model, heavy drinking was found to have a significant relationship with the positive mental health indicator, as heavy drinkers were 21% less likely than non-heavy drinkers to have high psychological well-being. Contrary to the research hypothesis, BMI was found to increase the likelihood of psychological well-being. The odds of high psychological well-being were found to be 22% higher for respondents with overweight BMIs than respondents with normal range BMIs after adjustment for all contributing factors in the model. Underweight and obese BMIs were not found to be significantly associated with psychological well-being.

When all factors were included in the model, physical health status and age were found to be significantly associated with the positive mental health indicator psychological well-being, while gender and education were not found to have significant relationships. Furthermore, the odds of psychological well-being increased with physical health. Respondents with poor physical health were 40% less likely, and respondents with good physical health were 19% less likely than those with excellent physical health to have high psychological well-being when all factors were included in the model. Similarly respondents between the ages of 18 and 35 were found to be 52% less likely, while those aged 35 to 55 were 31% less likely to have good psychological well-being than respondents aged 70 and older when all factors were included in the model.

When examined separately for gender a similar pattern was found for both males and females.¹⁴ The lifestyle behaviours smoking and physical activity were found to be associated with lower likelihoods of psychological well-being for both males and females, while heavy drinking and BMI were

¹⁴ Results for this analysis can be found in tables 9.3 and 9.4 in Appendix B.

not found to be significantly associated with psychological well-being for males and females when adjusted for all contributing factors in the model. However, female smokers and physically inactive females were found to have lower odds of psychological well-being than their male counterparts. For instance the odds of good psychological well-being were 18% lower for female smokers than the odds of female non-smokers, while the odds were only 14% lower for male smokers than the odds of male non-smokers when adjusted for all contributing factors in the model. Similarly the odds of good psychological well-being were 36% lower for physically inactive females than the odds of physically active females, while the odds of good psychological well-being were 24% lower for physically inactive males than the odds of physically active males when adjusted for all contributing factors in the model. These findings suggest that lifestyle behaviours smoking and physical activity lower the likelihood of psychological well-being for both males and females, however, females psychological well-being is lowered to a greater extent than males.

Discussion

Lifestyle behaviour measures smoking status, heavy drinking, BMI and physical activity have been identified as behaviours which put individuals at a greater likelihood of experiencing poor health outcomes (Chaney & Chaney, 2007; Rohrer et al., 2005; Bartley 2004; Singh-Manoux & Marmot, 2005). These analyses have demonstrated that three lifestyle behaviours, smoking status, physical inactivity and heavy drinking have low odds across five positive mental health indicators, happiness, sense of coherence, coping ability, life satisfaction and psychological well-being.

Smoking

Similar to previous research that has linked smoking to poor health outcomes, this study has linked smoking to the poor health outcome of poor positive mental health. These analyses found that respondents who smoke have significantly lower likelihoods across five of seven indicators of positive

mental health than non-smokers; happiness, sense of coherence, coping ability, life satisfaction and psychological well-being. Consistent with findings by Rohrer et al (2005), who found smokers to have lower likelihoods of mental health than non-smokers, this analysis also finds smokers to be more likely to have low likelihoods across more positive mental health indicators than non-smokers. According to Pedersen and Soest (2009), underlying factors that may predispose someone to smoking, such as social disadvantage, low socio-economic resources and few material resources are also linked to low positive mental health. As seen in the previous chapter, material resources such as financial stress, living alone or in a single parent household, neighbourhood stress and home ownership have been linked low likelihoods across the positive mental health indicators. Additionally, increased social stigmatization towards smokers over the past few decades could also contribute to low likelihoods of poor positive mental health among smokers (Pedersen & Von Soest, 2009). Furthermore, smokers have been found to be more likely to engage in other lifestyle behaviours deemed risky to health such as drinking, consuming less healthy foods, physical inactivity, and sleep impairment; the combination of which could further lower positive mental health (Strine et al., 2005).

Consistent with Strine et al (2005) who found that both male and female smokers were more likely to experience poor mental health than non-smokers, these analyses similarly found that smoking lowered likelihoods of positive mental health for both males and females. These analyses found both male and female smokers to have low odds of the positive mental health indicators sense of coherence, coping ability, psychological well-being and life satisfaction. Female smokers were found to have lower likelihoods of well-being, life satisfaction and happiness than male smokers. However, smoking was only found to contribute to lower likelihoods of happiness for females, as male smokers were not found to have a significant relationship with happiness. Male smokers were found to have lower likelihoods of the positive mental health indicators sense of coherence, coping ability and self-esteem than female smokers. Surprisingly smoking did not have a significant relationship with self-esteem for females.

Female smokers were expected to have lower likelihoods of self-esteem as females are generally more likely to have lower self-esteem than males, and increased social stigmatization towards smokers can lead to poor self-esteem (Pedersen & Von Soest 2009).

Physical Activity

These analyses found, consistent with physical activity literature, that physical inactivity is linked to poor positive mental health. According to Peluso and Guerra de Andrade (2005) engagement in physical exercise has both physical and mental benefits, and has been shown to have improvements to quality of life. Physical inactivity was found to have significant low likelihoods across four of seven positive mental health indicators; happiness, coping ability, life satisfaction and psychological well-being.

Physical activity has been shown to be an important buffer against ill health, acting as a protector against disease, and having a positive impact on one's mood. Similar to research by Rohrer et al (2005), who found that daily exercise was associated with improvements in mental health, these analyses similarly found that physically active respondents had higher likelihoods of happiness, ability to cope with day to day demands, life satisfaction, and psychological well-being than physically inactive respondents. These findings are also consistent with those by Peluso and Guerra de Andrade (2005) who found that physical activity has benefits to the positive mental health indicators general well being and life satisfaction. However, these analyses did not find a significant relationship between physical activity and the positive mental health indicator self esteem, while Peluso and Guerra de Andrade (2005) found physical activity to have positive benefits to self-esteem.

While physical activity has been shown to be beneficial to mental health, physical activity has also been shown to have adverse impacts on mental health. According to Peluso and Guerra de Andrade (2005), engagement in too much or intense physical activity can have a negative impact on mood, the body, and mental health. The link of excess physical activity to poor mental health could help explain the

finding in these analyses of higher odds of mastery among physically inactive respondents than physically active respondents.

When examined separately for males and females, physical inactivity was found to have benefits to males' positive mental health, while having negative contributions to females' positive mental health. Physical inactivity was significantly associated, for both males and females, with low likelihoods of the positive mental health indicators coping ability, psychological well-being and life satisfaction, as well as increased likelihoods of self esteem and sense of coherence when all contributing factors were included in the model. However, physically inactive males were more likely to have higher odds of some of the positive mental health indicators than females. For instance, physically inactive males had high likelihoods of the indicators self-esteem, mastery and sense of coherence. Supporting the research hypothesis, physical inactivity tended to lower the odds across the positive mental health indicators for females. Physically inactive females had lower odds of the positive mental health indicators psychological well-being, life satisfaction and happiness than physically inactive males. These results suggest while physical inactivity has an important impact on positive mental health for both genders, physical inactivity may have a greater negative impact on females' positive mental health, while physical inactivity may have benefits to males' positive mental health.

Heavy Drinking

These analyses, similar to previous research, have also linked heavy drinking to the poor health outcome of low positive mental health. These analyses found that respondents who are heavy drinkers have significant low odds across four of the seven positive mental health indicators; happiness, sense of coherence, coping ability and life satisfaction after adjustment for all factors in the model. Consistent with Murphy et al (2006) who found heavy drinking to be associated with low life satisfaction, particularly among male and female college students, these analyses found the odds of life satisfaction

to be 14% lower for heavy drinkers than for non-heavy drinkers. Murphy et al (2006) also found that drinking volume was not related to any quality of life measures such as general satisfaction, social belonging, and a sense of control over life. While general satisfaction or social belonging were not measured in this study, these analyses did find, contrary to Murphy et al (2006), that mastery did have a positive relationship with heavy drinking, where heavy drinkers had greater probabilities of high mastery than non-heavy drinkers. Similarly, heavy drinking was also found to be associated with higher likelihoods of the positive mental health indicator self-esteem. While heavy drinking has been found to be associated with poor health, drinking in moderation has been found to have social, as well as health benefits to cognitive function, dementia, and longevity (Chan, Mühlen, Silverstein & Barrett-Connor, 2009; Murphy et al., 2006). Consistent with other lifestyle behaviours that are deemed risky to health, those who are heavy drinkers are also more likely to engage in other risky health behaviours. For instance, heavy drinkers are also more likely smoke, especially women (Chan et al., 2009).

When examined separately for males and females it was found that heavy drinking impacts the positive mental health of males to a greater extent than females. Heavy drinking was found to lower the odds of two measures of positive mental health, sense of coherence and life satisfaction for females. All other measures of positive mental health were not found to have a significant association with heavy drinking for females. Heavy drinking was however found to lower the odds of the positive mental health indicators happiness, coping ability and life satisfaction for males. Furthermore, heavy drinking was found to increase the odds of sense of mastery for males. This finding of an increased sense of mastery, while contrary to the research hypothesis, reflects a similar finding by Chan et al (2009) who found that quality of life scores for males increased with alcohol intake. While heavy drinking was associated with a positive likelihood of sense of mastery for males, heavy drinking was associated with low odds across more indicators of positive mental health than females. Heavy drinking may have a greater negative

influence over more indicators of positive mental health for males as they are more likely to consume more alcohol than women (Chan et al., 2009).

BMI

Contrary to the research hypothesis that BMI would have a negative influence over positive mental health, these analyses did not find BMI to impede one's likelihoods of positive mental health. Underweight, overweight, and obese BMIs were generally not found to have significant low odds ratios across the seven positive mental health indicators when adjusted for all factors in the model. However, when unadjusted, significant low likelihoods of the positive mental health indicators mastery, self-esteem and well-being were found for respondents with underweight BMIs. These findings, while inconsistent with the health literature, seem to correspond to quality of life and emotional well-being research. According to Doll, Petersen and Stewart-Brown (2000) there is very little evidence to conclude that those with obese and overweight BMIs are at a greater risk for emotional ill health. Furthermore many studies have concluded that individuals with obese and overweight BMIs are not at a greater risk of poor emotional health than individuals with BMIs in the normal weight range. Consistent with these findings, this analysis found that underweight, overweight and obese BMIs were not associated with poorer psychological well-being, life satisfaction or happiness than BMIs within a normal range. Moreover, these analyses found significant positive associations between overweight and obese BMIs with the positive mental health indicators coping ability, life satisfaction and psychological well-being. These findings are consistent with those by Carr and Friedman (2005), who found that despite increased occurrences of discrimination and stigma of individuals with overweight and obese BMIs, self-acceptance scores and well-being scores did not differ significantly between those with normal range BMIs and those with obese and overweight BMIs. Carr and Friedman (2005) hypothesize that the self-acceptance and well-being results could be due to the combination of obese I, obese II and obese III levels into one category of obese, as obese I scores have been found to be no different than normal

range BMI responses, and consequently could inflate the psychological well-being scores. This can be seen in this analysis as all obese BMI categories were combined into one large category of obese to compare underweight, normal weight, overweight and obese BMIs.

While overweight and obese BMIs were found to be associated with good positive mental health, underweight BMIs were found to be associated with lower odds of self esteem than normal range BMIs. This finding is consistent with those of Mond, Rodgers, Hay and Owen (2011) who found, particularly for women, that those with underweight BMIs had low scores on three mental health measures than respondents who had BMIs in the normal weight range. Furthermore Mond et al (2011) found the association between underweight BMIs and well-being and quality life measures like life satisfaction to become non-significant with the inclusion of demographic characteristics. This was similarly experienced in this analysis as unadjusted underweight BMIs were significantly associated with low odds of mastery and well-being, however, these associations failed to remain significant with the inclusion of all lifestyle behaviours and control variables in the model.

When the different BMI groups were examined separately for males and females it was found that BMI may play a greater role in males' positive mental health than females. Underweight and obese BMIs were not found to have significant relationships with any of the positive mental health indicators for females when adjusted for all factors in the model. However, for males, an underweight BMI was found to have a significant positive association with the positive mental health indicator mastery, and obese BMIs were found to have significant positive relationships with the positive mental health indicators happiness, coping ability and life satisfaction. Overweight BMIs were however found to significantly increase the odds of the positive mental health indicator life satisfaction for females. Males with overweight BMIs were also found to increase the odds of the positive mental health indicators life satisfaction, happiness and sense of coherence. These results fail to support the research hypothesis as

these analyses found, for males, overweight and obese BMIs actually increase the likelihood of positive mental health.

Conclusion

Analysis of data from the National Population Health Survey and the Canadian Community Health Survey demonstrate that lifestyle behaviours have an influence over positive mental health. These findings demonstrate mixed support for the research hypothesis that lifestyle behaviours deemed risky to health would have a negative association with the positive mental health indicators. The lifestyle behaviours smoking, physical inactivity and heavy drinking generally show support for the research hypothesis, while BMI does not demonstrate such support.

The lifestyle behaviour smoking status was found to demonstrate the strongest support for the research hypothesis with smokers having significantly lower likelihoods than non-smokers across five of seven positive mental health indicators. The lifestyle behaviours physical inactivity and heavy drinking were found to show moderate support for the research hypothesis, each demonstrating significant low odds across four of seven positive mental health indicators. The lifestyle behaviour measure BMI was found to have the weakest support for the research hypothesis. Overweight and obese BMIs were not found to have significant low odds for any of the positive mental health indicators, while underweight BMIs were only found to have significant low odds for one positive mental health indicator, self-esteem. Contrary to the research hypothesis overweight BMIs were found to have high likelihoods across three positive mental health indicators, and obese BMIs were found to have high likelihoods across two indicators of positive mental health.

Not all positive mental health indicators are influenced by the lifestyle behaviour measures. Sense of mastery was not found to have any association with the lifestyle behaviours. Similarly the indicator self-esteem was found to have an association with only one lifestyle measure, and only two

lifestyle behaviours were found to lower the likelihoods of psychological well-being and sense of coherence. The positive mental health indicators happiness, coping ability and life satisfaction were found to have the most relationships with the lifestyle behaviours, as smoking, physical inactivity and heavy drinking all lowered the likelihoods of happiness, coping and life satisfaction.

When examined separately for gender physical inactivity tended to have a greater negative impact on females, while heavy drinking had a greater negative impact on males' positive mental health. Physically inactive females were found to have significant low odds across four measures of positive mental health, while physically inactive males were only found to have significant low odds across three measures of positive mental health. However, heavy drinking was only associated with low odds across two indicators of positive mental health for females, while heavy drinking was associated with lower odds across three indicators for males. BMI also tended to impact males' positive mental health to a larger extent than females' positive mental health. Underweight and obese BMIs were not found to be significantly associated with any of the positive mental health indicators for females, while underweight and obese BMIs were positively associated with males' positive mental health. BMI for both males and females was not associated with lower likelihoods of positive mental health as was hypothesized. Smoking however, tended to impact the positive mental health of males and females relatively equally. Male and female smokers were found to have significant low likelihoods across five indicators of positive mental health.

The results from this analysis regarding the impact of lifestyle behaviours on positive mental health are generally consistent with previous well-being and quality of life literature which link the lifestyle behaviours smoking, physical inactivity and heavy drinking to poor health outcomes. These analyses complement this literature by adding another poor health outcome, poor positive mental health, to which these lifestyle behaviours are associated with. Similar to material deprivation, it is important to note that lifestyle behaviours that individuals engage in are not chosen in isolation. Many

lifestyle behaviours that individuals engage in are shaped by material and psychosocial circumstances. According to Singih-Manoux and Marmot (2005), behaviours are a product of the structures in society and the socioeconomic positions occupied by the individual, which shape the way individuals live and work, which makes these behaviours never truly voluntary. For instance Strine et al (2005) found that the smokers in her study were also more likely to be physically inactive, to drink heavily, binge drink, experience sleep impairment and consume inadequate amounts of fruits and vegetables. Physical activity is in turn linked to psycho-social factors such as social support, as physically active individuals have been show to have increased social support and social interaction than physically inactive individuals (Chen & Millar, 1999). When these lifestyle behaviours are experienced in conjunction with Material deprivation and psycho-social disparities, which they often are, this can also further negatively impact positive mental health.

Chapter 5 Positive mental health and the Psycho-social health inequality model

Model Description, Research Questions and Hypotheses

The psycho-social model will examine the relationship between psycho-social resources and positive mental health. Psycho-social measures were selected following previous research by Bartley (2004), and Denton et al (2004), who identified social support, job characteristics and stress as important psycho-social measures. In this analysis social support is measured through community belonging, emotional social support and co-worker social support. Stress is measured through personal and family stressors, as well as workplace stressors job security and job control. Job characteristics such as job security and job control can contribute to high levels of stress if these characteristics are not present (Crowell & McCarter, 2006; Silla, De Cuyper, Garcia, Pieró & White, 2008).

Due to the strong relationship between positive mental health and physical health it is hypothesized that psycho-social measures of social support and stress will impact positive mental health similarly. It is expected that individuals with a high sense of community belonging, emotional social support and co-worker social support will be more likely to have consistently high likelihoods across all indicators of positive mental health than respondents with low quantities of the social support measures. Similarly, following from previous well-being research that links stress to poor health and well-being, it is hypothesized that respondents with good job security and good job control will have greater likelihoods across all indicators of positive mental health than respondents with low job security and low job control. Similarly, it is expected that respondents with family and personal stressors will be less likely to have consistently high likelihoods across the measures of positive mental health than respondents who do not experience such stress.

Reference categories for social support and job stressor measures were selected if the group was thought to have the greatest probability of experiencing low positive mental health. As such low community belonging, emotional support, co-worker support, poor job security and low job control

were chosen as reference categories. Reference categories for measures of stressors that do not originate from the workplace were selected if the group was thought to have the greatest probability of having good positive mental health. Subsequently low personal stress and family stress were chosen as reference categories and will serve as the comparative group to all other categories.

Logistic regression analysis will be conducted to test the research hypotheses between psycho-social resources and positive mental health. Psycho-social measures will be regressed separately for each indicator of positive mental health, and will be compared to evaluate the overall impact of psycho-social resources on positive mental health. Adjusted and unadjusted odds ratios will be compared to assess the contribution of each psycho-social measure to explain inequality in positive mental health.

Emotional social support, co-worker social support and community belonging were coded into two categories of high and low for this analysis. Job control and Job security were measured through agreement to statements assessing the degree of job security and control exercised over work. For these analyses respondents who agreed with all statements were considered to have good job security and job control. Respondents were considered to have high personal stress or family stress if they reported their main source of stress was from personal or family stressors. For a detailed explanation of how these variables were coded please see Appendix A.

Findings

Table 5.1 Logistic Regression Analysis results of Psycho-social theoretical health inequality model with Positive Mental Health Indicators

Psycho Social measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Community Belonging														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.60**	1.41**	1.70**	1.34**	2.63**	1.06	1.47**	1.12	1.55**	1.42**	1.81**	1.59**	1.74**	1.47**
Social Support														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	2.27**	1.94**	4.32**	3.23**	2.25**	1.92**	3.32**	3.25**	2.46**	2.15**	3.24**	2.85**	4.00**	3.70**
Co-worker Support														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.55**	1.35**	1.56**	1.41**	1.66**	1.35**	1.55**	1.39**	1.42**	1.25**	1.46**	1.29**	1.57**	1.40**
Not Applicable	0.85**	1.53**	0.63**	1.45**	0.49**	1.32	1.46**	2.21**	0.78**	0.96	1.28**	1.65**	1.53**	1.89**
Missing	0.33**	2.73	0.25**	0.62**	0.07**	0.89	0.33**	1.63	0.90	0.82	1.25	1.91**	1.12	2.24**
Job Security														
Bad	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good	1.75**	1.44**	1.82**	1.54**	1.95**	1.47**	2.10**	1.84**	1.41**	1.15**	1.63**	1.37**	1.85**	1.52**
Not Applicable	1.01	1.53**	0.77**	1.45**	0.59**	1.32	2.02**	2.21**	0.78	0.96	1.31	1.65**	2.00**	1.89**
Missing	0.39**	2.73	0.30**	0.62**	0.08**	0.89	0.46**	1.63	0.86**	0.82	1.55**	1.91**	1.40*	2.24**
Job control														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.72**	1.47**	1.76**	1.57**	2.05**	1.59**	1.68**	1.51**	1.65**	1.37**	1.69**	1.42**	1.93**	1.55**
Not Applicable	0.95	1.53**	0.72**	1.45**	0.57**	1.32	1.63**	2.21**	0.89**	0.96	1.47**	1.65**	1.87**	1.89**
Missing	0.37**	2.73	0.27**	0.62**	0.07**	0.89	0.36**	1.63	0.84	0.82	1.34	1.91**	1.34	2.24**
Personal Stress														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	0.59**	0.67**	0.94	0.70**	2.30**	0.81**	0.49**	0.52**	1.35**	1.18**	1.23**	1.17**	1.11*	1.09

Psycho-Social measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Physical Quality of Life	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Family Stress														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	0.71**	0.83**	0.94	0.92	1.60**	0.96	0.64**	0.72**	1.02	1.14*	1.32**	1.27**	1.44**	1.24**
Gender														
Male	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Female	1.07	1	0.95	0.90*	1.18**	0.83**	1.01	0.95	0.87**	0.89**	1.02	1	0.93*	0.91**
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.66**	0.59**	0.59**	0.63**	0.92	0.54**	0.72**	0.64**	1.20**	1.12**	0.89**	0.87**	0.80**	0.79**
Poor Health	0.33**	0.30**	0.30**	0.38**	0.43**	0.26**	0.60**	0.45**	0.53**	0.57**	0.52**	0.55**	0.60**	0.62**
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.08	0.98	1.19*	1.03	1.16	0.95	0.73**	0.73**	1.33**	1.05	0.99	0.89	1.27**	1.16*
Age 36-55	1.03	0.78**	1.55**	1.07	1.28**	0.69**	0.49**	0.48**	1.40**	0.87*	0.78**	0.66**	0.75**	0.64**
Age 18-35	0.95	0.65**	1.76**	1.18	1.22*	0.54**	0.33**	0.31**	1.32**	0.82**	0.73**	0.63**	0.51**	0.44**
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.86*	0.93	0.80**	0.84**	0.82*	0.81*	0.80**	0.86	0.81**	0.86*	0.86*	0.92	0.79**	0.90
High school	0.83*	0.92	0.73**	0.79**	0.83*	0.85	1.02	1.09	0.78**	0.84**	0.84**	0.88**	1.03	1.10
Less than high school	0.66**	0.84*	0.48**	0.67**	0.66**	0.89	1.08	1.04	0.58**	0.69**	0.81**	0.80**	1.06	0.98

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$ ** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Psycho-social Measures and the Positive Mental Health Indicator Happiness

Analysis of data from the National Population Health Survey demonstrates that psycho-social measures have an important influence over the positive mental health indicator happiness. In particular social support measures were found to have strong positive associations with happiness. Respondents reporting high emotional social support were 94% more likely to have high happiness than respondents who do not have emotional social support after adjusting for all factors in the model. Similarly, the odds of happiness were 41% higher for those who feel as though they belong to their communities than the odds of those who do not, and the odds of happiness were 35% higher for people who report receiving social support from their co-workers than the odds of those who do not after controlling for all factors in the model.

Stressors were also found to be significantly associated with the positive mental health indicator. Personal and family stressors were found to maintain significant negative associations with happiness when all contributing factors were included in the model, while good job security and job control were found to have strong positive associations with happiness. Respondents with good job security had odds of happiness that were 44% higher than the odds of respondents with low job security. Similarly the odds of happiness were 47% higher for respondents with good job control than the odds of those with poor job control after adjustment for all factors in the model. Respondents with personal stress had odds of happiness 33% lower than the odds of those with low personal stress after adjustment for all psycho-social and demographic factors in the model. Similarly the odds of happiness were 17% lower for respondents who reported family stress than the odds of those with low family stress.

The odds of happiness were found to improve with physical health and age. For instance, the odds of happiness were 70% lower for those with poor physical health and 41% lower for those with good health, than the odds for those with excellent health when all psycho-social factors were included

in the model. Similarly, the odds of high happiness were 35% lower for individuals aged 18 to 35 and 22% lower for individuals aged 36 to 55 than the odds of those aged 70 and over. Gender was not found to be significantly associated with the positive mental health indicator, and most education groups were also not found to be significantly associated with happiness when all psycho-social measures were included in the model. However, an education of less than high school was found to be associated with lower likelihoods of happiness when all psycho-social measures were included in the model.

When examined separately by gender, social support measures and stressors were found to have significant associations with happiness for both males and females.¹⁵ All social support measures were found to have significant positive relationships with happiness for both males and females, however, the odds of happiness were higher for females than for males. For instance, while males with high emotional social support were found to have odds of happiness 78% higher than the odds of males without social support, females with high emotional social support were found to have twice the odds of happiness than females without emotional social support. The reverse was seen for employment related psycho-social measures. While job control and job security were found to contribute positively to females' odds of happiness, the odds of happiness were higher for males with good job control and job security than the odds of females who had good job control and job security. For instance while females with good job security were found to have odds of happiness 28% higher than the odds of females with poor job security, males with good job security had odds of happiness 65% higher than the odds of males with poor job security. While psycho-social factors improve the odds of happiness for males and females, these results suggest that social support measures may have a greater positive impact on females' happiness while employment related psycho-social measures have a greater influence over males' sense of happiness.

¹⁵ Results for this analysis can be found in tables 9.5 and 9.6 in Appendix B.

Psycho-social Measures and the Positive Mental Health Indicator Mastery

Analysis of data from the National Population Health Survey further demonstrates that psycho-social factors have an important influence over positive mental health. These analyses found significant relationships between psycho-social measures of social support and stressors with the positive mental health indicator sense of mastery that are consistent with the research hypothesis. Psycho-social measures of social support, emotional social support, co-worker social support, and community belonging, were all found to have significant high odds of a high sense of mastery when adjusted for all psycho-social and demographic factors in the model. Respondents who feel as though they belong to their communities were found to have odds 34% higher of sense of mastery than the odds of respondents who do not feel as though they belong to their communities. Similarly the odds of having a high sense of mastery were 41% higher for those who experience social support from their co-workers than the odds of those who receive low social support from their co-workers. Emotional social support was found to have the highest odds of mastery. Those with high emotional social support were found to have just over three times the odds of having a high sense of mastery than those with low social support after adjustment for all factors in the model.

Psycho-social measures of stress, job security, job control, and personal stress were also found to have significant relationships with the positive mental health indicator sense of mastery that show support for the research hypotheses. Good job security and good job control were found to have significant high odd ratios of sense of mastery, while experiencing personal stress was found to significantly lower the odds of experiencing a high sense of mastery after adjusting for all contributing factors. Family stress was not found to have a significant relationship with a high sense of mastery. Respondents who reported having good job security had odds 54% higher of having a high sense of mastery than the odds of those who had poor job security after controlling for all factors in the model. Similarly the odds of having a high sense of mastery were 57% higher for respondents who reported

having good job control than the odds of those who had poor job control. Respondents who reported experiencing personal stress had odds 30% lower than the odds of those who do not have personal stress of having a high sense of control over their lives after adjustment.

While age was not found to have a significant association with mastery when psycho social factors were included in the model, gender, physical health, and education were all found to have significant relationships with mastery. Sense of mastery was found to increase with good physical health. For instance, the odds of a high sense of mastery were 62% lower for respondents with poor health and 37% lower for respondents in good health than the odds of respondents in excellent health when all psycho-social factors were included in the model. Similarly the odds of mastery also increased with educational attainment, where the odds of mastery were lowest among respondents with an education of less than high school and highest among respondents with a university education when all factors were included in the model.

When examined separately for gender, it was found that the psycho-social measures impact sense of mastery similarly for males and females.¹⁶ Emotional social support was found to have a strong relationship with sense of mastery for both males and females, however, females with high emotional social support and a high sense of community belonging were found to have higher odds ratios of mastery than males with a high sense of community belonging and emotional social support. Similarly good job security, which was associated with higher odds ratios of mastery for both males and females, was found to be associated with higher odds ratios for males than for females when adjusted for all contributing factors in the model. Stressors outside the workplace were found to be associated with lower odds ratios of mastery for females. While family stress was not associated with mastery for males, family stress was found to lower females' likelihoods of mastery by 22%. Similarly, personal stress was

¹⁶ Results for this analysis can be found in tables 9.5 and 9.6 in Appendix B.

found to lower males' likelihoods of mastery by 18%, while females' likelihoods of mastery were lowered by 38%.

Psycho-social Measures and the Positive Mental Health Indicator Self-esteem

Analysis of data from the National Population Health Survey further demonstrates that psycho-social measures have an impact on positive mental health. Consistent with the research hypothesis, co-worker social support and emotional social support were found to have significant positive relationships with self-esteem. Emotional social support was found to have an important influence on self-esteem, almost doubling the odds of high self-esteem for respondents with high emotional social support. Respondents with high emotional social support had odds 92% higher of high self-esteem than the odds of those with low emotional social support after adjusting for all psycho-social and demographic measures in the model. Social support from co-workers also increased the likelihoods of self-esteem, however, less so than emotional social support. For instance the odds of self-esteem were 35% higher for those with high co-worker social support than the odds of respondents who receive little or no support at work from their co-workers after controlling for age, gender, education and health status.

Psycho-social measures of stress, job security, job control, and personal stress were also found to have significant relationships with the positive mental health indicator self-esteem that lend support to the research hypothesis. Good job security and job control were found to have significant high odd ratios of high self-esteem, while personal stress was found to significant low odds of high self-esteem when adjusted for all factors in the model. For instance, respondents who reported having good job security had odds 47% higher of high self-esteem than the odds of those with poor job security after adjustment. Similarly the odds of high self-esteem were 59% higher for respondents who reported good job control than the odds of those who had poor job control. Respondents with personal stress had odds

of self-esteem 19% lower than those with low personal stress after adjustment for all factors in the model.

Likelihoods of self-esteem tend to increase with health and age. For instance the odds of high self-esteem were 74% lower for respondents in poor health and 46% lower for respondents in good health than the odds of respondents in excellent health. Similarly the odds of high self-esteem were 46% lower for respondents between the ages of 18 and 35, and 31% lower for respondents between the ages of 36 to 55, than the odds of high self-esteem for respondents over the age of 70. Females were also found to be less likely to have high self-esteem than males. Females were 17% less likely to have high self-esteem than males when all factors were included in the model. Education attainment was not found to have a strong association with self-esteem when all factors were included in the model.

When the relationship between psycho-social measures and self-esteem was examined separately by gender, the analyses found differences in the influence of the psycho-social measures on self-esteem for males and females. Social support measures once again tend to have a greater influence over females' sense of self-esteem than males, while employment characteristics had a greater influence over males' sense of self-esteem than females. While community belonging was not found to be significant for males and females, social support and co-worker support were found to increase females' self-esteem, and emotional social support was found to improve males' odds of self-esteem. While job security was not found to have a positive association with females sense of self-esteem, job security and job control were found to contribute to high odds ratios of self-esteem for males. Job control did however contribute to high odds ratios of self-esteem for females, however these odds were not as high as the odds for males. The odds of high self-esteem were 54% higher for females with high job control than the odds for females without job control, while the odds of high self-esteem were 84% higher for males with high job control than the odds of males without job control when all factors were

included in the model. Personal and family stressors were not found to have a strong influence over self-esteem for both males and females.

Psycho-social Measures and the Positive Mental Health Indicator Coherence

Analysis of data from the National Population Health Survey demonstrates that psycho-social measures of social support and stress have significant relationships with the positive mental health indicator sense of coherence, adding further support to the research hypothesis. Emotional social support in particular was found to have an important influence on sense of coherence, and was found to triple the odds of the positive mental health indicator. Co-worker social support was also found to have significantly higher odds of sense of coherence. While not as high as emotional social support, the odds of sense of coherence were 39% higher for those who receive social support from their co-workers than the odds of those who receive little or no support at work after controlling for all psycho-social and demographic variables in the model. In contrast to the research hypothesis, a sense of belonging to the community was not found to have a significant relationship with the positive mental health indicator sense of coherence.

Psycho-social measures of stress, job security, job control, personal stress, and family stress were also found to have significant relationships with sense of coherence that support the research hypothesis. Good job security and job control were found to have significant high odds of a high sense of coherence, while experiencing personal stress and family stress were found have significant low odds of a high sense of coherence after adjusting for all factors in the model. Respondents who reported good job security had likelihoods 84% greater of high sense of coherence than those who had poor job security after controlling for all factors in the model. Similarly the odds of a high sense of coherence were 51% higher for respondents who reported having good job control than the odds of those who had poor job control. Respondents who reported experiencing personal stress had likelihoods 48% lower

than those who do not have personal stress of having a high sense of coherence after adjustment for all factors in the model. Similarly the odds of having a high sense of coherence were 28% lower for respondents who reported experiencing family stress than those who do not experience family stress.

While educational attainment was not found to have a significant relationship with the positive mental health indicator sense of coherence, physical health status and age were found to have significant relationships when all contributing factors were included in the model. These analyses found that the odds of a good sense of coherence increased with health status and age. The odds of good sense of coherence were 55% lower for respondents in poor health and 36% lower for respondents in good health, than the odds of respondents in excellent health. Similarly the odds of a good sense of coherence were 69% lower for respondents between the ages of 18 to 35, 52% lower for respondents between the ages of 36 to 55, and 27% lower for respondents between the ages of 56 to 69 than the odds of respondents over the age of 70.

When the impact of psycho-social measures on sense of coherence was analyzed separately for gender it was found that social support measures may have a greater positive influence over males' sense of coherence, while stressors may have more of a negative influence over females' sense of coherence.¹⁷ Social support measures were found to have strong associations with sense of coherence for both males and females, however, the odds of sense of coherence for males with the social support measures were slightly higher than those of females. Females with high emotional social support were found to have almost three times the odds of a good sense of coherence than the odds of females with low social support, while males with high emotional social support were found to have just above three times the odds of a good sense of coherence than the odds of males without social support when all contributing factors are in the model. Job stressors, job security and job control, were also found to have higher odds ratios for males than for females, however the presence of personal and family

¹⁷ Results for this analysis can be found in tables 9.5 and 9.6 in Appendix B.

stressors were found to be associated with lower odds of sense of coherence for females than for males when all contributing factors were included in the model. Family stressors were not found to have a significant relationship with sense of coherence for males, while this type of stress was associated with lower odds of sense of coherence for females. These analyses suggest that social support, while important for a good sense of coherence for both males and females, may have a stronger influence over males' sense of coherence than females, whereas personal stressors and family stressors have a greater negative influence over females sense of coherence than males.

Psycho-social Measures and the Positive Mental Health Indicator Coping Ability

Analysis of data from the Canadian Community Health Survey demonstrates that psycho-social factors have an important impact on the positive mental health indicator coping ability. All seven psycho-social measures were found to have significant relationships with this positive mental health indicator, however the relationship between measures of stress outside of the workplace, family stress and personal stress, were not found to support the research hypotheses. Measures of social support were all found to have significantly higher odds of coping ability when adjusted for all psycho-social and demographic factors in the model, which lends further support to the research hypotheses.

Respondents who feel as though they belong to their communities were found to have odds 42% higher than the odds of respondents with low community belonging of having a good ability to cope with day to day demands. Emotional social support is once again an important factor associated with high odds. High emotional social support was found to have just over twice the odds of having a good ability to cope with day to day demands than the odds of those who have low emotional social support after adjustment for all factors in the model. Similarly, the odds of having good coping ability are 25% higher for those who experience social support from their co-workers than the odds of those who receive low social support from their co-workers.

Psycho-social measures of stress were also found to have significant relationships with the positive mental health indicator coping ability, however, job security and job control were the only measures to show results that are consistent with the research hypothesis. Good job security and job control were found to be associated with significant high likelihoods of good coping ability, as were personal stress and family stress, however the latter does not support the research hypothesis. Respondents with good job security had odds 15% higher of a good ability to cope with day to day demands than the odds of those with low job security when all psycho-social and demographic variables are included in the model. Similarly the odds of good coping ability were 37% higher for respondents with good job control than the odds of those who had poor job control. Respondents with personal stress had odds 18% higher than the odds of those with low personal stress of having good coping ability. Similarly the odds of good coping ability were 14% higher for those with family stress than the odds of those without family stress after adjustment for all factors in the model. These findings of higher likelihoods of coping ability for those who experience personal stress and family stress may be the result of stress itself. These respondents may have developed good coping strategies to cope effectively with the types of stress that they are experiencing, and thus have higher likelihoods of coping than those with low stressors.

Age, physical health and education were also found to have significant relationships with the ability to cope with day to day demands. Coping ability was found to increase with age and as physical health status improved. For instance, the odds of a good ability to cope with day to day demands were 18% lower for respondents between the ages of 18 to 35, and 13% lower for those between the ages of 36 to 55 than the odds of respondents aged 70 and older. Similarly the ability to cope was also found to increase with educational attainment, where the odds of coping ability were the lowest among respondents with an education of less than high school, and highest among those with a university education.

When the relationship between the psycho-social measures and the positive mental health indicator coping ability were analyzed separately for gender these analyses found subtle differences between males and females.¹⁸ The social support measures community belonging, emotional social support and co-worker social support were found to increase the likelihoods of coping ability for both males and females. However, males with high emotional social support and co-worker support were found to have higher odds of coping ability than females with the same level of support when all factors were included in the model. Similarly the job characteristics good job security and job control were found to increase males' likelihoods of coping. While job security was not found to be significantly associated with females' likelihoods of coping ability, females with high job control were found to have higher odds of coping ability than males who also experience job control. While family stress was not found to have a significant association with coping ability for males and females, personal stress was found to significantly increase both males and females coping ability. This finding however does not support the research hypothesis.

Psycho-social Measures and the Positive Mental Health Indicator Life Satisfaction

Analysis of data from the Canadian Community Health Survey further demonstrates that psycho-social factors have an important impact on positive mental health. All seven psycho-social measures were found to have significant relationships with life satisfaction. However, the relationships between stressors outside of the workplace, family stress and personal stress, were not found to support the research hypotheses. Social support measures, emotional social support, co-worker social support, and community belonging, were found to have significantly higher odds of life satisfaction when adjusted for all psycho-social and demographic measures in the model, adding support to the research hypothesis. Respondents who feel as though they belong to their communities were found to have odds of high life

¹⁸ Results for this analysis can be found in tables 9.5 and 9.6 in Appendix B.

satisfaction that were 59% higher than the odds of respondents who do not feel as though they belong to their communities. Emotional social support was once again found to be an important benefit to positive mental health. High emotional social support was found to have almost three times the odds of high life satisfaction than the odds of those with low emotional social support after adjustment for all factors in the model. Similarly the odds of a high sense of life satisfaction were 29% higher than the odds of those who experience social support from their co-workers than those who receive low social support from their co-workers.

Psycho-social measures of stress were also found to have significant relationships with the positive mental health indicator life satisfaction; however, job security and job control were the only measures to show support for the research hypotheses. Good job security and job control were found to have significant high odd ratios of high life satisfaction, supporting the research hypothesis. However, personal and family stressors were also found to have significant high odds of high life satisfaction which does not support the research hypothesis. Respondents who reported good job security had odds 37% higher of high life satisfaction than those with poor job security after controlling for all factors in the model. Similarly, the odds of high life satisfaction were 42% higher for respondents who reported having good job control than the odds of those with poor job control. Respondents with personal stress had odds 17% higher of high life satisfaction than the odds of those with low personal stress, and the odds of high life satisfaction were 27% higher for those with family stress than the odds of those with low family stress after adjustment.

When all psycho-social measures were included in the model, these analyses found that the odds of life satisfaction tend to improve with health, educational attainment and age. Respondents with poor health were found to have lower odds of life satisfaction than respondents in good health and excellent health. Likewise, respondents between the ages of 18 to 35 were found to have the lowest odds of life satisfaction of all age groups, while respondents aged 70 and older were found to have the

greatest odds of life satisfaction. Similarly respondents with a university education were found to have the highest odds of life satisfaction, while respondents with an education of less than high school were found to have the lowest odds of life satisfaction.

These analyses found, when analyzed separately for gender, that psycho-social measures may have a greater positive influence over males' life satisfaction than females.¹⁹ While females with high emotional social support were found to have high odds of life satisfaction, higher odds than males with high emotional social support, all other psycho-social measures were found to have higher odds ratios for males. Males with high community belonging and co-worker support were found to have higher odds of life satisfaction than females who reported the same type of social support after adjustment for all other psycho-social measures in the model. Similarly males with good job security and job control were found to have higher odds of life satisfaction than females who also have good job security and job control. Family stress was however found to have a significant relationship life satisfaction for females only. However this relationship was positive and does not lend support to the research hypothesis. Personal stress was found to have a positive association with life satisfaction for both males and females, however, this finding also does not support the research hypothesis.

Psycho-social Measures and the Positive Mental Health Indicator Psychological Well-being

Analysis of data from the Canadian Community Health Survey demonstrates that psycho-social factors have an important impact on the positive mental health indicator psychological well-being. Six of seven psycho-social measures were found to have significant relationships with psychological well-being contributing support for the research hypothesis. The psycho-social measures of social support, emotional social support, co-worker social support, and community belonging, were found to have significantly higher odds of psychological well-being when adjusted for all psycho-social and

¹⁹ Results for this analysis can be found in tables 9.5 and 9.6 in Appendix B.

demographic measures in the model, which add support to the research hypothesis. Respondents who feel a sense of belong to their communities were found to have odds 47% higher than the odds of respondents who do not feel a sense of belong to their communities of a having high psychological well-being. High emotional social support was found to have more than tripled the odds (3.70) of having high psychological well-being than the odds of those with low emotional social support after adjustment. Similarly, the odds of high psychological well-being were 40% higher for those who experience social support from their co-workers than the odds of those who receive low social support from their co-workers.

Psycho-social measures of stress were also found to have significant relationships with the positive mental health indicator psychological well-being, however, job security and job control were the only measures to show support for the research hypotheses. Respondents with good job security had odds of high psychological well-being 52% higher than those with low job security after adjustment for all factors. Similarly, the odds of having high psychological well-being were 55% higher for respondents who reported having good job control than the odds of those who had poor job control.

Stressors outside the workplace were not found to be an important predictor of psychological well-being. The odds of high psychological well-being were only 24% higher for those with family stress than those with low family stress after adjustment for age, gender, education and health status. While family stress was found to have significant high odds of psychological well-being this finding does not support for the research hypothesis. Furthermore, personal stress was not found to have a significant relationship with psychological well-being.

While education was not found to have a significant relationship with psychological well-being when all psycho-social measures were included in the model, physical health status, age and gender were all found to be significantly associated with psychological well-being. Consistent with well-being literature, these analyses found psychological well-being to increase with improvements to physical

health. These analyses found respondents in poor health to have the lowest odds of psychological well-being and respondents in excellent health to have the highest odds of psychological well-being of all health groups when all factors were included in the model. Similarly the odds of psychological well-being were found to improve with age. For instance respondents between the ages of 18 to 35 were found to have the lowest odds of good psychological well-being of all age groups when all factors were included in the model.

When the relationships between psycho-social measures and psychological well-being were analyzed separately for males and females, these analyses found that psycho-social measures may have a greater influence over males' psychological well-being than females.²⁰ These analyses found males had higher likelihoods of psychological well-being across all psycho-social measures except community belonging. For instance, males with high emotional social support were found to have almost four times the odds of psychological well-being than the odds of males with poor emotional social support, while females with high emotional social support were only found to have odds three times those of females with poor emotional social support. Similarly the odds of psychological well-being were 62% higher for males with good job control than the odds of males with poor job control, while the odds were only 48% higher for females with good job control than the odds of females with poor job control when all other psycho-social measures were included in the model. Personal and family stressors were not found to have a significant relationship with psychological well-being for males. Family stress was however found to have a significant positive relationship for females' psychological well-being, although this relationship does not support the research hypothesis.

²⁰ Results for this analysis can be found in tables 9.5 and 9.6 in Appendix B.

Discussion

Social support and stress have been identified as important psycho-social measures which can aid or impair physical health and mental health (Bartley 2004, Kawachi and Berkman, 2001; Seeman, 1996; Chou & Robert, 2008; Daniels & Guppy, 1994; Shields, 2006). Subsequently, community belonging, co-worker social support and emotional social support have been chosen to measure the positive impact that social support networks have on positive mental health. These analyses have found all three measures of social support to have a strong association with good positive mental health. Stressors however have been shown to have the opposite impact on physical and mental health, often hindering life satisfaction and well-being. These analyses capture potential employment stressors as well as personal stressors which impact positive mental health. Perceiving good levels of job control and job security were found to be associated with better positive mental health, while the presence of personal stressors and family stressors were found to be associated with poorer positive mental health.

Social Support

Social support, measured through community belonging, emotional social support, and co-worker social support were found to have significant positive relationships with good positive mental health demonstrating strong support for the research hypothesis. Emotional social support and co-worker social support showed the strongest support for the research hypothesis. These findings reflect similar findings from well-being research, which find that social support networks have improvements to mental health, physical health and well-being (Kawachi and Berkman, 2001; Seeman, 1996).

Community belonging

These analyses found community belonging to have a significant positive relationship with positive mental health, where a high sense of community belonging was found to be associated with improved likelihoods of positive mental health. Community belonging was found to be associated with

improved odds for two of the four positive mental health indicators measured in the NPHS, happiness and a sense of mastery, as well as improved odds for all three of the positive mental health indicators measured in the CCHS.

Consistent with research that has found a good sense of community belonging to be associated with improvements to mental health, physical health, longevity, and depression (Young, Russell, & Powers, 2004) these analyses have found community belonging to also have benefits to positive mental health. A high sense of community belonging has been found to be associated with low stress, good social support and physical activity (Young et al., 2004). Consistent with research by CIHI (2009), which found community belonging to improve likelihoods of coping ability, well-being, and life satisfaction by roughly 50%, these analyses similarly found high community belonging to improve the likelihoods of coping ability, well-being, and life satisfaction by approximately 50%.

While community belonging was found to improve the odds of positive mental health for both males and females these analyses found that a high sense of community belonging is more advantageous to females' positive mental health than males. Females with a high sense of community belonging were found to have higher odds of the positive mental health indicators happiness, mastery, coping ability and psychological well-being than males with a high sense of community belonging. However, this finding is not consistent with the literature. According to Osborne et al (2009), participation in community groups often has more negative consequences for women than men. According to Osborne et al (2009), more than half of the women in their study reported negative social relationships arising out of participation in community groups, and all the women interviewed reported limitations to participation in community groups. Furthermore, women are more likely to participate in organizations that are linked to gender roles which Osborne et al (2009) argue can be negative to mental health.

Emotional social support

Similar to previous research that has linked social support to good health outcomes this study has linked emotional social support to improvements in positive mental health. These analyses found emotional social support to have significant positive relationships across all four indicators of positive mental health measured in the NPHS, and all three indicators of positive mental health measured in 2002 in the CCHS. These analyses demonstrate support for the research hypothesis as emotional social support was found to increase the likelihood of each positive mental health indicator.

Emotional social support is argued to be beneficial to health as it serves as a protective factor against life stressors which can have a negative impact on physical health and well-being. According to Seeman (1996) the presence of social networks is not enough to produce benefits to health; rather it is the support and the emotional bonds from social networks that produce benefits to health. For instance, while married individuals have better mental health than those who are single, married individuals who report low attachment to their spouse have higher likelihoods of poor mental health than single individuals (Seeman, 1996). These results are consistent with other research in the area which finds emotional social support to increase life satisfaction, well-being and happiness. For instance research by the Canadian Institute for Health Information (2009), found individuals with emotional high social support to have twice the odds of ability to cope with day to day demands, well-being, and life satisfaction than individuals with low social support. Similarly Stephens et al (1999), found individuals with high emotional social support to have three times the odds of happiness, double the odds of a high sense of mastery, and almost double the odds of sense of coherence and high self-esteem than individuals with little social support.

Consistent with Kawachi and Berkman (2001), who argue that females are more likely to have greater emotional social support than males, these analyses also found females to have greater emotional social support than males. However, while a greater percentage of females in these analyses

have more emotional social support, logistic regression analyses indicate that social support may have a greater impact on males' positive mental health. Males with high emotional social support were found to have higher odds ratios across more indicators of positive mental health than females with high social support. For instance, males with high emotional social support had higher likelihoods of the three indicators of positive mental health measured in the CCHS than females with high emotional social support. This finding could be reflective of research that argues that social support networks have a greater negative impact on females' mental health due to stress which can arise from close emotional bonds. Participation in social networks is argued to predispose women to stress, as stressful life events that occur to people that women feel emotionally close to in their social network can also negatively impact their mental health (Kawachi & Berkman 2001; Seeman, 1996).

Co-worker social support

These analyses have also found support from co-workers to be significantly associated with improved likelihoods of positive mental health, adding further support to the research hypothesis. Social support from co-workers was found to have positive relationships with all four indicators of positive mental health measured in the NPHS, and all three indicators of positive mental health measured in the CCHS. These positive findings are consistent with previous research outlining the health benefits of good social support in the workplace. According to Shields (2006), poor support in the workplace from co-workers and supervisors can have negative consequences on health as it is associated with increased stress, physical ill health and depression. Furthermore, since work is an important part of many people's lives, work and the support experienced at work is an important determinant of happiness, quality of life and physical health (Chou & Robert, 2008).

Social support from co-workers was found to have a greater impact over males' positive mental health than Females. Males with high co-worker support were found to have higher likelihoods of the

positive mental health indicators measured in both the NPHS and the CCHS than the likelihoods of females with high co-worker support. This finding is similar to what was found previously with the psycho-social measure emotional social support. Similar to emotional social support, the higher benefits for males' positive mental health could also be attributed to increased likelihoods of stress for females from social networks (Kawachi & Berkman 2001; Seeman, 1996).

Stress

Stress has been consistently linked in the literature to poor health outcomes. These analyses focus on two sources of stress in the workplace, job insecurity and poor job control, as well as two sources of stress outside of the workplace, personal stress and family stress. The presence of good job security and job control were found to have significant positive relationships with the positive mental health indicators supporting the research hypothesis. The presence of personal stress and family stress also demonstrated significant positive relationships with some positive mental health indicators and does not demonstrate strong support for the research hypothesis. These analyses add to the health literature a further positive health outcome that good job security and job control are associated with, positive mental health.

Job Security and Job Control

These analyses found two sources of stressors originating from the workplace, job security and job control, to have an important relationship with positive mental health. Good job security and job control were found to increase the likelihoods of all four positive mental health indicators measured the NPHS, as well as all three indicators measured in the CCHS, demonstrating strong support for the research hypothesis. These findings are consistent with the health literature which has found job security and job control to be associated with benefits to well-being (Daniels & Guppy, 1994; Shields, 2006; Silla, De Cuyper, Gracia, Peiró & De Witte, 2009; Rocha, Crowell, McCarter, 2006). Job control,

according to Daniels and Guppy (1994), is particularly beneficial to mental health as the freedom to make decisions, and the ability to have input over work enables individuals to change the nature of their work environment, or work tasks, to allow them to cope with potential stressors. Conversely, job insecurity is particularly harmful to both physical and mental health due to a sense of powerlessness, anxiety and subsequent financial stress (Sillia et al., 2009; Rocha et al., 2006). According to Rocha et al (2006), what makes job insecurity particularly harmful to well-being is that the stress of job insecurity is not felt in isolation; rather the well-being of workers and their families is negatively impacted by job insecurity.

Consistent with previous health literature, job security and job control were found in these analyses to have a greater impact on males' positive mental health. Males with good job security and job control were found to have significant positive associations with all indicators of positive mental, however this was not similarly found for women. Job security was only found to have significant positive relationships with three of the four indicators measured in the NPHS and two of three indicators measured in the CCHS for females. Similarly job control was found to have significant positive relationships with three of four indicators measured in the NPHS and all three positive mental health indicators in the CCHS. Males with good job security were found to have higher likelihoods of the positive mental health indicators than the likelihoods of females with good job security across the same positive mental health indicators. The same pattern was seen between males and females with good job control. These findings are reflective of previous research that find women to have lower scores of decision authority and decision latitude than males (Shields, 2006), and greater job insecurity than males (Rocha et al., 2006). These findings could be attributed to differences in proportion of males and females employed in white collar and blue collar occupations. Men are more likely to be employed in white collar occupations which are more likely to give workers more job control and job security, while

women are more likely to work in blue collar occupations which are more likely to be characterized by low job security and low job control (Marchand et al., 2006; Shields, 2006).

Personal stress and Family stress

These analyses also examined the association of positive mental health with stressors outside the workplace, particularly for personal and family stress. These stressors demonstrated the least support for the research hypothesis. However, personal stress was found to demonstrate stronger support for the research hypothesis than family stress. Personal stress was found to maintain a significant relationship with four positive mental health indicators, demonstrating moderate support for the research hypothesis. Family stress maintained significant relationships with two positive mental health indicators and thus displayed low support for the research hypothesis. Personal stress was found to have significant low likelihoods across all positive mental health indicators measured in the NPHS, while family stress was found to be associated with significant low likelihoods of only two positive mental health indicators measured in the NPHS, happiness and sense of coherence. In contrast to the research hypothesis, significant positive relationships between high family stress was observed with the three positive mental health indicators measured in the CCHS. Having high family stress actually increased the likelihoods of having a good ability to cope with day to day demands, high life satisfaction and high psychological well-being. Similarly significant positive relationships were also observed for those who have personal stress across two positive mental health indicators measured in the CCHS.

Consistent with previous health research, which finds women to be more susceptible to stress (Sandanger, Nygård, Sorensen and Moum, 2004), these analyses found personal stress and family stress to have a greater negative impact on females' positive mental health than males. Females with personal stress had significant lower likelihoods of the positive mental health indicators measured in the NPHS than the likelihoods of males who also experienced personal stress. Similarly females who experience

family stress were found to have significant lower likelihoods of three of four positive mental health indicators measured in the NPHS; happiness, sense of mastery and sense of coherence. These findings are consistent with those from Sandanger et al (2004), who found that women under the age of 40 carry more stress than their male counterparts. A possible explanation for these findings could be that women carry more stress due to close emotional bonds they form with others, as well as balancing work and family life (Sandanger et al, 2004; Kawachi & Berkman 2001; Seeman, 1996).

Conclusion

Analysis of data from the National Population Health Survey and the Canadian Community Health Survey demonstrate that psycho-social measures of social support and stress have an important influence over positive mental health. While social support measures, particularly emotional social support, and employment stressors were found to demonstrate strong support for the research hypothesis, stressors outside the workplace, family stress and personal stress, were not found to have strong support for the research hypothesis.

Social support indicators emotional social support and co-worker social support, as well as job stressor measure job security were found to show the strongest support for the research hypothesis, with significant increased likelihoods across all positive mental health indicators measured in both the NPHS and the CCHS. Emotional social support was found to have a strong positive relationship with positive mental health, increasing likelihoods of sense of mastery, sense of coherence, and psychological well-being by three times the odds of those with low emotional social support. The stressor family stress was found to have the least support for the research hypothesis, with decreased likelihoods across only two measures of positive mental, happiness and sense of coherence. Family stress and personal stress were however found to have significant positive relationships with the positive mental health indicators measured in the CCHSS, which is in contrast to the research hypothesis.

The influence of psycho-social measures on positive mental health was also found to vary by gender. Co-worker support and emotional social support were found to improve males' likelihoods of the positive mental health indicators to a greater extent than females. Similarly job stressors, job security and job control, were also found to improve the likelihoods of positive mental health for both males and females, however the likelihoods for males were higher than those for females across most positive mental health indicators. Stressors outside of the workplace, personal stress and family stress, had a negative impact on females' positive mental health to a larger extent than males. Females with personal stress and family stress were found to have lower likelihoods of the positive mental health indicators than males who experience personal and family stress. While females do have greater social support networks than males, social support may have a greater negative impact on females positive mental health than males as women experience greater stress from their social support networks than males due to the close emotional bonds they form (Sanndager et al, 2004; Kawachi & Berkman 2001; Seeman, 1996).

The results from these analyses, which seek to uncover the impact of psycho-social stress and social support measures on positive mental health, are generally consistent with previous health and well-being literature which have linked social support and low stress to health benefits. These analyses complement the health literature to add a further positive health outcome of psycho-social factors, positive mental health. It is important to note that psycho-social measures of stress and social support do not occur in isolation. Social support and stress are shaped by the lifestyle behaviours individuals engage in as well as the material conditions in which they live. For instance individuals who are physically active have been found to have more emotional social support and larger social networks than individuals who are physically inactive (Chen & Millar, 1999). Furthermore those who have good job security and good job control are also more likely to be employed in white collar occupations (Marchand et al., 2006; Shields, 2006). When poor psycho-social measures are experienced in

conjunction with material deprivations and lifestyle behaviours which have been deemed as risky to health, which they often are, positive mental health can be further impacted.

Chapter 6 Positive mental health and All Health Inequality Theoretical Perspectives

Material inequality, lifestyle behaviours and psycho-social factors are the three main theoretical frameworks used to explain health inequality within social science research. The social context and socio-economic status play important roles in all three theoretical paradigms of health inequality, and as such, provide avenues through which measures of these theoretical frameworks overlap with one another to contribute to inequalities in health. As these three theoretical frameworks overlap it is important to examine the impact on the positive mental health indicators when measures of all theories of health inequality are included in the model. When all measures of the three theoretical frameworks were combined into one model likelihoods of positive mental health were further impacted and greater variation in the positive mental health indicators was explained.

This chapter will examine the impact on positive mental health when measures from all three health inequality theoretical frameworks are included in one model. The previous chapters analyzed the impact on positive mental health for each theoretical framework in isolation, however, the measures of health inequality overlap with another which could have further impacts on positive mental health. A model with measures from all health inequality theoretical frameworks could provide a more accurate representation of how inequality impacts positive mental health. Furthermore this chapter will examine the Pseudo R^2 for each positive mental health indicator from each theoretical model to assess what theoretical perspective provides a greater understanding and contribution to positive mental health.

Findings

Table 6.1 Logistic Regression Analysis of all theories of health inequality with Positive Mental Health Indicators

Theoretical Health Inequality measures	Happiness		Anxiety		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Living arrangement														
Partner & children	1		1		1		1		1		1		1	
Live alone	0.69**		0.85**		0.81**		0.64**		1.03		1.20**		1.12	
Partner no children	1.09		0.92		0.98		1.27**		1.49**		0.93		1.58**	
Single parent	0.60**		0.72**		0.73**		0.48**		0.79**		1.08		0.64**	
Other family	0.68**		0.66**		0.87*		0.74**		0.91		0.62**		0.75**	
Financial Stress														
No	1		1		1		1		1		1		1	
Yes	0.52**		0.68**		1.48**		0.49**		0.81**		0.52**		0.61**	
Occupation														
White Collar	1		1		1		1		1		1		1	
Blue Collar	0.73**		0.69**		0.72**		0.81**		0.74**		0.80**		1.00	
Neighbourhood stress														
No	1		1		1		1		n/a		n/a		n/a	
Yes	0.43**		0.67**		1.13*		0.40**		n/a		n/a		n/a	
Home ownership														
Yes	1		1		1		1		n/a		n/a		n/a	
No	0.63**		0.77**		0.86**		0.66**		n/a		n/a		n/a	
Physical Activity														
Active	1		1		1		1		1		1		1	
Inactive	0.74**		1.14**		2.43**		1.26**		0.68**		0.69**		0.69**	

Theoretical Health Inequality measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Type of Drinker														
Not a heavy drinker	1		1		1		1		1		1		1	
Heavy drinker	0.89		1.18*		1.04		0.59**		0.85**		0.76**		0.79**	
Not Applicable	0.81		0.70**		0.70**		1.14*		0.65**		0.83**		0.95	
Missing	0.74		0.12**		0.04**		0.20**		1		0.92		1.07	
Smoking Status														
Non-smoker	1		1		1		1		1		1		1	
Smoker	0.81**		1.01		1.11		0.62**		0.81**		0.70**		0.75**	
Weight														
Normal Weight	1		1		1		1		1		1		1	
Under Weight	0.83		0.75*		0.67**		0.90		0.86		0.90		0.73**	
Over Weight	1.06		0.97		1.10		1.17**		1.12*		1.22**		1.22**	
Obese	0.96		0.78**		0.92		0.97		1.05		1.06		1.08	
Missing	0.13**		0.19**		0.08**		0.30**		0.85**		1.22**		1.06	
Community Belonging														
Low	1		1		1		1		1		1		1	
High	1.60**		1.70**		2.63**		1.47**		1.55**		1.81**		1.74**	
Social Support														
Low	1		1		1		1		1		1		1	
High	2.27**		4.32**		2.25**		3.32**		2.46**		3.24**		4.00**	
Co-worker Support														
Low	1		1		1		1		1		1		1	
High	1.55**		1.56**		1.66**		1.55**		1.42**		1.46**		1.57**	
Not Applicable	0.85**		0.63**		0.49**		1.46**		0.78**		1.28**		1.53**	
Missing	0.33**		0.25**		0.07**		0.33**		0.90		1.25		1.12	

Theoretical Health Inequality measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Job Security														
Bad	1		1		1		1		1		1		1	
Good	1.75**		1.82**		1.95**		2.10**		1.41**		1.63**		1.85**	
Not Applicable	1.01		0.77**		0.59**		2.02**		0.78		1.31		2.00**	
Missing	0.39**		0.30**		0.08**		0.46**		0.86**		1.55**		1.40*	
Job control														
Low	1		1		1		1		1		1		1	
High	1.72**		1.76**		2.05**		1.68**		1.65**		1.69**		1.93**	
Not Applicable	0.95		0.72**		0.57**		1.63**		0.89**		1.47**		1.87**	
Missing	0.37**		0.27**		0.07**		0.36**		0.84		1.34		1.34	
Personal Stress														
Low	1		1		1		1		1		1		1	
High	0.59**		0.94		2.30**		0.49**		1.35**		1.23**		1.11*	
Family Stress														
Low	1		1		1		1		1		1		1	
High	0.71**		0.94		1.60**		0.64**		1.02		1.32**		1.44**	
Demographic measures														
Gender														
Male	1		1		1		1		1		1		1	
Female	1.07		0.95		1.17**		1.01		0.87**		1.02		0.93*	
Health Status														
Excellent health	1		1		1		1		1		1		1	
Good Health	0.66**		0.59**		0.92		0.72**		1.20**		0.89**		0.80**	
Poor Health	0.33**		0.30**		0.43**		0.60**		0.53**		0.52**		0.60**	

Demographic measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1		1		1		1		1		1		1	
Some university	0.86*		0.80**		0.82**		0.80**		0.81**		0.86**		0.79**	
High school	0.83**		0.73**		0.83*		1.02		0.78**		0.84**		1.03	
Less than high school	0.66**		0.48**		0.65**		1.08		0.58**		0.8**		1.06	
Age														
Age 70+	1		1		1		1		1		1		1	
Age 56-69	1.08		1.19*		1.16		0.73**		1.33**		0.99		1.27**	
Age 36-55	1.03		1.55**		1.28**		0.49**		1.40**		0.78**		0.75**	
Age 18-35	0.94		1.76**		1.22*		0.33**		1.32**		0.73**		0.51**	

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Table 6.2 Pseudo R2 of Positive Mental Health Indicators with all Health Inequality Theoretical Frameworks

	Happiness	Mastery	Self-esteem	Sense of Coherence	Coping ability	Life Satisfaction	Psychological well-being
Material	0.10	0.05	0.03	0.11	0.03	0.04	0.03
Behavioural	0.12	0.07	0.16	0.09	0.04	0.03	0.03
Psycho-social	0.11	0.13	0.38	0.13	0.06	0.07	0.08
Full theoretical model	0.18	0.14	0.39	0.15	0.07	0.08	0.09

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

Material, Lifestyle Behaviour and Psycho-social Inequality with Happiness

Analysis of data from the National Population Health Survey demonstrates, as was hypothesized, when combined, material inequality and lifestyle behaviours lower the odds of the positive mental health indicator happiness, while psycho-social factors such as social support increase the odds. Living alone or in a single parent household, financial stress, neighbourhood stress, renting, heavy drinking, physical inactivity, and personal stress all contribute to low odds of the positive mental health indicator happiness while community belonging, emotional social support, co-worker social support, job security and job control were associated with high odds.

Generally, the odds of happiness tended to improve when measures from all three theories were included in the model than when measures of each theory were analyzed separately. For instance, in the full model respondents who live alone were found to be 29% less likely to have high happiness than those who live with a partner and children when all theoretical measures were included in the model. However, when only material inequality measures were included in the model, those who live alone were found have odds of high happiness 35% lower than the odds of those who live with a partner and children. The odds of happiness, while still low, improved by 6% when all measures of health inequality were included in the model. This pattern holds for all health inequality measures except for physical inactivity, smoking, co-worker social support and family stress.

When all measures were included in the model physical inactivity and co-worker support had lower odds ratios than models testing the health inequality theories in isolation. Surprisingly, smoking, which was found to contribute to significant low odds of happiness in the lifestyle behaviour model, was not found to have a significant association with happiness when all health inequality measures were included in the model. Similarly, experiencing family stress was no longer found to have a significant association with happiness despite being found to contribute to significant low odds of happiness in the psycho-social model.

The most variation in the positive mental health indicator happiness was explained when all inequality measures are included in one model. Together, according to the Pseudo R², measures from all three health inequality theoretical perspectives explain approximately 18% of the variation in happiness. When the health inequality theoretical perspectives were examined individually, lifestyle behaviours were found to explain greater variation in happiness than material inequality and psycho-social factors. 12% of the variation in happiness was explained by lifestyle behaviors while material inequality explained only 10%, and psycho-social factors explained 11% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on happiness than individual theories of health inequality.

Material, Lifestyle Behaviours and Psycho-social Inequality with Sense of Mastery

Demonstrating moderate support for the research hypothesis, analysis of data from the National Population Health Survey shows that when all theoretical health inequality measures are included in the model, material inequality measures are associated with low odds of the positive mental health indicator sense of mastery, while psycho-social factors such as social support increase the odds. Lifestyle behaviour measures were not found to lower the odds mastery when all measures were included in the model, and do not demonstrate support for the research hypothesis. Financial stress, employment in blue collar occupations, neighbourhood stress, and personal stress were found to have significant low odds of sense of mastery, while community belonging, emotional social support, co-worker social support, job security and job control were found to increase the odds of mastery when all health inequality measures were included in the model.

Not all measures of inequality maintained significant relationships with the positive mental health indicator when all health inequality measures were included in the model. While measures of material inequality such as living alone, living in a single parent household and home ownership were

found to lower the odds of sense of mastery when adjusted for only material measures of inequality, when all measures of health inequality were included in the model these relationships were no longer found to be significant.

Generally, when all health inequality measures were included in the model the odds of mastery for psycho-social factors were not as high as in models testing psycho-social factors in isolation. Psycho-social measures community belonging, social support, job security and job control had higher odds of mastery when included in a model with only psycho-social factors. For instance, respondents with high emotional social support were found to have over three times the odds of a high sense of mastery when only psycho-social factors were included in the model. When all health inequality measures were included in the model those with high emotional social support were found to have less than three times the odds of a high sense of mastery. Conversely the odds of mastery were lower for some material inequality measures when measures from all the theoretical frameworks were included in the model. The odds of mastery were slightly lower for respondents who have financial and neighbourhood stress when all measures of health inequality were included in the model.

According to the Pseudo R^2 , the most variation in the positive mental health indicator sense of mastery was explained when all inequality measures were included in one model. Together, measures of health inequality from all three theoretical perspectives explain approximately 14% of the variation in mastery. When the health inequality theoretical perspectives were examined individually, psycho-social factors were found to explain greater variation in sense of mastery than material inequality and lifestyle behaviours. 13% of the variation in mastery was explained by psycho-social factors while lifestyle behaviours explained only 7%, and material inequality explained 5% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on mastery than individual theories of health inequality. However psycho-social factors tend to have the greatest impact on sense of mastery than material inequality and lifestyle behaviours.

Material, Lifestyle Behaviours and Psycho-social Inequality with Self-esteem

Demonstrating moderate support for the research hypothesis, analysis of data from the National Population Health Survey demonstrates that few material inequality measures are associated with low odds of the positive mental health indicator self-esteem, while psycho-social factors increase the odds when all theoretical measures are included in the model. Lifestyle behaviour measures however were not found to lower the odds self-esteem when all measures were included in the model. Financial stress, neighbourhood stress, and personal stress were found to have significant low odds of self-esteem, while emotional social support, co-worker social support, job security and job control were found to increase the odds of self-esteem when all health inequality measures were included in the model.

Not all measures of inequality maintained significant relationships with self-esteem when all health inequality measures were included in the model. Employment in blue collar occupations and underweight BMIs were found to have significant low odds of self-esteem when adjusted for only material inequality or lifestyle behaviour factors; however, when adjusted for all measures of the theoretical frameworks of health inequality, employment in blue collar occupations, home ownership and underweight BMIs were no longer found to significantly reduce the odds of self-esteem. Conversely, lifestyle behaviour measure physical inactivity, and psycho-social measure family stress, which were found to increase the odds of self-esteem in previous models, were no longer found to maintain significant relationships with self-esteem when adjusted for all measures of health inequality.

Psycho-social measures tended to have higher odds ratios of self-esteem when adjusted for all measures of the health inequality theories. The odds of self-esteem were higher for those with good co-worker support, good job security and good job control when adjusted for all measures than when adjusted for only psycho-social measures. For instance, when adjusted for psycho-social measures those

with high job control were found to be 59% more likely to have high self-esteem, however when adjusted for all measures, those with high job control were found to have odds of self-esteem 68% higher than the odds of those with low job control. Similarly, the relationship with the material measure financial stress was found to change with the inclusion of all measures into the model. When adjusted for only material measures of inequality the odds of self-esteem were actually significantly higher for those who experience financial stress, however, when adjusted for all measures of health inequality those with financial stress were found to have significant low odds of self-esteem.

The most variation in the positive mental health indicator self-esteem was explained when all inequality measures were included in one model. According to the Pseudo R^2 , together, measures of health inequality from all three theoretical perspectives explain approximately 39% of the variation in self-esteem. When the health inequality theoretical perspectives were examined individually, psycho-social factors were found to explain more variation in self-esteem than material and lifestyle behaviour health inequality theories. 38% of the variation in self-esteem was explained by psycho-social factors while lifestyle behaviours explained 16%, and material inequality explained only 3% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on self-esteem than individual health theories. However psycho-social factors tend to have the greatest impact on self-esteem than material inequality and lifestyle behaviours.

Material, Lifestyle Behaviours and Psycho-social Inequality with Sense of Coherence

Analysis of data from the National Population Health Survey demonstrates when measures from all health inequality theoretical frameworks are included in one model, material inequality and lifestyle behaviour measures lower the odds of the positive mental health indicator sense of coherence, while psycho-social factors increase the odds. Living alone or in single parent households, heavy drinking, smoking, and financial, neighbourhood, personal and family stressors were all found to be associated

with low odds of sense of coherence, while high emotional social support, high co-worker social support, and good job security and job control were found to contribute to higher odds of sense of coherence when all health inequality measures were included in the model.

With the inclusion of all measures of health inequality in the model relationships with some material and psycho-social measures that were not significant became significant. For instance physical inactivity was found to have significant high odds of sense of coherence when adjusted for only lifestyle behaviour measures, however, when all measures were included in the model physical inactivity was no longer found to have a significant relationship with sense of coherence. Furthermore, employment in blue collar occupations was previously not found to have a significant relationship with sense of coherence and is now significantly associated with the positive mental health indicator.

The odds of sense of coherence improved for some indicators of inequality while decreased for others when adjusted for all health inequality measures. The odds of sense of coherence improved for those living alone, or in single parent families, and for smokers when adjusted for all health inequality measures. For instance, when only adjusted for material measures, the odds of sense of coherence were 51% lower for those who live in single parent homes than the odds of those who live with a partner and children. However, when adjusted for all measures of health inequality the odds improved. The odds of sense of coherence were only 27% lower for those who live in single parent homes than the odds of those who live with a partner and children. Conversely, the odds of sense of coherence were lower for heavy drinkers, those with financial and personal stress, high emotional social support, high co-worker support, and good job security and control. Emotional social support had the greatest reduction in the odds of sense of coherence. When adjusted for only psycho-social factors, the odds of sense of coherence were over three times greater for those with high emotional support than the odds of those with low emotional support. However, when adjusted for all measures of health inequality, those with

high emotional support were only found to have odds 73% higher, less than twice the odds, of high sense of coherence than the odds of those with low emotional social support.

The most variation in the positive mental health indicator sense of coherence was explained when all inequality measures were included in one model. According to the Pseudo R², together, measures of health inequality from all three theoretical perspectives explain approximately 15% of the variation in sense of coherence. When the health inequality theoretical perspectives were examined individually, psycho-social factors were found to explain greater variation in sense of coherence than material and lifestyle behaviour health inequality theories. 13% of the variation in sense of coherence was explained by psycho-social factors. Material inequality closely followed explaining 11% of the variation, while lifestyle behaviours only explained 9% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on sense of coherence than the individual theories. However, psycho-social factors tend to have a greater impact on the positive mental health indicator than material inequality and lifestyle behaviours.

Material, Lifestyle Behaviours and Psycho-social Inequality with Coping Ability

Demonstrating moderate support for the research hypothesis, analysis of data from the Canadian Community Health Survey shows that when measures of all theoretical frameworks of health inequality are included in the model lifestyle behaviour measures are associated with low odds of ability to cope with day to day demands, while psycho-social factors increase the odds of the positive mental health indicator. Heavy drinking, physical inactivity and smoking were associated with low odds of coping ability, supporting the research hypothesis, while community belonging, emotional social support, co-worker social support, and good job security and job control were found to be associated with higher odds of coping ability, adding further support to the research hypothesis. Material measures

of health inequality were no longer found to maintain significant relationships with coping ability when adjusted for all measures of health inequality.

With the inclusion of all measures of health inequality in the model relationships between the positive mental health indicator and measures of health inequality changed. The odds of some measures improved, while decreased for others, and some material and psycho-social measures that were once significant were no longer found to be significant. Significant relationships between ability to cope with day to day demands and living in a single parent household, financial stress, employment in blue collar occupations and family stress were not maintained when all measures of the health inequality theoretical frameworks were included in the model. Material measures in particular, living in a single parent family, financial stress, and employment in blue collar occupations were no longer found to have significant low odds of coping ability when all measures were included in the model.

The odds of coping ability also improved for some inequality measures, while decreased for others when adjusted for all measures. The odds of coping ability improved for those who live alone, smokers and those that are physically inactive when all measures were included in the model. The odds of coping ability only slightly increased for psycho-social factors co-worker social support and good job security and job control when all measures were included in the model. For instance the odds of coping ability were just 2% higher for those with high co-worker social support and job security when adjusted for all measures of material inequality. Conversely, the odds of coping ability were lower for those with high community belonging, high emotional social support, and personal stress when adjusted for all measures of health inequality. However, the odds of coping ability are not substantially lower. For instance, when adjusted for only psycho-social factors those with high community belonging were found to be 42% more likely than those with low community belonging to have a good ability to cope with day to day demands, while the odds of good coping ability were 39% higher for those with high community belonging when adjusted for all health inequality measures.

According to the Pseudo R^2 , the most variation in the positive mental health indicator coping ability was explained when all inequality measures were included in one model. Together, all measures of the health inequality theories explain approximately 7% of the variation in the ability to cope with day to day demands. When the health inequality theoretical perspectives were examined individually psycho-social factors were found to explain greater variation in coping ability than material and lifestyle behaviour health inequality theories. Closely following the variation explained by all measures of health inequality, 6% of the variation in the ability to cope with day to day demands was explained by psycho-social factors while lifestyle behaviours explained 4%, and material inequality closely followed explaining only 3% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on sense of coherence than the individual theories. However psycho-social factors tend to have the greatest impact on the positive mental health indicator than material inequality and lifestyle behaviours.

Material, Lifestyle Behaviours and Psycho-social Inequality with Life Satisfaction

Analysis of data from the Canadian Community Health Survey demonstrates when measures from all health inequality theoretical frameworks are included in one model, material inequality and lifestyle behaviour measures lower the odds of the positive mental health indicator life satisfaction, while psycho-social factors increase the odds, demonstrating support for the research hypothesis. Living alone or in single parent households, financial stress, heavy drinking, physical inactivity, and smoking were found to be associated with low odds of life satisfaction while high community belonging, high emotional social support, high co-worker social support, and good job security and job control were found to contribute to higher odds of life satisfaction.

With the inclusion of all measures of health inequality in the model, relationships with the positive mental health indicator life satisfaction changed. The odds of some health inequality measures

improved or decreased, while some material and psycho-social measures that were once significant were no longer found to be significant. For instance, significant relationships between health inequality measures, employment in blue collar occupations and personal stress with life satisfaction were no longer maintained when all measures of the health inequality theoretical frameworks were included in the model.

The odds of life satisfaction also improved for some health inequality measures, while decreased for others when adjusted for all measures. The odds of life satisfaction improved for those with financial and family stress, heavy drinkers, smokers and those who are physically inactive when all measures were included in the model. For instance, when adjusted for all health inequality measures, the odds of life satisfaction for those with financial stress were 7% higher than the odds of life satisfaction when adjusted for only material inequality measures. When adjusted for only measures of material inequality, the odds of life satisfaction were 42% lower for those with financial stress, however, when adjusted for all health inequality measures, the odds of life satisfaction were only 35% lower than the odds of those without financial stress. Conversely, the odds of life satisfaction were lower for those who live alone or in single parent households, those with high community belonging, emotional social support, and good job security and control when adjusted for all measures of health inequality. The relationship between life satisfaction and the material inequality measures living alone and living in a single parent household reversed when all measures were include in the model. When adjusted for other measures of material inequality, living alone or in a single parent household were found to contribute to higher odds of life satisfaction than the odds of those who live with a partner and children. When adjusted for all measures of health inequality, those who live alone are 29% less likely, and those who live in a single parent household are 43% less likely than those who live with a partner and children to have high life satisfaction.

The most variation in the positive mental health indicator life satisfaction was explained when all inequality measures are included in one model. According to the Pseudo R^2 , together, all measures of the health inequality theories explain approximately 8% of the variation in life satisfaction. When the health inequality theoretical perspectives were examined individually, psycho-social factors were found to explain greater variation in coping ability than material and lifestyle behaviour health inequality theories. Closely following the variation explained by all measures of health inequality, 7% of the variation in life satisfaction was explained by psycho-social factors while material inequality explained 4%, and lifestyle behaviours explained 3% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on life satisfaction than the individual theories. However psycho-social factors tend to have the greatest impact on the positive mental health indicator than material inequality and lifestyle behaviours.

Material, Lifestyle Behaviours and Psycho-social Inequality with Psychological well-being

Demonstrating moderate support for the research hypothesis, analysis of data from the Canadian Community Health Survey shows that when measures of all theoretical frameworks of health inequality are included in the model few material and lifestyle behaviour measures are associated with low odds of psychological well-being, while psycho-social factors increase the odds of the positive mental health indicator. Financial stress, physical inactivity and smoking were associated with low odds of psychological well-being, while community belonging, emotional and co-worker social support, and good job security and job control were found to be associated with higher odds of psychological well-being.

With the inclusion of all measures of health inequality in the model, relationships with the positive mental health indicator psychological well-being changed. For instance, the material inequality measure living in a single parent home was found to have significant low odds of psychological well-

being when only material inequality measures were included in the model. When measures from all the health inequality theoretical frameworks were included in one model this relationship was not maintained. The odds of psychological well-being also improved for some inequality measures, and decreased for others when adjusted for all measures. The odds of psychological well-being improved for those with financial stress, smokers, good job control and physical inactivity. For instance, when adjusted for all measures of health inequality, the odds of psychological well-being for those with financial stress were 10% higher than the odds of psychological well-being when adjusted for only material inequality measures. When adjusted for only measures of material inequality, the odds of psychological well-being were 33% lower than the odds of those with financial stress, however, when adjusted for all health inequality measures the odds of psychological well-being were only 23% lower than the odds of those without financial stress.

Conversely, the odds of psychological well-being were lower for those with high community belonging, high emotional social support, good job security and family stress when adjusted for all measures of health inequality. However, the odds were only slightly lower for these psycho-social factors. For instance, when adjusted for all measures of inequality, the odds of high psychological well-being were 44% higher for those with high community belonging as opposed to low. When adjusted for only psycho-social measures the odds of high psychological well-being were just 3% higher. The odds of high psychological well-being were 47% higher for those with high community belonging as opposed to low when adjusted for only psycho-social factors.

According to the Pseudo R^2 the most variation in the positive mental health indicator psychological well-being was explained when all inequality measures were included in one model. Together, all measures of the health inequality theories explain approximately 9% of the variation in psychological well-being. When the health inequality theoretical perspectives were examined individually psycho-social factors were found to explain greater variation in psychological well-being

than material and lifestyle behaviour health inequality theories. Closely following the variation explained by all measures of health inequality, 8% of the variation in psychological well-being was explained by psycho-social factors, while material inequality and lifestyle behaviours each explained 3% of the variation. These results suggest that the combination of material, behavioural and psycho-social inequality have a greater impact on psychological well-being than the individual theories. However psycho-social factors tend to have the greatest impact on the positive mental health indicator than material inequality and lifestyle behaviours.

Conclusion

Material inequality, lifestyle behaviours and psycho-social factors are the three theoretical frameworks used to explain health disparities within social science research. While these three theories impact health through different avenues, they are also connected through the social structure and co-occur to further impact health. For instance access to material conditions such as housing are largely influenced by the socio-economic resources individuals have available to them. Those with access to few socio-economic resources are more likely to live and work in areas exposed to health hazards such as dusts, pollution, noise and chemicals (Bartley, 2004). Engagement in risky health behaviours is also largely influenced by the social structure as those found to engage in risky health behaviours, such as smoking, physical inactivity and poor diet were also found to be more likely to have low incomes and low access to material resources (Barley, 2004). The social structure and socio-economic resources also influence psycho-social factors such as social support and stress as individuals in low socio-economic positions with few material resources are more likely to experience social isolation (Bartley, 2004).

When all measures of the three theoretical frameworks were combined into one model the odds ratios of positive mental health changed from when each theory of health inequality was independently measured with the positive mental health indicators. Likelihoods of the positive mental health indicators further declined, and in some cases improved, or became significant when all health

inequality measures were included in the model. Generally psycho-social measures were found to have lower likelihoods of the positive mental health indicators when measures from all the health inequality theoretical frameworks were included in the model. However, these likelihoods remained positive and continued to be found to contribute to higher likelihoods of positive mental health. Material and lifestyle behaviour measures were generally found to have improved likelihoods across the positive mental health indicators when all measures of health inequality were included in the model. While the likelihoods of positive mental health improved slightly, these likelihoods continued to be low, and material and lifestyle behaviour measures remained associated with low likelihoods across the positive mental health indicators when all health inequality measures were included in the model.

When all measures of the health inequality theoretical frameworks were included in the model the greatest variation was explained in all positive mental health indicators. Surprisingly, lifestyle behaviours were found to explain greater variation in the positive mental health indicators sense of mastery and self esteem, despite most measures of lifestyle behaviours having little, or no significant association with these indicators of positive mental health. The variation in most positive mental health indicators explained by psycho-social measures was just below the variation explained by all measures of health inequality. This finding suggests psycho-social measures play a greater role in explaining variation in positive mental health than material and lifestyle behaviour theoretical frameworks of health inequality. However, when all measures of the health inequality theoretical perspectives were combined into one model more variation was explained in all positive mental health indicators than was explained in the single theoretical models. This finding suggests that all measures of the health inequality theoretical frameworks are required to explain the most variation in positive mental health, and are subsequently the best for explaining positive mental health.

Chapter 7 Conclusions

The intent of this thesis was to explore the material, lifestyle behaviour and psycho-social inequalities that impact positive mental health. It was hypothesized that material disparities and lifestyle behaviours deemed risky to health would lower likelihoods of positive mental health, while psycho-social factors would increase likelihoods of positive mental health. This chapter will highlight the major findings of this thesis and the contributions of this thesis to mental health literature. Furthermore, this chapter will review the strengths and limitations of the study and discuss potential directions for future research.

Supporting the research hypothesis material inequality and psycho social factors were found to be significantly associated across the majority of positive mental health indicators. For instance psycho-social measures of social support were found to contribute to higher likelihoods of all positive mental health indicators. Lifestyle behaviours in this analysis, while found to lower the likelihoods of some positive mental health indicators, were not found to do so across the majority of indicators. For instance the positive mental health indicator sense of mastery was not found to have an association with any of the lifestyle behaviours.

These analyses found that material disparities, lifestyle behaviours and psycho-social factors contribute to inequality in positive mental health. However, the greatest variation explained across the positive mental health indicators was when measures from all the health inequality theoretical frameworks were included in the model. When the individual theories of health inequality were tested in isolation, psycho-social factors were found to explain the greatest variation across the positive mental health indicators, while lifestyle behaviours and material inequality explained the least variation across the positive mental health indicators.

Material Health Inequality Model

The material health inequality model demonstrated moderate support for the research hypothesis. Analysis of data from the National Population Health Survey and the Canadian Community Health Survey found the measures of material deprivation in this study to be associated with significant low odds of the positive mental health indicators. In particular, the material deprivation measures financial stress and living in single parent households were found to have the greatest impact on positive mental health. Financial stress was found to lower the odds of six indicators of positive mental health. Similarly living in single parent households was found to lower the odds of five indicators of positive mental health. While it was only possible to measure neighbourhood stress and home ownership with the positive mental health indicators measured in the NPHS, these two measures of material inequality show strong support for the research hypothesis. Both neighbourhood stress and homeownership had significant low likelihoods across three of four positive mental health indicators. The results from these analyses are generally consistent with previous physical health and mental health literature that finds material deprivation to be associated with poor physical health and mental health outcomes.

When examined separately for males and females the material deprivation measures financial stress, living in a single parent household, and experiencing neighbourhood stress were found to lower the odds of females' positive mental health to a greater extent than males. While financial stress was found to have significant low likelihoods across six indicators of positive mental health for males and females, females likelihoods across the positive mental health indicators were lower than males. In contrast, employment in blue collar occupations, living alone and homeownership were found to lower the probability of males' positive mental health to a greater extent than females.

While measures of material inequality were associated with significant low odds across most of the positive mental health indicators, material inequality in isolation did not explain much of the

variation in positive mental health. The material inequality framework explained the least variation across five of seven indicators of positive mental health, happiness, sense of mastery, self-esteem, coping ability and psychological well-being.

Lifestyle Behaviour Health Inequality Model

The lifestyle behaviour health inequality model demonstrated moderate support for the research hypothesis. Analysis of data from the National Population Health Survey and the Canadian Community Health Survey found measures of lifestyle behaviours deemed risky to health to be associated with significant low likelihoods with some of the positive mental health indicators. The results from this analysis are generally consistent with previous physical health, well-being and quality of life literature which link the lifestyle behaviours smoking, physical inactivity and heavy drinking to poor health outcomes. These analyses complement the existing literature by adding another poor health outcome, poor positive mental health, to which these lifestyle behaviours are associated with.

The lifestyle behaviours smoking, physical inactivity and heavy drinking show strong to moderate support for the research hypothesis while BMI was not found to be associated with low likelihoods of the positive mental health indicators. The lifestyle behaviour smoking status was found to have the greatest impact on positive mental health. Smokers were found to have low likelihoods across five indicators of positive mental health. Physical inactivity and heavy drinking were also found to lower the likelihoods of positive mental health, each being associated with lower likelihoods of four indicators of positive mental health.

When examined separately for males and females, physical inactivity was found to lower the probability of females' positive mental health to a greater extent than males, while heavy drinking was found to lower the odds of males' positive mental health to a greater extent than females. Smoking tends to impact the positive mental health of males and females relatively equally, with male and

female smokers experiencing low likelihoods of sense of coherence, ability to cope, life satisfaction and psychological well-being than non-smokers.

While lifestyle behaviour measures were associated with significant low probabilities of the positive mental health indicators, lifestyle behaviours in isolation did not explain much of the variation in positive mental health. Overall the lifestyle behaviour model explained the second least variation in positive mental health of the three health inequality theoretical frameworks.

Psycho-social Health Inequality Model

The psycho-social health inequality model demonstrated strong support for the research hypothesis. Analysis of data from the National Population Health Survey and the Canadian Community Health Survey found the psycho-social measures in this study to be significantly associated with the positive mental health indicators. As hypothesized, social support psycho-social measures, emotional social support, co-work social support and community belonging, were associated with high likelihoods of the positive mental health indicators. Similarly, as hypothesized, the absence of job stressors, job insecurity and poor job control, were also found to be associated with high likelihoods of the positive mental health indicators. Furthermore, the presence of stressors outside of the workplace, personal stress and family stress, were found to be associated with lower likelihoods of positive mental health as was hypothesized, however, only moderate support for the hypothesis was found for these measures.

Social support indicators, emotional social support and co-worker social support, as well as job security were found to show the strongest support for the research hypothesis. Emotional social support, co-worker social support and good job security were found to be associated with increased likelihoods with all positive mental health indicators measured in the NPHS and the CCHS. The results from these analyses are consistent with previous well-being literature which has linked social support

and low stress to health benefits. These analyses complement the health literature by adding a further positive health outcome of good social support and low stress, positive mental health.

When examined separately for males and females, social support measures, co-worker support and emotional social support were found to improve males' likelihoods of positive mental health to a greater extent than females. Similarly, job security and job control were also found to improve the likelihoods of males' positive mental health to a greater extent than females. However, stressors outside of the work place, personal stress and family stress, were found to lower the odds of females' positive mental health to a greater extent than males.

Psycho-social measures were also found to explain the greatest variation in positive mental health of the three health inequality theoretical perspectives. Overall the psycho-social model explained the greatest variation in positive mental health of the of the three health inequality theoretical frameworks, explaining the greatest variation in six of seven indicators of positive mental health.

Full Health Inequality Theoretical Framework Model

The social context and socio-economic status influence all three theoretical paradigms of health inequality. Access to material conditions such as housing, and psycho-social factors such as job security and social support are influenced by socio-economic resources and the social contexts in which people live. Lifestyle behaviours are in turn influenced by material conditions and psycho-social factors. When all measures of the three theoretical frameworks were combined into one model the likelihoods of the positive mental health indicators differed from when each theory of health inequality was measured with positive mental health. Generally the likelihoods of positive mental health associated with psycho-social factors were found to decrease slightly from the independent model, while the likelihoods of

positive mental health associated with material and lifestyle behaviour measures were found to improve slightly from the independent model.

The most variation in the positive mental health indicators was explained when all measures of health inequality were included in one model than the variation by any of the health inequality models in isolation. This finding suggests that indicators from all three theoretical frameworks, when experienced together, have the greatest impact on positive mental health. However, the variation in positive mental health explained by the psycho-social model in isolation was close to the amount of variation explained by all measures of health inequality.

Positive mental health consists of three main components, positive affect, resilience, and quality of life which are measured through seven indicators; happiness, sense of mastery, sense of coherence, coping ability, life satisfaction and psychological well-being. These analyses found that the average Canadian with good positive mental health, who encompasses high levels of the seven measures listed above, lives with a partner without children, does not have financial, personal or neighbourhood stress, is not a heavy drinker, is physically active, is a non-smoker, has a high sense of community belonging, has high emotional social support and co-worker support, good job security and job control, has an university education and is in excellent physical health.

Limitations and strengths

This study used self report data from two Statistics Canada surveys the NPHS and the CCHS. While Statistics Canada data is of high quality, there are always limitations when using self-reported data. For example respondents may over report or under report occurrences. In particular, this is more likely to occur on questions measured with a likert scale, which is used to measure many of the positive mental indicators. According to Cohen et al (2003) there is a danger that responses to questions

measured on a likert type scale are more likely to be concentrated at either end of the likert scale (Cohen et a., 2003).

Caution should be used when interpreting findings that used proxies for the psycho-social measure community belonging and lifestyle behavior smoking status. The NPHS measured community belonging through participation in community groups rather than through sense of community belonging as in the CCHS. Furthermore, smoking status in the CCHS was measured through self-reports of being either a non-smoker or if there was increased consumption of cigarettes when faced with stress. Subsequently these findings may not be as accurate as other research that is able to measure smoking status and community belonging without proxies.

A further limitation of these analyses is the data. The data used for these analyses spans two different time periods and thus may not be comparable. Furthermore the data used from the NPHS is older than the data used in the CCHS. Despite the age of the data the trends indentified are still relevant today, especially as divisions in material inequality, lifestyle behaviours and psycho-social factors continue to grow within the social system. Furthermore the NPHS is one of the only Canadian surveys to measure the positive mental health indicators happiness, sense of mastery and sense of coherence, which are essential to include in positive mental health research and is a particular strength of this thesis.

Despite the limitations, these findings make an important contribution to the sociological literature on positive mental health. A particular strength of this thesis is the ability to measure positive mental health without using measures of mental illness, as many previous studies use measures of mental illness, such as the absence of depression, to measure positive mental health. The ability to measure positive mental health without measures of mental illness is an important contribution to the literature as the absence of mental illness does not necessarily indicate the presence of happiness, good self-esteem, a good sense of control over life, a good sense of coherence, good life satisfaction, a good

ability to cope with day to day demands and good psychological-wellbeing. The ability to measure positive mental health without measures of mental illness ensures accurate measurement of positive mental health itself.

While considered a limitation, the use of two surveys is also a particular strength of this analysis. By using the NPHS and the CCHS all aspects of positive mental health were able to be assessed instead of a particular component. To date no Canadian survey contains measures of all indicators of positive mental health. By using two surveys a complete assessment of the relationship between positive mental health and the health inequality frameworks could be obtained.

Future Research

It is necessary to further examine inequality in positive mental health. Future research should explore the roles of education, age and physical health status with positive mental health within the context of the health inequality theoretical frameworks. Material disparities, lifestyle behaviours, and psycho-social factors may impact positive mental health differently across education groups, age groups and physical health statuses. Longitudinal research could also be undertaken to examine if the relationship between material disparities, lifestyle behaviours and psycho-social factors hold through time. Longitudinal analysis could also be used to further study the argument of the role of adaption with positive mental health to examine if the impact of material inequality, psycho-social factors and engagement in risky health behaviours on positive mental health lessens or diminishes with time.

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Appendix A Variable Measurement, Logistic Regression Assumptions and Model Fit, and Sample Characteristics

Positive mental health indicators

Following from the description of positive mental health by Kovess-Masfety et al (2005), indicators of positive mental health for this study include psychological well-being, coping ability, life satisfaction, sense of coherence, mastery, happiness and self-esteem. The NPHS measures four indicators of positive mental health, happiness, self-esteem, mastery and sense of coherence, while the CCHS measures three indicators of positive mental health, psychological well-being, life satisfaction and coping ability.

Happiness

Happiness was measured in the NPHS along a likert scale where respondents are asked to rate their degree of happiness. Respondents were asked “would you describe yourself as being usually: happy and interested in life, somewhat happy, somewhat unhappy, unhappy with little interest in life, and so unhappy that life is not worthwhile.” Scores on the likert scale ranged from 1 to 5, with 1 being happy and interested in life and 5 being so unhappy that life is not worthwhile. Following from previous analyses by Stephens et al (1999), respondents are considered to have high levels of happiness if they were very happy and interested in life. All respondents who reported being happy and interested in life (71%) were coded as being very happy, and all other respondents with responses ranging from 2 to 5 (25%) were coded as not happy.

Self-esteem

Self-esteem is measured in the NPHS through responses to six questions. Respondents were asked to rate their level of agreement from strongly agree to strongly disagree to the following questions: “you feel that you have a number of good qualities,” “you feel that you’re a person of worth

at least equal to others," "you are able to do things as well as most other people," "you take a positive attitude toward yourself," "on the whole you are satisfied with yourself," and "all in all, you're inclined to feel you're a failure." Responses were summed on a scale of 1 to 24 with higher scores indicating greater levels of self-esteem. Respondents with scores of 17 or less are considered to have low self-esteem, corresponding to an average score of agree per item (Chen & Millar, 1998; Shields & Shooshari, 2001).

Sense of Coherence

The NPHS measures sense of coherence through responses to thirteen questions. Respondents are asked to rate on a scale from 1 to 7, where 1 indicates very seldom or never, and 7 indicates very often, how often they experience the following events: "how often do you have the feeling that you don't really care about what goes on around you," "how often in the past were you surprised by the behaviour of people whom you thought you knew well," "how often have people you counted on disappointed you," "how often have you felt like a sad sack or loser in certain situations in the past," "until now your life has had no clear goals or purpose or has it had very clear goals and purpose"

For the remaining questions respondents were asked to rate on a scale from 1 to 7 where 7 indicates very often and 1 indicates very seldom or never, how often they experience the following: "how often do you have the feeling you're being treated unfairly," "how often do you have the feeling you are in an unfamiliar situation and don't know what to do," "how often do you have very mixed-up feelings and ideas," "how often do you have feelings inside that you would rather not feel," "how often do you have the feeling that there's little meaning in the things you do in your daily life," how often do you have feelings that you're not sure you can keep under control," "when something happens, you generally find that you overestimate or underestimate its importance or you see things in the right proportion," "is doing the things you do every day a source of great pleasure and satisfaction or a source

of pain and boredom.” Scores were summed and ranged from zero to 78 with higher scores indicating greater levels of sense of coherence. Following from previous research this analysis considers a score of 70 or higher to indicate a high level of sense of coherence (Shields & Martel, 2006; Martel, Bélanger, Berthelot & Carrière, 2005).

Sense of Mastery

The NPHS measures mastery through responses to seven questions. Respondents were asked their level of agreement on a likert scale from strongly agree to strongly disagree to the following statements: “you have little control over the things that happen to you,” “there is really no way you can solve some of the problems you have,” “there is little you can do to change many of the important things in your life,” “you often feel helpless in dealing with problems of life,” “sometimes you feel that you are being pushed around in life,” “what happens to you in the future mostly depends on you,” and “you can do just about anything you really set your mind to.” Responses were summed on a scale ranging from 0 to 28 with higher scores indicating a greater sense of mastery. Following from previous research, this analysis considers scores of 20 or higher to indicate a high sense of mastery (Wilkins & Beaudet, 1998; Chen & Millar, 2001).

Life Satisfaction

Life satisfaction is measured by the CCHS on a likert scale where respondents were asked to rate their level of satisfaction with their life from very satisfied to very dissatisfied. Following from previous research by Shields (2004), a respondent was considered to have high life satisfaction if they reported being very satisfied with their life. All other categories were collapsed to form a category of not very satisfied with life.

Coping Ability

Coping ability is measured by the CCHS on a likert scale where respondents were asked to rate their ability handle day to day demands from excellent to poor. Respondents were asked the following question: "In general, how would you rate your ability to handle the day-to-day demands in your life, for example, handling work, family and volunteer responsibilities?" Following from previous research by the Canadian Institute of Health Information (2009), this analysis considered responses of excellent and very good to indicate a high ability to cope with day to day demands.

Psychological Well-being

Psychological well-being is measured in the CCHS through responses to twenty five questions assessing individuals' positive feelings toward life and themselves over the past month. Respondents were asked to rate the frequency of occurrence of particular feelings over the past month from almost always to never. Respondents were asked the following: "during the past month, you felt self-confident," "during the past month, you felt satisfied with what you were able to accomplish, you felt proud of yourself," "during the past month, you were a go-getter, you took on lots of projects," "during the past month you felt emotionally balanced," "during the past month you felt loved and appreciated," "during the past month you had goals and ambitions," "during the past month you felt like having fun, participating in sports and all your favorite activities and hobbies," "during the past month you felt useful," "during the past month you smiled easily," "during the past month you were true to yourself, being natural at all times," "during the past month you did a good job of listening to your friends," "during the past month you were curious and interested in all sorts of things," "during the past month you were able to clearly sort things out when faced with complicated situations," "during the past month you found life exciting and you wanted to enjoy every moment of it, "during the past month your life was well-balanced between your family, personal and professional activities," "during the past

month you were quite calm and level-headed,” “during the past month you were able to easily find answers to your problems,” “during the past month you got along well with everyone around you,” “during the past month you lived at a normal pace, not doing anything excessively,” “during the past month you had the impression of really enjoying life, “ “during the past month you had a good sense of humour, easily making your friends laugh,” “during the past month you felt good, at peace with yourself,” “during the past month you felt healthy and in good shape, “during the past month you were able to face difficult situations in a positive way,” and “during the past month your morale was good.”

Scores were summed and ranged from 0 to 100 with higher scores indicating greater psychological well being. The median score on this scale was a score of 84. Consistent with other measures of positive mental health, specifically mastery and sense of coherence, scores at or above the 75th percentile indicate high psychological well-being, which corresponds to a score of 94 or above. This score also corresponds with an average response pattern of almost always and frequently to most questions.

Material Inequality Measures

The material model examines the relationship between material measures of deprivation and positive mental health. Common measures of material deprivation include access to food, ownership of a vehicle, ability to afford participation in social and leisure activities, housing conditions, work conditions, occupational prestige, neighbourhood characteristics and subjective feeling of poverty (Bartley, 2004; Boarini & d’Ercole, 2006). For this analysis, material deprivation is measured through living arrangement, occupation, financial stress, homeownership and neighbourhood stress.

Living Arrangement

Living arrangement is measured in both the NPHS and the CCHS as the type of family structure in which a respondent is currently living. Respondents were asked if they are unattached and live alone,

unattached living with others, living with a spouse or partner, a parent living with a spouse or partner with children, a single parent living with children, a child living with a single parent, a child living with a single parent and siblings, a child living with two parents, a child living with two parents and siblings, or in another type of living arrangement, for example with grandparents or a niece or nephew. For these analyses, response categories “a single parent living with children, a child living with a single parent, a child living with a single parent and siblings” were collapsed to form the category “single parent households. Similarly, response categories “parent living with a spouse or partner with children, a child living with two parents, a child living with two parents and siblings” were collapsed to form the category, living with a partner and children.

Financial stress

Financial stress is measured in the NPHS and the CCHS as stress arising from not having enough money to buy needed goods. In the NPHS respondents were asked the true or false statement “You don't have enough money to buy the things you need.” Respondents who answered true to the statement were considered to have financial stress, and respondents who answered false were coded as not having financial stress. In the CCHS respondents were asked what “is the most important thing contributing to feelings of stress you may have?” If respondents reported “financial situation, not having enough money to buy needed items” they were considered to have financial stress. Respondents who reported other types of stress as the most important thing contributing to feelings of stress were considered not to have financial stress.

Occupation

Respondent's occupations were classified into 10 categories in the NPHS and the CCHS. In the NPHS occupations were coded into “management,” “business, finance and administrative,” “natural and applied sciences,” “health occupations,” “occupations in social science, education, government and

religion," "occupations in culture, recreation and sport," "sales or service," "trades, transportation, or equipment operator," "occupations unique to primary industry" and "occupations unique to "processing, manufacturing and utilities." The CCHS similarly coded occupations into categories of "management," "professional," "technologist, technician, or tech," administrative, financial or clerical," "sales or service," "trades, transport, or equipment operator," "farming, forestry, fishing, mining," "processing, manufacturing, utilities" These occupation codes were further broken down into white collar or blue collar occupations for this analysis. Following from previous employment research from Shields (2006), occupations that were coded as "sales or service," "trades, transport, or equipment operator," "farming, forestry, fishing, mining," "processing, manufacturing, utilities," "occupations unique to primary industry" and "occupations unique to "processing, manufacturing and utilities" were coded as blue collar occupations for this analysis. All other occupation codes "management," "professional," "technologist, technician, or tech," administrative, financial or clerical," "business, finance and administrative," "natural and applied sciences," "health occupations," "occupations in social science, education, government and religion," "occupations in culture, recreation and sport," were coded as white collar occupations.

Neighbourhood Stress

Neighbourhood stress was only measured in the NPHS and was assessed through three true or false questions "Your neighbourhood or community is too noisy or too polluted?" "Your friends are a bad influence" and "You would like to move but you cannot?" Following from previous stress research by Oprana (2009), if a respondent reported true to at least one of the above statements they were considered to live in stressful neighbourhoods.

Home Ownership

Home ownership was also only measured in the NPHS. Respondents were asked “is this dwelling owned by a member of this household (even if being paid for)?” If respondents answered yes they were considered to be home owners. If respondents answered no to this question they were coded as non-homeowners.

Lifestyle Behaviour Measures of Inequality

The behavioural model examines the relationship of lifestyle behaviours identified as being risky to health with positive mental health. The lifestyle behaviours smoking, alcohol consumption, physical inactivity and BMI are consistently used in the literature as components of the behavioural theoretical framework (Denton et al., 2004; Rohrer et al., 2005).

Heavy drinker

For this analysis a respondent was considered to be a heavy drinker if they consumed more than five drinks on one occasion at least once a month. In the NPHS respondents were asked “How often in the past 12 months have you had 5 or more drinks on one occasion?” Respondents then reported the exact number of times that this had occurred. Following from previous research, respondents who reported they had consumed five or more drinks on one occasion 12 or more times were considered to be heavy drinkers (Shields, 2005). Respondents in the CCHS were also asked “How often in the past 12 months have you had 5 or more drinks on one occasion?” Responses ranged from never to more than once a week. Respondents who reported this occurred once a month or more were considered to be heavy drinkers.

Smoking

In the NPHS respondents were asked "At the present time do you smoke cigarettes daily, occasionally or not at all?" Respondents who answered "daily" and "occasionally" were considered to be smokers for this analysis. Those who responded "not at all" were coded as non-smokers. Smoking status in the CCHS was measured through a proxy. The CCHS asks "When dealing with stress, how often do you try to feel better by smoking more cigarettes than usual?" response categories included "often," "sometimes," "rarely," "never," "do not smoke." For this analysis, respondents who responded "do not smoke" were coded as non-smokers, while respondents who reported "often," "sometimes," "rarely," and "never" were coded as smokers. The proportion of smokers between the two data sets is relatively similar. 29% of the NPHS population in cycle one were smokers while 30% of the CCHS population were smokers.

Physical Activity

Physical activity in both the NPHS and the CCHS was calculated through the amount of average daily energy expenditure during leisure time. Respondents were subsequently coded as being either "active", "moderately active," or "inactive." For this analysis active and moderately active respondents were coded as physically active as they participated in enough daily exercise required for cardiovascular health benefits.

BMI

The NPHS and the CCHS calculated respondent's BMI based on their age, gender, weight and height. Respondents, excluding pregnant women, were assigned to BMI categories from a body weight classification system recommended by *Health Canada* and the *World Health Organization (WHO)* which has been widely used internationally. Following this system respondents from the NPHS were placed into one of five weight categories: Normal weight, underweight, overweight, obese class 1, obese class

2, and obese class 3. CCHS respondents were placed into one of four weight categories: Normal weight, underweight, overweight, and obese. To maintain consistency between the two surveys NPHS obese categories (obese class 1, obese class 2, and obese class 3) were collapsed to form a single obese category.

Psycho-social Measures of Inequality

The psycho-social model examines the relationship between psycho-social resources and positive mental health. In this analysis psycho-social measures of social support are measured through community belonging, emotional social support and co-worker social support. Psycho-social measures of stress are measured through personal and family stressors, as well as workplace stressors job security and job control.

Community Belonging

Community belonging in the NPHS was assessed through membership to voluntary organizations or associations within the community. Respondents were asked the following question: "Are you a member of any voluntary organizations or associations such as school groups, church social groups, community centers, ethnic associations or social, civic or fraternal clubs?" If a respondent answered yes they were considered for this analysis to experience community belonging. If a respondent answered no they were considered to experience low community belonging. Community belonging in the CCHS was measured on a likert scale where respondents were asked to rate their sense of belonging to their community from very strong to very weak. Respondents who reported a "very strong" or "somewhat strong" sense of belonging to their community were considered to experience community belonging for this analysis. Respondents who reported "somewhat weak" or "very weak" ties to their community were considered to have low community belonging.

Emotional Social Support

Emotional social support was measured in the NPHS through a series of four yes or no questions about whether they receive different types of emotional social support. Respondents were asked if they: “have someone you can confide in or talk to about your private feelings or concerns,” “have someone you can really count on to help you out in a crisis situation,” “have someone you can really count on to give you advice when you are making important personal decisions,” and “have someone who makes you feel loved and cared for.” Scores of emotional social support ranged from 0 to 4, with higher scores indicating higher emotional social support. Following from previous social support research, a respondent with a score of 4 was coded as having high emotional social support for this analysis, as this corresponded to experiencing all forms of emotional social support, (Shields. 2006).

The CCHS measures emotional social support through a series of eight questions where respondents are asked to rate on a likert scale ranging from “none of the time” to “all of the time” how often they receive different types of support. Respondents are asked if they have: “someone you can count on to listen to you when you need to talk,” “someone to give you advice about a crisis,” “someone to give you information in order to help you understand a situation,” “someone to confide in or talk to about yourself or your problems,” “someone whose advice you really want,” “someone to share your most private worries and fears with,” “someone to turn to for suggestions about how to deal with a personal problem,” and “someone who understands your problems.” Emotional social support ranges on a scale from 0 to 32 with higher scores indicating higher support. Respondents with scores 24 or higher were considered to have high emotional support; corresponding to scores of “all of the time” and “most of the time” for the eight assessment questions.

Co-worker Social Support

The NPHS and the CCHS measured co-worker social support through three questions. Respondents were asked their level of agreement to if they “are exposed to hostility or conflict from the people you work with,” “Your supervisor is helpful in getting the job done,” and “The people you work with are helpful in getting the job done”. Responses to these questions were summed to form a scale with a range of 0 to 12, with lower scores indicating higher social support from co-workers. Following from previous research, those with scores between 0 and 3 were considered to have high social support from co-workers (Shields, 2006). These scores indicate an average response of strongly agree or agree to having helpful supervisors and co-workers, and scores of strongly disagree or disagree to having hostile co-workers.

Job Control

Job control was measured in the NPHS and the CCHS through two questions that measured decision authority/latitude on the job. Respondents were asked to rate their level of agreement, from strongly agree to strongly disagree to the following statements: “Your job allows you freedom to decide how you do your job. You have a lot to say about what happens in your job”. Possible responses ranged on a scale from 0 to 8, with higher values indicating lower job control. For this analysis respondents with scores ranging from 0 to 2 were considered to have high job control, which corresponds to responses of either strongly agree or agree to the previous two statements.

Job Security

Job security is measured in the NPHS and the CCHS along a likert scale where respondents are asked to rate if their current job security is good from strongly agree to strongly disagree. Respondents who strongly agreed or agreed that their job security was good were considered to have good job

security for this analysis. Respondents that strongly disagreed, disagreed, or neither agreed nor disagreed were considered to have poor job security.

Personal Stress

Personal stress in the NPHS was assessed through five questions. Respondents were asked if the following statements were true or false: "trying to take on too many things," "There is too much pressure on you to be like other people," "others expect too much from you," work around home not appreciated," "people are too critical." Responses were summed on a scale of 0 to 5, with higher values indicating greater stress. Following from previous stress research by Oprana (2009), respondents who reported true to one or more statements were considered to have personal stress.

In the CCHS respondents were asked what "is the most important thing contributing to feelings of stress you may have?" If respondents reported "time pressures/not enough time" or "other personal/family responsibilities" they were considered to experience personal stress. Respondents who reported other types of stress as the most important thing contributing to feelings of stress were considered not to experience personal stress.

Family Stress

Family stress in the NPHS was assessed through two questions. Respondents were asked if the following statements were true or false: "You have a parent, a child or partner who is in very bad health and may die," "Someone in your family has an alcohol or drug problem." Responses were summed on a scale of 0 to 2, with higher values indicating greater stress. Following from previous stress research by Oprana (2009), respondents who reported true to one or more statements were considered to have family stress. In the CCHS respondents were asked what "is the most important thing contributing to feelings of stress you may have?" If respondents reported "personal and family safety" or "health of family members" they were considered to experience family stress. Respondents who reported other

types of stress as the most important thing contributing to feelings of stress were considered not to experience family stress.

Logistic Regression Assumptions and Model Fit

Properly fitted logistic regression models must meet the assumptions of logistic regression. In logistic regression analysis, the dependent variable must be dichotomous, the probability of the occurrence of an event must be modeled as one, the models should be correctly fitted where all meaningful independent variables are included and variables that are not meaningful are excluded from the final model, there should be little or no multicollinearity between the independent variables, independent variables must be linear, and the sample must be large (Cohen, Cohen, West, & Aiken, 2003).

All models for this analysis met the above assumptions for logistic regression analysis. All seven dependent variables were coded as high and low, or yes and no, to the positive mental health state measured. For this analysis, the probability of having high happiness, mastery, self esteem, coherence, life satisfaction, coping ability and psychological well-being, was modeled as one, meeting the second assumption. To ensure that each model was correctly fitted, and contained only meaningful independent variables, stepwise logistic regression analysis was used before the final models were conducted. Stepwise logistic regression selects for inclusion in the model only those independent variables that significantly contribute to explain variance in the dependent variable (Cohen et al., 2003). Tests of multicollinearity were performed on each model to ensure the independent variables are not correlated and are independent of another to ensure the models met the fourth logistic regression assumption. Tolerance, variance inflation and condition index tests were performed on all models and confirmed that there were no issues of multicollinearity for any models. All independent variables chosen for inclusion in this analysis were linear, meeting the fifth logistic regression assumption, and the

analysis drew from large samples, ensuring the last logistic regression assumption was met. The NPHS weighted sample contained approximately 21141172 respondents, and the weighted CCHS sample contained approximately 23631430 respondents.

Sample Characteristics

Table 8.1 NPHS Sample Characteristics

Variables	NPHS	%	Variables	NPHS	%
Gender	Male	49%	Smoking	Smoker	29%
	Female	51%		Do not smoke	66%
				Missing	5%
Education	Less than high school	26%	Weight	Under	3%
	High school	16%		Normal	46%
	Some university	25%		Over	33%
	University	32%		Obese	12%
	Missing	1%		missing	6%
Living Arrangement	Living alone	12%	Social Support	High	75%
	Live with spouse or partner, no children	25%		Low	16%
	Two parent families	37%		Missing	9%
	Single parent families	6%	Co-worker social support	High	24%
	Other families	6%		Low	29%
	Not Stated	5%		Not Applicable	47%
			Job Control	High	31%
				Low	22%
				Not Applicable	47%

Variables	NPHS	%	Variables	NPHS	%
Occupation	White Collar	33%	Family Stress	Yes	21%
	Blue Collar	30%		No	70%
	NA	31%		Not Stated	9%
	Missing	6%			
Neighbourhood stress	Yes	25%	Self-esteem	High	80%
	No	66%		Low	11%
	Missing	9%		Missing	10%
Personal stress	Yes	54%	Sense of Control	High	18%
	No	37%		Low	71%
	Not Stated	9%		Missing	11%

Source: Statistics Canada, NPHS cycle 1

Table 8.2 CCHS Sample Characteristics

Variables	CCHS	%	Variables	CCHS	%
Gender	Male	49%	Smoking	Smoker	31%
	Female	51%		Do not smoke	69%
				Missing	0%
Education	Less than high school	22%	Weight	Under	5%
	High school	20%		Normal	29%
	Some university	8%		Over	12%
	University	49%		Obese	25%
	Missing	1%		missing	29%
Living Arrangement	Living alone	13%	Social Support	High	76%
	Live with spouse or partner, no children	26%		Low	22%
	Two parent families	28%		Missing	2%
	Single parent families	6%	Co-worker social support	High	32%
	Other families	8%		Low	39%
	Missing	5%		Not Applicable	29%
Occupation	White Collar	32%	Job Control	High	42%
	Blue Collar	34%		Low	29%
	NA	33%		Not Applicable	29%
	Missing	1%			

Variables	CCHS		Variables	CCHS	
Financial Stress	Yes	13%	Coping Ability	High	69%
	No	87%		Low	31%
	Missing	0%		Not Stated	0.30
Personal stress	Yes	19%	Psychological well-being	High	24%
	No	80%		Low	74%
	Not Stated	1%		Missing	2%
	Not Stated	1%			

Source: Statistics Canada, CCHS cycle 1.2

The sample for these analyses was limited to adults ages 18 and over, as some of the dependent variables were only measured of this population. Age was regrouped into four categories for this analysis; 18 to 35, 36 to 55, 56 to 69 and 70 and over. The baseline characteristics from the NPHS for this analysis depict an age distribution with 37% of respondents between the ages 18 and 35, 38% between the ages 36 to 55, 16% between the ages of 56 and 69 and 10% over the age of 70. The age distribution of the sample from the CCHS cycle 1.2 depicts a similar pattern, 31% of the sample were between the ages 18 and 35, 41% were between the ages 36 and 55, 16% were between the ages 56 to 69, and 11% were over the age of 70. Gender was equally represented in each sample, with 49% males and 51% females in both the NPHS and the CCHS.

Both samples from the NPHS and the CCHS have high education rates with over 50% of respondents reporting at least some post secondary education. The CCHS sample for this analysis is highly educated. 50% of the sample has a post secondary degree, 8% of respondents have some postsecondary education while 22% have an education of less than high school, and only 20% have a high school education. Data from the NPHS depicts a similar pattern. In the sample for this analysis, 26% of respondents have less than a high school education, 16% have a high school education, 25% have some post secondary education and 32% have a post secondary degree.

The samples for this analysis also generally report good physical health. According to data from the CCHS cycle 1.2, 23% of the sample reported their physical health as excellent, 37% reported very good physical health, 28% reported good physical health, 9% report that their health is fair, and only 3% report that their health is poor. The sample from the NPHS displays a similar pattern. 24% of Canadians reported their physical health as excellent, 35% stated that their health was very good, 26% reported good health, 8% reported their health was fair, and only 2% reported that their health was poor.

Material Inequality Measures

The majority of both samples do not experience material deprivation. Only 13% of the CCHS sample reported living alone and 6% live in single parent households, while 26% live with a spouse or partner, and 28% live with a spouse or partner and children. Similarly within the NPHS sample 12% of respondents live alone, 6% live in single parent households, 25% live with a spouse or partner, and 37% live with a spouse or partner and children. Only 32% of the CCHS sample is employed in blue collar occupations, 16% work in sales or service, 10% work in trades and 6% work in primary industry professions. Furthermore 34% of the sample is employed in white collar occupations; 14% work in management professions and 20% work in professions associated with business, finance, government or administration, while 33% are not in the work force. Similar to the CCHS sample, 33% of the NPHS sample is employed in blue collar occupations; 16% work in sales and service, 11% work in trades and 7% work in primary industry. Similarly, 31% of the NPHS sample is employed in white collar occupations; 19% work in managerial positions and 12% are employed in business, finance, government or administrative positions, while 31% are not in the work force. Only 13% of the CCHS sample reported experiencing the material inequality measure financial stress, while 87% reported they did not experience such stress. The NPHS sample contains a greater number of respondents who report financial stress, 36% report experiencing financial stress while 56% reported that they did not

experience financial stress. Only 24% of the NHPS sample reported experiencing stress from their neighbourhoods while 66% did not experience stress from their neighbourhoods, and 71% of the sample reported owning their own homes, while 29% did not.

Lifestyle Behaviour Measures

The majority of both samples engage in healthy lifestyle behaviours. 52% of the CCHS sample reported being physically active while 48% reported being inactive. 30% reported being a smoker while 69% reported being non-smokers, and only 17% of the sample reported being a heavy drinker while 41% are not heavy drinkers. However, only 29% of the CCHS sample met the criteria for a healthy weight, 25% of the sample is considered obese, 12% are considered to be overweight and 5% are underweight. In contrast only 36% of the NHPS sample engages in physical activity as 56% of respondents reported being inactive. 46% of the sample is considered to be of a healthy weight while 3% are reported to be underweight, 33% overweight and 12% obese. Similar to the CCHS sample, only 11% of the NHPS sample is considered to be heavy drinkers while 64% are not heavy drinkers, and only 29% of the sample reported being a smoker and 66% reported being a non-smoker.

Psycho-social Measures

The majority of both samples also demonstrate good social support networks. 76% of the CCHS sample reported high social support while 22% report low social support, 32% of the sample report experiencing high social support from their co-workers while 39% reported they do not receive such support. 58% of the sample reported having a sense of belonging to the community while 42% did not feel as though they belonged to their community. Similarly, 75% of the NHPS sample reported high social support and only 16% reported low social support, 24% reported high social support from their co-workers while 29% did not report such support. Only 31% of the sample reported a high sense of

community belonging while 60% of the sample reported they did not feel a strong sense of belonging to their community.

Stressors also seem to be low among these two samples. Only 18% of the CCHS sample reported having low job security while 54% reported high job security, 42% of the sample reported high job control while 29% reported a low sense of job control. Only 7% of the sample reported experiencing family stress while 92% of the sample did not experience such stress, and only 20% of the sample reported experiencing personal stress while 80% did not. Similar to the CCHS sample, only 11% of the NPHS sample reported low levels of job security while 42% reported high job security, 22% of the sample reported a low sense of job control while 31% reported high job control. 21% of the sample experience family stress while 70% of the sample does not report such stress, while 54% of the sample reported experiencing personal stress, while 37% did not.

Positive Mental Health Indicators

Data analysis of the NPHS and the CCHS cycle 1.2 indicate that Canadians do not experience consistently high levels of each indicator of positive mental health. According to data from the NPHS while 71% of respondents report that they are happy and satisfied with their lives, and 80% report that they have high self esteem, only 49% of respondents reported having a high sense of mastery, and only 18% reported having a high sense of coherence. Analyses of the CCHS cycle 1.2 depict a similar pattern across indicators of positive mental health. While 69% of respondents reported a high ability to cope with day to day demands only 32% reported that they were very satisfied with their lives, and 24% of respondents report high psychological well-being.

Appendix B: Logistic Regression Results of Positive Mental Health Indicators with Health Inequality Theories by Gender

Material Deprivation and Positive Mental health

Table 9.1 Logistic Regression Analysis of Material Deprivation Measures with All Indicators of Positive Mental Health for Females

Material measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Living arrangement														
Spouse & children	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Alone	0.79**	0.77*	0.84*	1.28**	1.13	1.45**	1.23*	0.94	0.80**	0.93	0.70**	0.56**	1.27**	0.88
Partner no children	1.04	1.02	0.87	1.08	0.94	1.06	1.49**	1.20	0.91	0.98	1.25**	1.08	1.49**	1.07
Single parent	0.54**	0.72**	0.72**	0.95	0.88	1.03	0.63**	0.71*	0.77**	0.85*	0.44**	0.46**	0.83	0.80*
Other family	0.57**	0.73*	0.67**	0.81	0.57**	0.66**	0.74	0.73	0.87	0.96	0.72**	0.70**	0.94	0.87
Financial Stress														
No	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Yes	0.46**	0.63**	0.62**	0.69**	1.02	1.23**	0.45**	0.64**	0.85*	0.87*	0.44**	0.50**	0.55**	0.64**
Occupation														
White Collar	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Blue Collar	0.68**	0.90	0.70**	0.91	0.62**	0.73**	0.74*	0.84	0.74**	0.85**	0.83**	0.95	0.92	1.02
Neighbourhood stress														
No	1	1	1	1	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
Yes	0.40**	0.51**	0.60**	0.67**	0.77**	0.83*	0.44**	0.61**	n/a	n/a	n/a	n/a	n/a	n/a
Home ownership														
Yes	1	1	1	1	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
No	0.63**	0.89	0.79**	0.95	0.81**	0.88	0.69**	0.89	n/a	n/a	n/a	n/a	n/a	n/a

Material measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.86	0.97	0.77**	0.84*	0.76**	0.83	0.73**	0.77*	0.89	0.93	0.80**	0.84*	0.78**	0.85
High school	0.81*	0.94	0.60**	0.69**	0.76*	0.87	1.03	1.07	0.82**	0.88*	0.85**	0.84**	1.08	1.04
Less than high school	0.59**	0.80*	0.41**	0.61**	0.58**	0.78*	1.04	1.01	0.56**	0.69**	0.79**	0.76**	1.11	0.92
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.67**	0.63**	0.54**	0.63**	0.81*	0.84	0.63**	0.58**	1.27**	1.20**	0.84**	0.83**	0.77**	0.80**
Poor Health	0.29**	0.30**	0.25**	0.35**	0.36**	0.39**	0.52**	0.40**	0.54**	0.55**	0.49**	0.49**	0.55**	0.53**
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.01	0.80	1.08	0.97	1.14	1	0.60**	0.58**	1.33**	1.14	1.07	0.87	1.22**	1.13
Age 36-55	1.06	0.68**	1.59**	1.22	1.34*	0.92	0.48**	0.54**	1.43**	0.94	0.84**	0.62**	0.71**	0.63**
Age 18-35	0.99	0.68**	1.70**	1.35*	1.15	0.81	0.36**	0.45**	1.43**	0.92	0.76**	0.57**	0.44**	0.39**

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Material Deprivation and Positive Mental health

Table 9.2 Logistic Regression Analysis of Material Deprivation Measures with All Indicators of Positive Mental Health for Males

Material measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Living arrangement														
Spouse & children	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Alone	0.57**	0.55**	0.87	1.20	1.25*	1.45**	0.96	0.94	0.84**	0.95	0.57**	0.55**	0.81**	0.76**
Partner no children	1.14	0.13	0.97	1.27**	0.93	1.11	1.68**	1.23	1.07	1.20**	1.28**	1.17*	1.49**	1.27**
Single parent	0.65**	0.67*	0.71*	0.82	1.55*	1.70*	0.65	0.75	0.67**	0.78	0.54**	0.57**	0.77	0.83
Other family	0.82	1.02	0.65**	0.72**	0.67**	0.71*	0.75	0.81	0.88	1	0.76**	0.79**	0.89	0.93
Financial Stress														
No	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Yes	0.59**	0.79**	0.74**	0.83**	2.18**	2.31**	0.52**	0.75**	0.76**	0.79**	0.61**	0.65**	0.65**	0.69**
Occupation														
White Collar	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Blue Collar	0.79**	0.89	0.67**	0.78**	0.87	0.87	0.83	0.92	0.72**	0.84**	0.77**	0.87*	1.02	1.13
Neighbourhood stress														
No	1	1	1	1	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
Yes	0.47**	0.60**	0.77**	0.83*	1.69**	1.56**	0.35**	0.46**	n/a	n/a	n/a	n/a	n/a	n/a
Home ownership														
Yes	1	1	1	1	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
No	0.62**	0.78**	0.76**	0.80**	0.89	0.76**	0.63**	0.85	n/a	n/a	n/a	n/a	n/a	n/a

Material measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.84	0.98	0.82*	0.94	0.86	0.85	0.89	1.05	0.74**	0.81*	0.94	1.00	0.80*	0.88
High school	0.85	0.94	0.90	1.04	0.88	0.89	0.99	1.15	0.75**	0.83*	0.82**	0.90	0.99	1.03
Less than high school	0.74**	0.96	0.37**	0.47**	0.73**	0.82	1.12	1.06	0.60**	0.72**	0.83**	0.88	1.01	0.93
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.64**	0.55**	0.66**	0.75**	1.02	0.96	0.84*	0.75**	1.12	1.07	0.94	0.93	0.83**	0.83**
Poor Health	0.39**	0.33**	0.37**	0.47**	0.52**	0.47**	0.71*	0.52**	0.53**	0.52**	0.55**	0.55**	0.65**	0.52**
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.18	0.90	1.33*	1.13	1.22	0.88	0.90	0.86	1.29**	0.97	0.90	0.77**	1.34**	1.17
Age 36-55	1.02	0.63**	1.51**	1.13	1.29*	0.61**	0.51**	0.52**	1.32**	0.80*	0.71**	0.57**	0.79**	0.66**
Age 18-35	0.92	0.57**	1.82**	1.53**	1.35**	0.62*	0.31**	0.36**	1.17*	0.71**	0.70**	0.58**	0.60**	0.50**

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Lifestyle Behaviours and Positive Mental Health

Table 9.3 Logistic Regression Analysis of Lifestyle Behaviours and All Indicators of Positive Mental Health for Females

Lifestyle Behaviour measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Type of Drinker														
Not a heavy drinker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Heavy drinker	0.78	0.92	0.83	0.82	0.85	0.93	0.28**	0.36**	0.93	0.98	0.71**	0.84*	0.72**	0.95
Not Applicable	0.79**	0.95	0.67**	0.89	0.69**	0.87	1.16	1.09	0.64**	0.73**	0.78**	0.80**	0.92	0.88*
Missing	0.08**	0.67	0.13**	0.14**	0.05	0.09**	0.21*	0.17*	0.78	0.79	0.81**	0.80	0.60	0.65
Physical Activity														
Active	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inactive	0.69**	0.80**	0.99	1.04	1.68**	1.59**	1.13	1.17*	0.67**	0.76**	0.66**	0.70**	0.63**	0.64**
Smoking Status														
Non-smoker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Smoker	0.61**	0.69**	0.98	1.02	1.03	1.00	0.60**	0.74**	0.87**	0.87**	0.70**	0.76**	0.73**	0.82**
Weight														
Normal Weight	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Under Weight	0.93	1.08	0.82	0.87	0.69	0.70	1.03	1.06	0.96	1.02	0.88	0.98	0.73**	0.86
Over Weight	0.86	0.91	0.80**	0.96	0.99	1.05	0.98	0.89	1.04	1.14	1.22*	1.27**	1.24*	1.21
Obese	0.79**	0.93	0.78**	1.01	0.86	1.01	0.93	0.95	0.94	1.06	0.90	0.96	0.98	0.96
Missing	0.08**	0.96	0.39**	0.63**	0.17**	0.36**	0.54**	0.87	0.85**	1.03	1.09	1.18**	0.96	0.92
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.67**	0.55**	0.54**	0.53**	0.81*	0.60**	0.63**	0.52**	1.27**	1.19**	0.84**	0.83**	0.77**	0.79**
Poor Health	0.29**	0.23**	0.25**	0.28**	0.36**	0.25**	0.52**	0.33**	0.54**	0.55**	0.49**	0.50**	0.55**	0.55**

Lifestyle Behaviour measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.86	0.90	0.77**	0.79**	0.76**	0.74**	0.73**	0.74**	0.89	0.91	0.80**	0.83*	0.78**	0.87
High school	0.81*	0.87	0.60**	0.62**	0.76*	0.74*	1.03	1.07	0.82**	0.87*	0.85**	0.89	1.08	1.09
Less than high school	0.59**	0.71**	0.41**	0.53**	0.58**	0.63**	1.04	0.96	0.56**	0.69**	0.79**	0.79**	1.11	0.99
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.01	0.87	1.08	0.89	1.14	0.97	0.60**	0.59**	1.33**	1.18*	1.07	0.71**	1.22**	1.07
Age 36-55	1.06	0.66**	1.59**	1.01	1.34*	0.87	0.48**	0.41**	1.43**	1.12	0.84**	0.81**	0.71**	0.61**
Age 18-35	0.99	0.57**	1.70**	1.01	1.15	0.72*	0.36**	0.30**	1.43**	1.07	0.76**	0.71**	0.44**	0.39**

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$
 ** Significant at $P < 0.01$
 OR = Unadjusted Odds Ratio
 AOR = Adjusted Odds Ratio

Lifestyle Behaviours and Positive Mental Health

Table 9.4 Logistic Regression Analysis of Lifestyle Behaviours and All Indicators of Positive Mental Health for Males

Lifestyle Behaviour measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Type of Drinker														
Not a heavy drinker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Heavy drinker	0.68**	0.73**	1.28**	1.30**	1.14	1.21	0.65**	0.83	0.78**	0.82**	0.79**	0.87*	0.79**	0.92
Not Applicable	0.80*	0.91	0.76**	0.87	0.68**	0.78	1.14	1.09	0.68**	0.73**	0.90	0.92	1.02	1.02
Missing	0.07**	0.86	0.11**	0.10**	0.04**	0.26**	0.19**	0.93	1.07	1.27	0.97	1.17	1.25	1.32
Physical Activity														
Active	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inactive	0.80**	0.88	1.34**	1.29**	3.53**	3.01**	0.74**	1.30**	0.71**	0.75**	0.71**	0.75**	0.76**	0.76**
Smoking Status														
Non-smoker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Smoker	0.67**	0.85	1.03	0.95	1.20	0.81*	0.63**	0.68**	0.75**	0.83**	0.71**	0.79**	0.76**	0.86**
Weight														
Normal Weight	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Under Weight	0.44*	0.49	0.51	0.63	0.51	0.62	†	†	0.69*	0.79	0.84	0.94	0.70	0.79
Over Weight	1.27**	1.22*	1.08	1.18*	1.23*	1.19	1.37**	1.24*	1.16	1.15	1.26**	1.25**	1.23*	1.18
Obese	1.22	1.42**	0.77**	0.92	0.99	1.03	1.02	0.95	1.12	1.19**	1.19**	1.25**	1.15*	1.12
Missing	0.02**	0.56			0.02**	0.05**	1	1	0.88*	1.01	1.41**	1.22*	1.27**	0.92
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.64**	0.42**	0.66**	0.58**	0.81*	0.62**	0.84*	0.62**	1.12	1.09	0.94	0.95	0.83**	0.85**
Poor Health	0.39**	0.23**	0.37**	0.36**	0.36**	0.29**	0.71*	0.41**	0.53**	0.54**	0.55**	0.56**	0.65**	0.64**

Lifestyle Behaviour measure	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.84	0.91	0.82*	0.82*	0.76**	0.83	0.89	1.00	0.74**	0.79**	0.94	0.97	0.80*	0.90
High school	0.85	0.94	0.90	0.92	0.76*	0.91	0.99	1.11	0.75**	0.82**	0.82**	0.88	0.99	1.08
Less than high school	0.74**	0.88	0.56**	0.66**	0.58**	0.80	1.12	1.04	0.60**	0.69**	0.83**	0.83**	1.01	0.97
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.18	1.19	1.33**	1.21	1.14	1.28	0.90	0.90	1.29**	1.15	0.90	0.91	1.34**	1.21
Age 36-55	1.02	0.86	1.51**	1.10	1.34*	1.20	0.51**	0.47**	1.32**	1.11	0.71**	0.73**	0.79**	0.70**
Age 18-35	0.92	0.66**	1.82**	1.24	1.15	1.15	0.31**	0.29**	1.17*	1.01	0.70**	0.72**	0.60**	0.54**

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

£ Odds did not meet minimum requirements for disclosure

Psycho-social measures of Health Inequality and Positive Mental Health

Table 9.5 Logistic Regression Analysis of Psycho-social Factors with All Measures of Positive Mental Health for Females

Psycho-Social measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Community Belonging														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.71**	1.49**	1.65**	1.39**	2.06**	1.06	1.38**	1.12	1.58**	1.46**	1.76**	1.54**	1.80**	1.54**
Social Support														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	2.56**	2.13**	4.55**	3.68**	2.37**	1.95**	3.19**	2.96**	2.41**	2.06**	3.37**	3.07**	3.59**	3.49**
Co-worker Support														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.64**	1.44**	1.56**	1.41**	1.76**	1.59**	1.57**	1.31*	1.37**	1.22**	1.42**	1.25**	1.44**	1.25**
Not Applicable	0.89	1.47**	0.68**	1.34**	0.67**	1.32*	1.55**	1.86**	0.79**	1.13	1.28**	1.58**	1.61**	1.78**
Missing	0.30**	0.73	0.35**	0.68*	0.13**	1.13	0.27**	0.43*	0.83	1.05	1.48	2.01**	1.10	1.71*
Job Security														
Bad	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good	1.53**	1.28*	1.50**	1.23*	1.57**	1.29	1.87**	1.59**	1.32**	1.10	1.53**	1.29**	1.77**	1.48**
Not Applicable	0.94	1.47**	0.73**	1.34**	0.70**	1.32*	1.94**	1.86**	0.84*	1.13	1.50**	1.58**	2.11**	1.78**
Missing	0.29**	0.73	0.36**	0.68*	0.12**	1.13	0.34**	0.43*	0.67	1.05	1.46	2.01**	1.18	1.71*
Job control														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.78**	1.46**	1.72**	1.62**	1.94**	1.54**	1.49**	1.26	1.70**	1.48**	1.61**	1.33**	1.80**	1.48**
Not Applicable	0.94	1.47**	0.95	1.34**	0.72**	1.32*	1.55**	1.86**	0.90*	1.13	1.41**	1.58**	1.89**	1.78**
Missing	0.29**	0.73	0.37**	0.68*	0.12**	1.13	0.27**	0.43*	0.77	1.05	1.45	2.01**	1.06	1.71*

Psycho-Social measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Personal Stress														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	0.57**	0.65**	0.76**	0.62**	1.59**	0.78**	0.44**	0.50**	1.34**	1.15*	1.21**	1.16*	1.08	1.05
Family Stress														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	0.70**	0.81**	0.77**	0.78**	1.30**	0.96	0.58**	0.68**	1.00	1.14	1.37**	1.39**	1.45**	1.23*
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.67**	0.61**	0.54**	0.58**	0.81*	0.53**	0.63**	0.56**	1.27**	1.19**	0.84**	0.82**	0.77**	0.78**
Poor Health	0.29**	0.28**	0.25**	0.35**	0.36**	0.26**	0.52**	0.41**	0.54**	0.58**	0.49**	0.53**	0.55**	0.58**
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.01	0.89	1.08	0.96	1.14	0.93	0.60**	0.61**	1.33**	1.12	1.07	0.97	1.22**	1.13
Age 36-55	1.06	0.74*	1.59**	1.15	1.34*	0.67*	0.48**	0.49**	1.43**	0.97	0.84**	0.70**	0.71**	0.60**
Age 18-35	0.99	0.65**	1.70**	1.18	1.15	0.54**	0.36**	0.35**	1.43**	0.96	0.76**	0.64**	0.44**	0.38**
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.86	0.93	0.77**	0.83*	0.76**	0.78*	0.73**	0.74**	0.89	0.95	0.80**	0.86	0.78**	0.89
High school	0.81*	0.93	0.60**	0.69**	0.76*	0.82	1.03	1.06	0.82**	0.88*	0.85**	0.87*	1.08	1.09
Less than high school	0.59**	0.77**	0.41**	0.62**	0.58**	0.75*	1.04	0.98	0.56**	0.68**	0.79**	0.74**	1.11	0.93

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio

Psycho-social measures of Health Inequality and Positive Mental Health

Table 9.6 Logistic Regression Analysis of Psycho-social Factors with All Measures of Positive Mental Health for Males

Psycho-Social measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping ability		Life Satisfaction		Psychological well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Community Belonging														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.49**	1.31**	1.76**	1.25**	3.43**	1.05	1.57**	1.11	1.53**	1.38**	1.86**	1.64**	1.69**	1.41**
Social Support														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	2.06**	1.78**	4.43**	2.93**	2.34**	1.88**	3.49**	3.29**	2.56**	2.23**	3.13**	2.67**	4.45**	3.93**
Co-worker Support														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.48**	1.32**	1.56**	1.41**	1.56**	1.31	1.54**	1.38**	1.48**	1.31**	1.50**	1.33**	1.69**	1.53**
Not Applicable	0.80**	1.66**	0.59**	1.57**	0.33**	1.22	1.41**	2.05**	0.79**	1.01	1.26**	1.66**	1.46**	1.94**
Missing	0.32**	1.39*	0.20**	0.63**	0.04**	1.02	0.34**	1.04	0.98	1.25	1.04	1.73*	1.15	2.87**
Job Security														
Bad	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good	1.97**	1.65**	2.15**	1.89**	2.51**	2.21**	2.33**	1.89**	1.50**	1.28**	1.72**	1.44**	1.91**	1.56**
Not Applicable	1.05	1.66**	0.82*	1.57**	0.47**	1.22	2.12**	2.05**	0.90	1.01	1.59**	1.66**	1.89**	1.94**
Missing	0.48**	1.39*	0.28**	0.63**	0.06**	1.02	0.53*	1.04	0.95	1.25	1.12	1.73*	1.70*	2.87**
Job control														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	1.72**	1.55**	1.72**	1.51**	2.00**	1.84**	1.86**	1.62**	1.59**	1.30**	1.79**	1.50**	2.02**	1.62**
Not Applicable	0.94	1.66**	0.95	1.57**	0.41**	1.22	1.74**	2.05**	0.88*	1.01	1.53**	1.66**	1.83**	1.94**
Missing	0.43**	1.39*	0.37**	0.63**	0.05**	1.02	0.42**	1.04	0.93	1.25	1.20	1.73*	1.71*	2.87**

Psychosocial measures	Happiness		Mastery		Self-esteem		Sense of Coherence		Coping Ability		Life Satisfaction		Psychological Well-being	
	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR	OR	AOR
Personal Stress														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	0.62**	0.69**	1.18**	0.82**	3.33**	0.88	0.55**	0.54**	1.42**	1.23**	1.26**	1.17*	1.16*	1.14
Family Stress														
Low	1	1	1	1	1	1	1	1	1	1	1	1	1	1
High	0.73**	0.85	1.21*	1.14	2.06**	0.95	0.71**	0.74**	1.14	1.13	1.23*	1.07	1.49**	1.23
Health Status														
Excellent health	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Good Health	0.64**	0.57**	0.66**	0.66**	1.02	0.54**	0.84*	0.71**	1.12	1.05	0.94	0.92	0.83**	0.80**
Poor Health	0.39**	0.32**	0.37**	0.41**	0.52**	0.25**	0.71*	0.47**	0.53**	0.55**	0.55**	0.58**	0.65**	0.67**
Age														
Age 70+	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age 56-69	1.18	1.06	1.33*	1.13	1.22	1.00**	0.90	0.85	1.29**	0.97	0.90	0.78**	1.34**	1.20
Age 36-55	1.02	0.76	1.51**	1.03	1.29*	0.81	0.51**	0.44**	1.32**	0.81*	0.71**	0.58**	0.79**	0.68**
Age 18-35	0.92	0.62**	1.82**	1.18	1.35*	0.62*	0.31**	0.25**	1.17*	0.72**	0.70**	0.58**	0.60**	0.50**
Education														
University	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Some university	0.84	0.94	0.82*	0.83	0.86	0.84	0.89	1.01	0.74**	0.78**	0.94	0.99	0.80*	0.90
High school	0.85	0.92	0.90	0.90	0.88	0.84	0.99	1.11	0.75**	0.80**	0.82**	0.88	0.99	1.10
Less than high school	0.74**	0.93	0.56**	0.72**	0.73**	1.04	1.12	1.11	0.60**	0.69**	0.83**	0.85*	1.01	1.02

Sources: Analysis of National Population Health Survey (Cycle 1, 1994), Statistics Canada; Analysis of Canadian Community Health Survey (Cycle 1.2, 2002), Statistics Canada.

* Significant at $p < 0.05$

** Significant at $P < 0.01$

OR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio