

MENTAL HEALTH COMPONENTS AND LOCUS OF CONTROL

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Abstract

Using Ryff's positive psychological theory as a conceptual framework, this research was focused on mental health to explore the degree to which mental health can be predicted by personality and demographic factors. This theory covers all critical features of well-being by taking into consideration different developmental, personality and clinical theories. Employing Ryff's inclusive theory that covered six dimensions (purpose in life, self-acceptance, positive relations with others, autonomy, environmental mastery, and personal growth), the researcher studied the relationship between mental health components and locus of control in one hundred and seventy two students attending Mount Saint Vincent University. All participants completed two measures of locus of control (Rotter's LOC Scale and Levenson's Multidimensional LOC Scale), Ryff's Well-Being Scale, and a Demographic Questionnaire. Bivariate correlation, ANOVA and hierarchical linear regression revealed that there was a positive association between internal locus of control and well-being as measured by Ryff's scale. Findings from the current research demonstrated that individuals who have an internal locus of control have higher levels of mental health in comparison to with individuals with an external locus of control. Hierarchical linear regression analysis revealed that locus of control, gender, citizenship status, marital status, and time spent in face to face contact can predict 41% of the variance in participants' mental health.

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Chapter I

Introduction

Child and youth mental health issues are one of the controversial issues that has been central to many interdisciplinary studies (Kazdin, 2006; MacKean, 2011; Burns, Durkin and Nicholas, 2009; Santrock, MacKenzie-Rivers, Leung, & Malcomson, 2005). It was estimated that in United States of America 20% of all children (15 million) meet the diagnostic criteria for at least one mental health difficulty (Kazdin, 2006). Not only children, but adolescents and young adults between 15 and 34 years of age are more at risk of having mental health difficulties. In fact, Burns et al. (2009) reported that 60% of adolescents and young adults as having a disability caused by mental illnesses. In England, approximately 11% of individuals between 11 and 15 years old are assumed to have mental health concerns (Michaud & Fombonne, 2005), while Health Canada reported that 20% of Canadians will personally experience a mental illness during their lifetime. Of this proportion, persons 15 to 24 years old in Canada are at risk of experiencing mental health difficulties, as “over 10% of young adults [who had mental health difficulties] were hospitalized due to one of seven mental illnesses (e.g., anxiety disorders, bipolar disorders, schizophrenia, major depression, personality disorders, eating disorders, and attempted suicide) in general hospitals” (Health Canada Report, 2002, p. 19). Similarly a study of six Ontario post-secondary institutions found that approximately 4% of the students had a psychiatric condition, 15% had been treated by a professional for one or more mental health problems and 53% indicated they felt overwhelmed by anxiety (MacKean, 2011). These statistics reveal that mental health

issues, including understanding its components, influential and associated factors, consequences, and interventions strategies, should be central to psycho-social studies.

Mental health is often viewed or described based on different theoretical or intervention approaches that they focus on various aspect of mental health. For example, in the medical approach, mental health is characterized by lack of symptoms or signs of disorders. This view of mental health is a psychopathological view in which abnormality is defined on the basis of pathological symptoms (Westerhof & Keyes, 2010). From a biomedical sciences approach in which the concept of disease and health are connected, a lack of specific symptoms may be considered a sign of mental health in people. This view does not increase our understanding of mental health. Murphy (2009) stated:

If disease is biological malfunction or abnormality, it follows that a healthy person is someone whose biological systems are all in order. But another way of looking at health insists that it is not just the absence of disease but the presence of something more; a positive state (p. 2).

Mental health then can be characterized by its components that determine an individual's positive state. Furthermore, the concepts of well-being, mental health and happiness are often used synonymously in this approach. Ryff also recognized the role of happiness in mental health. Ryff's (1989; Ryff & Singer, 2008) theory, in which hedonism and positive psychological views are predominant, characterizes mental health by its six major components: personal growth, self-acceptance, purpose in life, autonomy, positive relation with others, and environmental mastery. Corsini (1999) also noted that

an individual's degree of positive self-esteem, happiness, and life-satisfaction can determine one's mental health. Mental health from these perspectives is defined as a "subjective evaluation of individual functioning" (Westerhof et al, 2010 p. 111). The World Health Organization (WHO 2005, cited in Michaud & Fombonne, 2005), likewise, defined mental health as a "state of well-being whereby individuals recognize their abilities, are able to cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their communities" (p. 835). In WHO's definition of mental health, there are three major components (e.g., well-being, effective individual functioning and efficient functioning within a community -Westerhof & Keyes, 2010) that reveal a positive view of mental health.

This positive view of mental health allows experts to determine the role of other behavioral and developmental domains such as personality traits in exploring mental health components. For example, Carver and Connor-Smith (2010) stressed that mental health should be considered in relation to other behavioral and developmental domains in which personality is linked. Since personality traits and coping (e.g., with stress, illnesses or other difficulties) are associated with each other, individuals with specific behavioral characteristics or personality traits should show positive mental health (Corr & Matthews, 2009). For example, in Big Five theory of personality, which is introduced by Costa and MacCrae (1980, 1984), Agreeableness (as a big trait of personality) can span social behavior and positive affect that both determine positive mental health (Canli, 2009). In Big Five theory of personality, most personality traits are relevant to different domains such as "physical and mental health, quality of social relationships, occupational choice,

satisfaction and performance, and pro- and antisocial behaviors in the community” (Ozer and Benet-Martinez 2006 cited in Corr & Matthews, 2009, p. xxxvii).

Not only was the relationship between mental health and behavioral traits discussed in Big Five theory of personality, but also in other theories. It was noted that individuals’ personality characteristics can determine the level of their mental health (Corr & Matthews, 2009; Carver & Connor-Smith, 2010; Pervin, 1993). Among different personality theories, Rotter’s theory is a unique perspective in which individuals develop within social-learning processes through which they constructing the main traits of their personalities including internal and/or external locus of control (Rotter, 1960 cited in Pufal-Struzik, 1998). In different scholarly studies, it has been found that there is a close relationship between the level of mental health in individuals and their behavioral orientations based on locus of control (Karayurt & Dicle, 2008; Armstrong & Boothroyd, 2008). Individuals whose locus of control is more internal have higher level of mental health (Karayurt & Dicle, 2008; Adolfsson, Andersson, Elofsson, Rössner, & Undén, 2005).

Although the relationships between different levels of personality orientation (based on Rotter’s view) and mental health or mental illnesses were studied (Karayurt & Dicle, 2008; Armstrong & Boothroyd, 2008; Adolfsson et al., 2005), there are minimal studies about the relationships between locus of control and mental health components based on Ryff’s view as a positive psychological approach. Therefore the purpose of this research is to study the association between internal/external locus of control and six components of mental health, identified by Ryff, in adolescents and young adults. In addition, this study will focus on demographic characteristics of young adults and their

roles in predicting personality traits and mental health components. It is assumed that the result of this study can be used in different areas of child and youth studies including mental health intervention programs, early intervention programs to construct positive personality traits, public health care, and producing other theoretical and practical studies.

Chapter II

Literature Review

Research on mental health has been published in the professional and scientific literature in many disciplines using terms such as happiness, life satisfaction, well-being and others (Murphy, 2008; Haybron, 2011; Crisp, 2008). Different perspectives on mental health (e.g. hedonic, eudaimonic, psychological, and medical) have been influential in recognizing the degree to which mental health is related to other human domains such as personality (Westerhof & Keyes, 2010; Haybron, 2011; McDowell, 2010; Ryff & Singer, 2008). In this chapter, mental health, its components, and its relationship to personality will be discussed from varying perspectives.

A. Mental Health and Its Components

From a medical perspective, mental health has been characterized by terms antonymous with disease, mental illnesses, and pathological symptoms/ signs (Murphy, 2009). In this view, mental health was seen as a condition without any pathological signs or diseases (Keyes, 2007; Murphy, 2009; Perring, 2010; Happell, 2009; Ruini & Fava, 2009). A healthy person was recognized as an individual whose physical functions were considered as major criteria in diagnosing diseases. Indeed, the World Health Organization (WHO), noted that the medical model views physical and mental health in terms of “objectivism” in which human physiology is considered as the criterion for being healthy (Murphy, 2009). WHO (1948, cited in Murphy, 2009) defined health as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity” (p. 2). However, focusing on mental health as “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” (World Health Organization, 2005; cited in Westerhof & Keyes, 2010, p.111), demonstrates that this definition is also influenced by the objective or medical view (Westerhof & Keyes, 2010; Murphy, 2009). What is absent in the medical perspective are the psychological components of mental health.

Other views of mental health, hedonic and eudaimonic, are rooted in Aristotle’s teachings (Ryff & Singer, 2008). In the hedonic view, mental health is characterized by happiness, satisfaction, and interest in life (Westerhof & Keyes, 2010). Hedonic well-being is also presented as Epicurean doctrine in which pleasure is the prime goal of life (Corsini, 1999). Eudaimonism is defined as a doctrine positing that the chief end of living is happiness (Corsini, 1999). Eudaimonia is also defined as “the feeling accompanying behavior in the direction of, and consistent with, one’s true potential” (Waterman, 1984; cited in Ryff 1989 p. 1070). Common characteristic between these notions is the central concept of ‘happiness’ (Bradburn, 1969 cited in Ryff, 1989). This central concept was derived from Aristotle’s view who stated that maximum of all goods attainable by human action is eudaimonia (Ryff, 1989). Happiness is characterized by two exact senses “a state of mind and a life that goes well for the person leading it” (Haybron, 2011, p. 2). Using this type of perspective of well-being, Ryff (1989) argued that both terms, hedonism and eudaimonism, indicate psychological well-being. Keyes (2007) noted that these terms indicate emotional well-being. Ryan and Deci (2001 cited in Westerhof & Keyes, 2010) used terms, hedonia and eudaimonia, to define well-being as happiness, life-satisfaction, and reaching human well-being.

Using hedonic and eudaimonic perspectives and embedding Aristotle's view in her theory, Ryff (1989; Ryff & Singer, 2008) demonstrated that mental health (well-being) can be characterized by its six major components that cover different psychosocial aspects of human being. Thus, Ryff's view of well-being considers elements of hedonic and eudaimonic approaches in addition to major points of grounded personality theories such as those proposed by Allport, Rogers, Maslow, Erikson, Jung and others. (see Figure 1, Ryff & Marshall, 1999). Major components identified by Ryff include purpose in life, self-acceptance, positive relations with others, autonomy, environmental mastery, and personal growth (Ryff, 1989; Ryff & Singer, 2008). These components are discussed in the following:

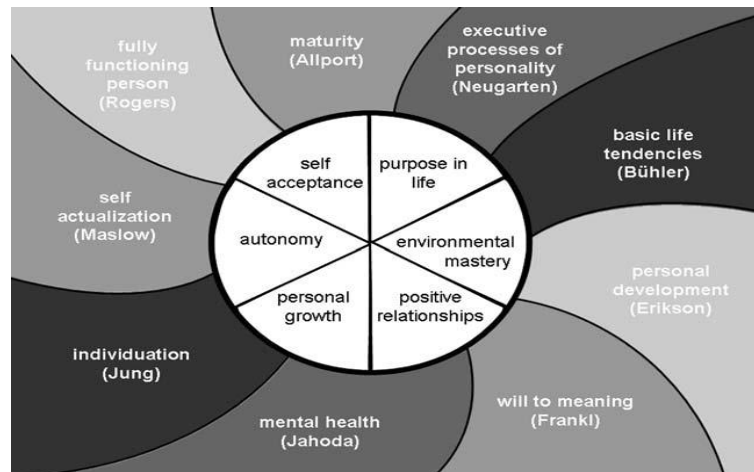


Figure 1: Core Dimensions of Well-Being and their Theoretical Origins (Ryff & Marshall, 1999).

Purpose in life is discussed as a key factor of maturity in many developmental theories (Ryff, 1989). As mature individuals are characterized by having life's purpose, having intentionality, and directedness, it is assumed that people's well-being is

identified by this component (Ryff & Singer, 2008). More specifically, if someone enjoys making plans for his or her future and works for making them a reality; or being an active person in carrying out his plans, he/she has a purpose in life (Ryff & Singer, 2008).

Self-acceptance is defined as a sense of recognition of personal abilities and achievements as well as acknowledging and accepting personal limitations (Ryff, 1989). Self-acceptance is the most recurring mark of well-being that determines “self-actualization, optimal functioning, and maturity” (Ryff, 1989, p. 1071). Self-acceptance also refers to two features of positive functioning: the acceptance of one’s own past and the acceptance of self (Ryff, & Singer, 2008). Having self-acceptance, individuals accept their past mistakes, but they may conclude that everything has worked out for the best. They are also confident and positive about their self (Ryff, & Singer, 2008).

Positive relationship with others, as the other important component of mental health, is characterized by having warm and trusting interpersonal relationships, and also being able to love other people or having strong feeling of empathy (Ryff, & Singer, 2008). Ryff (1989) noted that intimacy and a close affiliation with others, which demonstrated by developmental theories, are the feature of positive relationship with others. Namely, seeing individuals as loving and affectionate persons, or having mutual trusting relations with family and friends, are some of characteristics of this component of mental health. Moreover, these characteristics can also be found in the theory of self-actualization (Ryff, & Singer, 2008).

Autonomy in Corsini’s (1999) word is a condition of independence and self-determination, either in a society or an individual. According to Ryff (1989, Ryff & Singer, 2008) autonomy can be characterized by self-determination, independence, and

the regulation of behavior from within. This component of mental health has close association with major characteristics of self-actualizers in personality theories such as having an “internal locus of evaluation”, “showing autonomous functioning” and “resistance to enculturation” (Ryff, 1989, p.21). Since autonomy is characterized by the regulation of behavior, it is discussed that self-regulation is one of the major components of autonomy (Deci & Ryan, 1987; Ryan & Deci, 2006; Carver & Scheier, 2001). Self-regulation refers to the human capacity to control over personal emotions, thoughts, feelings, and wishes as well as actions (Corsini, 1999). It is also perceived as self “a complex, universal human ability that structures goal-directed behavior and increases the likelihood of fulfilling a variety of individual needs” (Trommsdorff, 2009, p. 687).

Focusing on environmental mastery, people’s talent in selecting or making the environment around them suitable to their personal-psychological situation is seen as one of the features of mental health (Ryff & Keyes, 1995). According to Ryff and Singer (2008), life span environmental mastery is a demanding ability to change and control the difficulties of environments, and the use of environmental opportunities. For instance, being confident about taking care of our personal finances and affairs, and time management indicate having environmental mastery (Ryff & Singer, 2008).

Personal growth refers to a person’s potential to develop positive characteristics (Ryff & Singer, 2008). This ability implies that individuals need, first, to identify their potentials; second, to actualize and develop them. To make this process applicable, individual should be open to experience (Ryff, 1989). According to Ryff (1989), openness to experience is a major characteristic of a fully functioning person. Since most developmental theories state on a sense of growth and continuation of growth

(Demetriou, Doise, & Lieshout, 1998), personal growth can be a main component of mental health. Corsini (1999) noted that personal growth may include an individual's skillfulness in relationships, willingness to take initiatives, leadership, and understanding of others that can be reached even in personal growth laboratory through various qualities of experience and terms such as art activities, logical debates, interaction on an emotional level, and sensory motivation.

Scholarly studies revealed that these components have been extracted from different developmental, clinical and particularly personality theories (Ryff, 1989; Ryff & Singer, 2008; Westerhof & Keyes, 2010; McDowell, 2010). These theories were mentioned originally in first attempts of generating Ryff's model of well-being (Ryff & Marshall, 1999). Similar to Ryff's stress on this originality, other studies showed that there is a close relationship between personality traits and mental health (Carver & Connor-Smith, 2010; Corr & Matthews, 2009). This association is prominent in some major components of mental health such as what was noted in relation to autonomy, or personal growth (Ryff & Singer, 2008). It has been found that some specific personality traits such as agreeableness and conscientiousness in Big Five Theory (as a personality theory) overlap with mental health components in Ryff's theory, particularly with positive relation with others (Van Dierendonck, 2005; DeNeve & Cooper, 1998). Agreeableness can predict positive affectivity (DeNeve & Cooper, 1998). Conscientiousness has also close relationship with greater subjective wellbeing (Steel et al., 2008 cited in Carver & Connor-Smith, 2010; Corr & Matthews, 2009). Likewise, it is demonstrated that personality and coping has close relationship with mental and physical

health (Carver & Connor-Smith, 2010), such as relationship between neuroticism (as a personality trait) to anxiety and depression (Carver & Connor-Smith, 2010).

Referring to Rotter's theory of personality, it is noted that locus of control is not only associated with mental health, but it also determines the level of well-being function (Karayurt & Dicle 2008; Armstrong et al., 2008; Adolfsson et al., 2005). Since it is assumed that mental health components (e.g., autonomy, personal growth, environmental mastery and others) have relationships with personality traits, particularly with locus of control in Rotters' perspective, their roles are central to this study.

B. Locus of Control in Rotter's Perspective

Historically, personality theorists have attempted to explain the extent to which human behaviors are integrated, consistent, congruent, conscious, unconscious, shaped ideographically or nomothetically, developed genetically or socially, and to what degree individuals' traits are changeable (Pervin, 1993; Corr & Matthews, 2009). Almost all theories agree that personality "represents those characteristics of the person that account for consistent patterns of behavior" (Pervin, 1993, p. 3). Throughout these historical attempts to explain the behavioral patterns of humans, single-trait theories (e.g., the Theory of Need for Achievement, Type a Personality Theory, and others) have emerged from academic research. Such theories emphasize the role of particular trait that influences individuals' behaviors.

Rotter's (1954, 1966, & 1975) locus of control view is a part of his social learning theory of personality. This theory was originated from the integration of two major approaches in American psychology: the stimulus-response (S-R) theory and the cognitive or field position related to Lewin's theory (Graham & Weiner, 1996). By

integrating these theories, Rotter (1966) explained that human motivational behavior is a function of expectancy (E) and reinforcement value (RV).

$$\text{Behavior} = f(E, RV)$$

Rotter (1954) stated that RV is related to the degree of preference for any reinforcement that is relative, and E is related to individuals' expectancies for success which is determined by people's past history of successful or unsuccessful experiences. Exploring the influences of E in human behavior, Rotter (1966) found that expectancies of success are either skill-related situations or chance-related contexts. Studying more details of these situations, Rotter (1966) realized that people manifest two broad yet different perceptions of situations and of their success that reflected either internal or external control. Later, Rotter postulated that individuals' personality is determined by having either internal locus of control or external locus of control (Pervin, 1993; Graham & Weiner, 1996; Corr & Matthews, 2009). Both types of personality traits, internal or external locus of control, create different motivational behaviors, tendencies, and cognitions.

Locus of control is defined as a person's tendency to see events as being controlled internally or externally (Rotter, 1966). This tendency characterizes a person's perspective about self-independence and control by others (Corsini, 1999). Moreover, locus of control can determine behavior potential. Behavior potential (the likelihood of engaging in a particular behavior) is defined as a "function of expectancy (the probability that a given behavior will lead to a particular outcome) and reinforcements such as the outcomes of our behavior" (Lefcourt, 1976; cited in April, Dharani, & Peters, 2012, p. 125). Since locus of control refers to the individuals' belief about controllability over

what happens to them in life, it is defined as a personality trait or construct that reveals how individuals perceive their ability to control life events or environment (April et al., 2012). This belief can be characterized on one continuum on which two extremes can be recognized: internal locus of control and external locus of control (see Figure 2).

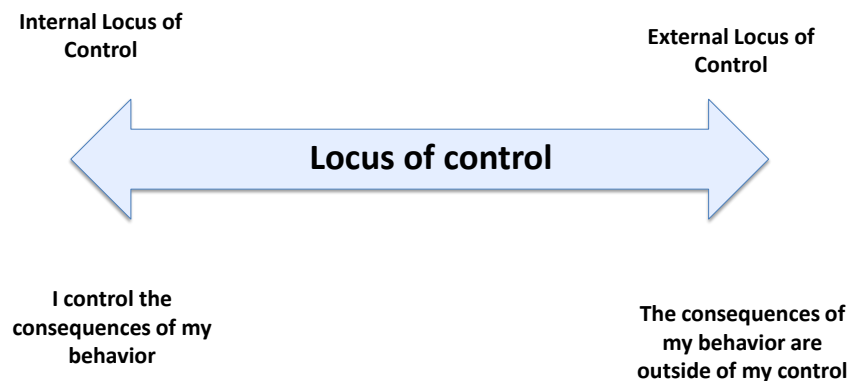


Figure 2: The continuum of locus of control

Based on this theory (locus of control theory), people who would believe that an outcome is dependent on their own behavior, and feel individually responsible for the events happen to them have internal locus of control (Lloyd & Hastings, 2009; Pannells & Claxton, 2008). This type of people is characterized as “internalisers” (Bozorgi, 2009 p. 3). In contrast, people with external locus of control would believe that outcomes are not as a result of their own actions and are the consequences of fate, luck, chance and environmental influences (Lloyd & Hastings, 2009; Pannells & Claxton, 2008). Such people are recognized as “externalisers” (Bozorgi, 2009, p. 3). To understand internal and external locus of control in people, researchers attempted to recognize small components

of these traits (Pannells & Claxton, 2008; Rotter, 1966; cited in April et al., 2012; McCombs, 1991 cited in Bozorgi, 2009). It is assumed that what underlie the external locus of control are four types of beliefs including powerful others, luck or chance, fate, and a belief that world is too complex to be predicted (Rotter, 1966 cited in April et al., 2012). Based on Levenson's (1973, cited in April et al., 2012) view, these components can be categorized into two groups; 1) control by powerful others and 2) control by chance and luck. Regarding internal locus of control, it has been found that self-determination, self-control, self responsibility, self-efficacy and self-agent are underpinning components of internal locus of control or at least they are major characteristics associated with internal locus of control (McCombs, 1991 cited in Bozorgi, 2009; Karayurt & Dicle, 2008; Lloyd & Hastings, 2009).

Unlike to multi-traits personality theories, particularly Allport's and Cattell's theories (Pervin, 1993), locus of control in Rotter's single-trait theory is situation specific (Rotter, 1975 cited in Lloyd & Hastings, 2009). Rotter (1975) demonstrated that locus of control is not typology or predisposition, but it is a general belief or expectancy and situation-based trait. Thus, an individual's locus of control can vary across situations depending two main factors: past history of success and reinforcement and his or her expectancies (Graham & Weiner, 1996; Lloyd & Hastings, 2009). Based on this specific characteristic of locus of control, it has been found that individuals who faced rich meaningful experiences changed their causal attribution orientations (Lefcourt, 1976 cited in Bozorgi, 2009). Karayurt and Dicle (2008) demonstrated that when students progress in their educational programs their locus of control shift to internal. They have indicated that when students are faced problem-based learning program their internal

locus of control will increase (Karayurt & Dicle, 2008). Based on similar finding (Sandler & Lakey, 1982 cited in Bozorgi, 2009) it is supposed that stress-challenge environment and controlled risk-taking education (e.g., outdoor-adventure programs) can influence people's locus of control. Not only involving in social experiences can shift individuals' locus of control from external to internal, but also from McArthur's (1999) finding can be deduced that changing socioeconomic status can affect individuals' locus of control. These finding are congruent with social learning theory in which locus of control is situation based, that is, having more social experiences can change locus of control (Rotter, 1975).

Since 1954, when Rotter introduced his theory, numerous studies have been done to explore different aspects of locus of control such as its consistency, its association with different behavioral domains, and individual differences in locus of control (Graham & Weiner, 1996; April et al., 2012). In addition to studies on the nature of locus of control, some studies have been focused on the associations between locus of control and other domains of human behavior including: physical health (Nabors, McGrady, & Kichler, 2010), stress (Arslan, Dilmaç, & Hamarta, 2009), mental health or illnesses (Baker, Buchanan, & Corson, 2008; Coyne, & Thompson, 2011), learning and academic achievement (Karayurt & Dicle, 2008; Pufal-Struzik, 1998; Bozorgi, 2009), creativity (Pannells & Claxton, 2008), and leadership (Northhouse, 2010; April et al., 2012). In the following part of this chapter these studies will be explored to illuminate the purpose of current research.

C. Mental Health and Locus of Control

A review of literature on locus of control reveals that this personality trait has close association with different physical and mental illnesses as well as positive mental health features (Arslan et al., 2009; Coyne et al., 2011; Field & Kruger, 2008; Nabors et al., 2010). A wide range of physical diseases has been studied in relation to locus of control in which chronic pain was central (Baker et al., 2008). Resulting from different diseases, such as arthritis, osteoporosis, osteoarthritis, fibromyalgia, migraines and multiple sclerosis, pain is defined as an unpleasant, distressful psychological and physiological response to any type of tissue damage (Baker et al., 2008). Using Multidimensional Health Locus of Control (MHLC) questionnaire, Baker et al. (2008) noted that locus of control is associated with chronic pain in patients particularly in individuals whose locus of control are both locus of control-power, and locus of control-internal. Since Baker et al.'s (2008) finding is somehow opposite of previous studies in which external locus of control is associated with intensity of pain (Cross, March, Lapsley, Byrne, & Brooks, 2006 cited in Baker et al., 2008); it is assumed that patients with internal locus of control blame themselves while they become ill and lose their control over the disease (Baker et al., 2008). Researchers, who have tended to study the relationship between locus of control and physical diseases, attempted to find the role of locus of control, as a predisposing personality factor, in symptomatology and the recovery course of diseases (Goldstein, Atkins, & Leigh, 2003). They also tended to find whether the beliefs of locus of control change over time or not (Houpt, Gould, & Norris, 1977 cited in Goldstein et al., 2003). In this regard, Goldstein et al. (2003), in one longitudinal study, found that health locus of control beliefs do appear to change over

time in individuals with motor neuron disease (MND). Goldstein and his colleagues (2003) noted that the mean of patients in Health Locus of Control Scale (MHLC), internal health locus of control, has decreased during 16 months of testing while their mean in external health locus of control increased significantly. This finding is compatible with Rotter's (1975) view in which locus of control is a situation-based phenomenon.

Regarding other physical diseases such as obesity or overweight, it has been found that individuals with internal locus of control have lower risk to become ill (Gale et al., 1970, cited in Bozorgi, 2009). The predictive role of locus of control in weight loss was studied by Adolfsson et al. (2005) resulted the higher association between internal locus of control and weight reduction. People with internal locus of control felt more capable to bring their weight under control; they also followed weight loss programs sufficiently and were satisfied with the programs (Adolfsson et al., 2005). In addition to obesity and weight reduction, the association between locus of control and diabetes management was studied in children resulted that individuals with internal locus of control had lower (better) HbA1c than individuals with external locus of control (Nabors et al., 2010). HbA1c is a 'glycosylated hemoglobin' molecule. In the blood stream are the red blood cells, which are made of a molecule, hemoglobin. Glucose sticks to the hemoglobin to make a 'glycosylated hemoglobin' molecule, called hemoglobin A1C or HbA1C (World Health Organization, 2011).

Apart from physical illnesses, the association between mental illnesses and locus of control was central to many scholarly studies (Lloyd & Hastings, 2009; Field & Kruger, 2008; Karayurt & Dicle, 2008). A belief with which person has enough ability to

achieve desired outcome when he or she becomes ill mentally or physically is called internal health locus of control (Shelley & Pakenham, 2004). This belief is a major determinant in people's reaction to mental and physical illnesses. Comparing with external locus of control, it has been found that in both physical and mental illnesses having internal locus of control is a positive predictors in coping with diseases (Shelley & Pakenham, 2004; Lloyd et al., 2009; Field & Kruger, 2008). For example, Marks, (1998 cited in April et al., 2012) reported that "locus of control in cultures that fostered a high perception of external control also fostered higher rates of suicide" (p. 124). April et al. (2012) argued that with external locus of control, individuals are more vulnerable to depression and they are weak in responsiveness to anti-depressive medications. Those individuals have also lower levels of happiness (April et al., 2012). Focusing on depression, it has been argued that helplessness and hopelessness are its major symptoms (DSM IV-TR, 2000). Since hopelessness is directly related to the beliefs by which individuals feel unable to control the circumstances and the consequences of their conditions; it is assumed that people with external locus of control suffer from hopelessness and consequently they are vulnerable to become depressed (Field & Kruger, 2008). Also, Coyne and Thompson (2011) demonstrated that there is an association between maternal depressive symptoms (e.g., hopelessness), parental locus of control, and children internalizing problems.

With regard to maternal stress as a devastating factor influencing relationships between mothers and their children with intellectual disability, it has been found that mothers with internal locus of control reported lower levels of parental distress, anxiety and depression (Lloyd et al., 2009). Since depressive symptoms are prevalent in mothers

who have children with mental health problems (Gerkenmeyer, Perkins, Day, Austin, Scott, & Wu, 2011), locus of control can be considered as a significant predictor of further distress of parental psychological atmosphere between child and mother.

A study on anxiety and stress between college students and their locus of control revealed that students, who feel more anxious and perceived their conditions stressful, have internal orientation in their beliefs (Lloyd & Hastings, 2009). Sandler and Lakey (1982 cited in Lloyd et al., 2009) demonstrated that students who had high external locus of control experienced more anxiety than those with internal locus of control. Cochran (1987 cited in Karayurt et al., 2008) noted that college students who attended a private university in USA showed close association between external locus of control and anxiety, stress and depression. The same findings were reported for Chinese students (Karayurt et al., 2008). In one study, Buhagiar, Parsonage and Osborn (2011) used multidimensional health locus of control scale (MHLC), and they found that individuals with severe mental illnesses had statistically significant higher scores on the MHLC for powerful others and chance (external locus of control as two dimensions of MHLC). They also noted that there was no difference in the scores for an internal locus of control when two groups of people (individuals with severe mental illnesses and people with non-psychotic mental illness) were compared with each other (Buhagiar et al., 2011). In other words, both groups of individuals had lower level of internal locus of control. If two dimensions of MHLC, powerful others and chance, are considered as external locus of control (Buhagiar et al., 2011), it could be concluded that individuals with severe mental illnesses, such as psychotic disorders, show higher external locus of control. Buhagiar's et al.(2011) findings are compatible with previously noted findings in which

people with mental illnesses, such as depression or anxiety had higher external locus of control. A review of related literature revealed that most studies have been focused on the role of locus of control in predicting mental illnesses or physical diseases, and there are few studies concentrated on the role of locus of control in positive features and psychological components of mental health, such as what Ryff put forward (Pannells & Claxton, 2008; Pufal-Struzik, 1998; Graffeo & Silvestri, 2006).

A review of literature reveals that these few studies have also been concentrated on association between locus of control and self-confidence, problem-solving, self-pity, coping with reality of a situation, personal adjustment, self-perception, positive relationship with others, self-regulation, personal growth, happiness, flexibility, self-responsibility, self-awareness, and creativity (Karayurt & Dicle, 2008; Bozorgi, 2009; Robitschek, 1998; Graffeo & Silvestri, 2006; Rotter, 1966 cited in Pufal-Struzik, 1998). For example, it is discussed that internal locus of control has close association with both self-regulation and autonomy (Monshi Toussi & Ghanizadeh, 2012). Using regression model, Monshi Toussi et al. (2012) demonstrated that almost 48% of the variation in teachers' self-regulation can be predicted by their internal locus of control. Considering locus of control as a situation-based phenomenon, it is suggested that both locus of control and self-regulation are constructed by environmental factors. Based on Bronfenbrenner and Morris's (1998) view these factors can be more influential during early childhood than other periods of development.

In relation to self-confidence, problem-solving and locus of control, Karayurt and Dicle (2008) noted that individuals with external and internal locus of control showed different degree of self-confidence and problem-solving skills indicating that people with

external locus of control were less self-confident and had poorer skills in problem-solving. In comparison with individuals with external locus of control, people who have internal locus of control tend to participate in problem-solving tasks voluntarily showing not to be passive (Findly & Cooper, 1983 cited in Bozorgi, 2009).

It is also noted that persons with internal locus of control had high level of grade points and felt self-confident in predicting their success for academic performance (Rose, Hall, Bolen, & Webster, 1996 cited in Bozorgi, 2009). In addition to self-confidence and problem-solving skills, Phares (1968, cited in Bozorgi, 2009) studied self-pity and coping with situations in relation with locus of control resulted that people with external locus of control are being self-pity and are unable to cope with the reality of situation. Coping with reality of situation indicates personal adjustment that is a factor by which individuals can adapt themselves with life stresses and with any changes that cause distress or difficulties. This behavioral feature is also one of the major components of mental health noted in different definitions of mental health (e.g., WHO's, 2005 cited in Westerhof & Keyes, 2010). Personal adjustment is associated with self-perception that it is rooted in personality trait of locus of control and determining how individuals interpret the cause-and-effect relationship between their behaviors and their outcomes (Pufal-Struzik, 1999). In contrast to people with external locus of control, individuals who interpret the outcomes of their behaviors based on luck, destiny, and control of others (persons with external locus of control) are not well-adjusted and do not react constructively to frustrating situations (Pufal-Struzik, 1999; Bozorgi, 2009).

In this regard, the important point is inter-correlation among positive self-perception, having good relation with others, personal adjustment and locus of control.

Considering different literature, it is revealed that they have direct, positive and linear association with internal locus of control that indicates good mental health status (Pufal-Struzik, 1999; Leotti, Iyengar, & Ochsner, 2010; Lloyd & Hastings, 2009). Considering different reasons, one reason of higher level of mental health in such people is that people with a sense of personal control over events can restrain their physical reactions to stress such as automatic arousal and stress hormone release (Leotti et al., 2010). This type of personal control (self-control) is assumed to increase the level of human's immune system as well as mental health (Leotti et al., 2010). As a sense of personal control is rooted in locus of control, it helps college students to increase their mental health status (Karayurt & Dicle, 2008). Likewise, Pannells and Claxton (2008) examined 171 university students and found that students with internal locus of control had higher level of mental health manifesting with happiness, academic achievement and creativity in which happiness had higher correlation with internal locus of control.

Happiness is defined by two different but integrated terms: psychological sense and value (Haybron, 2011). As a psychological sense, it is characterized by life satisfaction, pleasure, or a positive emotional condition and as a value it is exemplified by the synonymous terms such as well-being, welfare, utility or flourishing (Haybron, 2011; Crisp, 2008). In this case, happiness is considered as “what benefits a person, is good for her, makes her better off, serves her interests, or is desirable for her for her sake” (Haybron, 2011, p. 3). Since happiness is very close to the meaning of mental health (well-being) or at least is one of the core constituents of mental health, some researchers used this term equal to mental health (Haybron, 2011; Crisp, 2008; Pannells et al., 2008). This psycho-physiological phenomenon has been central explicitly or implicitly to those

studies in which locus of control was assumed to have main role in creating and sustaining mental health (Pannells et al., 2008; Crisp, 2008; Leotti et al., 2010). In this regard, it was indicated that happiness is associated with internal locus of control (Pannells et al., 2008). In addition to this association, Pannells et al. (2008) noted that individuals who are creative, self-confident, self-sufficient, and self-independent are also happy people whose main personality trait is internal locus of control. Since mental health includes various but integrated components such as what Ryff (1989, Ryff & Singer, 2008) noted, it is assumed that locus of control has close relationship with other components of mental health.

A review of noted literature showed that in this context locus of control has close association with personal growth (Pufal-Struzik, 1998). It is discussed that personal growth depends on the awareness of self (Pufal-Struzik, 1998), which is a sense of one's own potential, instrumentality (as a cognitive concentration on getting job done), internal locus of control, and assertiveness (Robitschek, 1998). Between these influential factors, the role of internal locus of control has been studied by researchers resulting positive association between them (Robitschek, 1998; Graffeo & Silvestri, 2006; Rotter, 1966 cited in Pufal-Struzik, 1998). In particular, Mackey (2002 cited in Graffeo et al., 2006) demonstrated that internal locus of control is linked to a bunch of health-related behaviors that determine personal growth (e.g., such as “seeking health-related knowledge, adhere to physician's prescription, and successfully stop smoking” p. 594). This link is not only in health-related behaviors, but also students with internal locus of control have shown serious efforts in academic and social conditions that reveals their personal growth (Graffeo & Silvestri, 2006).

The noted review of literature about the association between these positive characteristics (e.g., personal growth, self-confidence, problem solving, happiness, and personal adjustment) and locus of control reveals that just some of positive psychological characteristics in relation to locus of control have been studied. Although these noted studies contributed significant and applied findings to academic and practical health communities; they usually lacked an integrated theory to portray how locus of control link with mental health components. Therefore, in this study, an organized and theory-based research will be conducted to investigate the associations between locus of control, as a predicting factor, and mental health components based on Ryff's well-being theory. This study can lead health professionals to develop more effective health intervention programs for promoting mental health components in young adults.

D. Purpose of Study

As previously mentioned, the role of locus of control in individuals' positive psychological characteristics have been studied separately (Pannells & Claxton, 2008; Pufal-Struzik, 1998; Graffeo & Silvestri, 2006; Haybron, 2011; Crisp, 2008). Although these noted characteristics may be representatives of components of mental health; the components of mental health in Ryff's (1989; Ryff, & Singer, 2006) theory are the main characteristics of mental health that were extracted from different developmental, personality and clinical theories. Even though these components were studied in numerous studies indicating the accuracy of this perspective about mental health (Abbott, Ploubidis, Huppert, Kuh, & Croudace, 2010; Baker, Soto, Perez, & Lee, 2012; Bishop, 2006); the role of locus of control in all components of mental health have not been studied in one comprehensive investigation. Focusing on Ryff's components of mental

health including personal growth, self-acceptance, purpose in life, autonomy, positive relations with others, and environmental mastery, the role of locus of control in these components is central to this study. Therefore, the purpose of current study includes first: determining the role of locus of control as a personality trait in all components of mental health based on Ryff's theory (psychological well-being theory), and second: determining to what extent locus of control is associated with mental health components in terms of socio-demographic factors such as age, gender and others. Based on these purposes and noted studies, the following hypotheses and research questions were tested in this study.

E. Hypotheses and Research Questions

Hypotheses:

1. Individuals who score high on measures of internal locus of control will also score high on Ryff's measure of mental health for all six components (purpose in life, personal growth, environmental mastery, autonomy, self acceptance, positive relationship with others)
2. Variables including age, gender, citizenship status, number of siblings, marital status, degree program and living arrangements as measured by demographic questionnaire will have an impact on participants' mental health as measured by Ryff's PWB Scale.

Research Questions: Regarding the demographic variables, the researcher examined the following questions.

- Is there any relationship between the locus of control as measured by Rotter LOC scale and variables such as amount of time spending on physical activity, on

texting and using social media like tweeter and face-book, on interacting with other people face to face, and also type of physical activity?

- Is there any relationship between the level of individuals' mental health as measured by Ryff's PWB scale and variables such as amount of time spending on physical activity, on texting and using social media like tweeter and face-book, on interacting with other people face to face, and also type of physical activity?

Chapter III

Method

This chapter contains a description of the variables, participants, and measures for this research. In addition, the research method is described as well as the data analysis process and ethical issues.

Variables and Operational Definitions

It is argued that research has two integrated levels, conceptual and measurable (Kerlinger, 1986). On conceptual levels, literature, concepts, constructs and theories are central and on measurable levels, variables, their operational definitions and the methods of measurement are essential. On a measurable level, researchers defined variables as elements or constructs that vary and take different values in an exact range (Kerlinger, 1986; Corsini, 1999; Wiersma et al., 2009). Operational definitions of variables act as a guide to “create, determine or measure concepts or constructs” (Wiersma et al., 2009, p. 668) in research studies. In this research, the following variables were used:

- 1) Mental health: In this study, Ryff’s (1989) conceptualization of mental health as well as its six components including environmental mastery, purpose in life, positive relations with others, self-acceptance, personal growth, and autonomy was used. These components are dependent variables that are measured by Ryff’s Psychological Well-Being Scale (Ryff, 1989; Ryff, & Singer, 2008; Ryff, & Singer, 2006; Ryff, & Keyes, 1995).
- 2) Locus of control refers to a personality trait, introduced by Rotter (1954, 1966, 1987 cited in Pervin, 1993), and it also refers to a person’s tendency to see events

as being controlled internally or externally. This variable will be measured by Rotter's (1966) and Levenson's (1973, 1981) locus of control scales.

The other variables such as marriage status, citizenship, number of siblings and living arrangements were controlled by random sampling or entered in the study as moderator variables.

Participants:

One-hundred and seventy two students, between the ages of 19 and 30 years old, enrolled at MSVU in either an art, science or professional degree program participated in this study.

Procedure:

After receiving ethics approval from Ethics Department at Mount Saint Vincent University, faculty members at MSVU, who were selected randomly in various departments, were contacted via email (Appendix E) for permission to distribute research packages in their classes. Each package contained a covering letter to potential participants (Appendix F) explaining the purpose of the study and information on their rights and copies of the three to be completed. After permission was granted, the researcher followed-up with faculty members to confirm class times, enrollment numbers, and class location. The researcher arrived at the classes, introduced herself, and explained what she would do and why.

Students were guaranteed by a cover letter indicating the information on their questionnaire is confidential and no identifying information is required. Only the researcher and her supervisor had access to the surveys, which would be destroyed once the thesis was completed. Data coded and entered on a password-protected computer.

Students were given an opportunity to pose questions. In this process, the researcher used systematic multistage random sampling. Limited to one statistical society such as university (e.g. Mount Saint Vincent University), systematic multistage random sampling is an appropriate sampling design. In this sampling plan the following stages were used: 1) determining and providing the frame of sampling like programs, 2) selecting randomly some programs (e.g. Psychology and Business Administration), 3) identifying a list of all on campus classes in selected programs, 4) selecting some (five to seven) classes from stage 3 randomly, 5) going to the selected classes based on stage 4 with the instructors' permission, 6) using random number or other ways (simple random ways) to choose students based on age variable, 7) elaborating the goals of study, also accentuating the ethics and confidentiality of responses and explain the ethical issues of the questionnaires (in which there is no need to write any ID information), 8) administrating the scales and questionnaires on the selected students in stage 6 and 7, and 9) preparing data for next step (statistical analysis).

Measures

Psychological Well-Being Scale

In this study, mental health and its components was measured by Ryff's (Ryff, 1989; Ryff, & Singer, 2008; Ryff, & Singer, 2006; Ryff, & Keyes, 1995) Psychological Well-Being scale (PWB) (see Appendix A). Ryff (1989) developed a model of psychological well-being, or positive mental health (Cheng, & Chan, 2005) based on clinical theories, life-span developmental and personality theories (Van Dierendonck, 2005). Ryff's approach represents an optimistic outlook on life, stressing development and personal growth. The scale covers six psychological aspects of mental health,

including self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. This scale has been increasingly used by many practitioners and researchers (Van Dierendonck, 2005; Ryff & Keyes, 1995; Kafka & Kozma 2002; Ryff, & Singer, 2008; McDowell, 2010; Arkoff, Meredith, & Dubanoski, 2004; Clarke, Marshall, Ryff, & Wheaton, 2001; Cheng, & Chan, 2005). Ryff's Psychological Well-Being Scale (PWB) is a screening scale. Based on the number of items in each subscale, there are different versions of the scale, including versions with 20 items, 14 items, 7 items and 3 items in each subscale (see Ryff, 1989; Ryff & Keyes, 1995). The version with 7 items in each subscale (total 42 items), which was used in this study, is more commonly used, and has reasonable psychometric properties (Abbott et al., 2010). Using a sample of 4051, the psychometric properties of the scale were calculated and revealed that the subscales of the scale have reliability between 0.70 and 0.84 in Alpha Coefficient (Ryff, 1989). Participants respond to items on six-point Likert scale ranging from 1 indicating strongly disagree to 6 for agree strongly. After scoring all six subscales, the low and high scores determined the degree to which participants meet each component of the scale. Ruini and Fava, (2009) demonstrated that high score and low score in this scale show two levels named impaired level and optimal level of well-being. In other studies done by Ryff and her colleagues (1989; 1995; 2008), obtaining a low score on each subscale determines that respondents have difficulty in the area being assessed.

Other findings in statistical properties of Ryff's psychological well-being scale in a study conducted by Lindfors, Berntsson, Lundberg (2006) indicated that the inter-correlations between six dimensions of the scale fluctuated between low to modest.

Internal consistency coefficients for all six dimensions ranged from .50 to .70, except purpose in life (see Table 1).

Table 1: Statistical Properties for Different Dimensions of the Ryff Scales (N = 1260)*

Dimensions	1.	2.	3.	4.	5.	6.
1. Self-acceptance	(.70)	.50	.34	.62	.26	.46
2. Positive relationships		(.65)	.19	.41	.23	.28
3. Autonomy			(.53)	.29	.10	.30
4. Environmental mastery				(.71)	.16	.34
5. Purpose in life					(.24)	.31
6. Personal growth						(.66)
M	13.54	13.18	12.90	13.25	14.03	14.24
SD	2.38	2.66	2.40	2.60	2.20	2.55

*Note: Internal consistency coefficients are in parentheses. All correlations are significant at the .001 level (Lindfors, et al. 2006, p. 1217).

Although this scale was valid and reliable (McDowell, 2010), all its subscales (components) were analyzed by measurement methods (e.g., split-half method and Cronbach's alpha method) to obtain its internal consistency, content validity, construct validity, and reliability. In the current study, the Cronbach's Alpha for Ryff's Scale was 0.93, demonstrating that the measure has high internal consistency. As shown in Table 2, each subscales of Ryff's Well-Being Scale had high reliability. Using split-half method, the reliability of Ryff's Well-Being scale was high ($r = .87$, $P < .000$) (See Table 3).

Table 2: Cronbach's Alpha Reliability of Subscales of Ryff's Well-Being Scale

	*Autonom y	*Positive relations with others	*Environmen tal mastery	*Persona l growth	*Purpose in life	*Self- acceptance	Total Items 42
Cronbach's Alpha	.75**	.80**	.74**	.83**	.76**	.73**	.93**
Cronbach's Alpha Based Standardize d Items	.75**	.81**	.74**	.83**	.75**	.73**	.93**
Number of items	7	7	7	7	7	7	42
Number of valid cases	165	161	162	165	158	164	154

*Well-Being Components as Measured by Ryff's Scale.

**P < 0.000

Table 3: Cronbach's Alpha Reliability of Ryff's Well-Being Scale Using Split-Half Method

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	.87*
		N of Items	21^a
	Part 2	Value	.89*
		N of Items	21^b
	Total N of Items		42
Correlation Between Forms			.77*
Spearman-Brown Coefficient	Equal Length		.87*
	Unequal Length		.87*
Guttman Split-Half Coefficient			.87*

*P < 0.000

Levenson's Multidimensional Locus of Control Measure

Levenson's (1973, 1976, & 1981) scale consists of 24 items that measure three dimensions of locus of control, internal (individual's belief they have control over their life), powerful others (life is controlled by others), and chance (life is determined by fate or chance, see Appendix B). This scale yielded internal consistency coefficients (0.81) based on Cronbach's Alpha (Baker et al. 2008). Moreover, Levenson's scale was reported to have good test-retest reliability (Huntley, Palmer, & Wakeling, 2011). In another study, its test-retest reliabilities were calculated and were .74 for the chance, .78 for the powerful others, and .80 for the internal scale, also, reliability coefficient of .67, .82 and .79 were found for internal, powerful others, and chance scale (Packman, Smaby, Maddux, Farnum, Hodges, Liles, et al., 2009). Two dimensions of this scale, powerful others and chance, measure external locus of control. This questionnaire is based on Likert scale measuring individuals' responses within a range from strongly agree to strongly disagree. Although this scale has been used in different studies with reasonable psychometric properties (Levenson, 1981; Huntley, et al., 2011; Tong, & Wang, 2006); in this study the researcher analyzed the scale to obtain its psychometric properties (Table 4).

Rotter's Locus of Control Scale

In addition to Levenson's (1981) scale, in this study the researcher used the Rotter's (1954, 1966, & 1987 cited in Pervin, 1993) scale including 29 items to measure locus of control. Rotter's (1954, 1966) scale measures two different types of locus of control, internal and external (see Appendix C). The higher score indicates that the individual more likely possess internal locus of control, and the lower score shows that

Table 4: Cronbach's Alpha Reliability of Levenson Locus of Control Scale and its Subscales

	Internal	Powerful Others	Chance	Levenson Total
Cronbach's Alpha	.56	.72	.67	.75
Cronbach's Alpha Standardized Item	.59	.72	.68	.75
Number of Items	8	8	8	24
Number of Valid Cases	169	167	168	167

the individual possess external locus of control (Pannells & Claxton, 2008). Additionally, Pannells and Claxton's (2008) findings indicated that the reliability of the scale by test-retest ranged from 0.55 to 0.83 and internal consistency extended from 0.65 to 0.79. However, Rotter (1966, cited in Twenge, Zhang & Im, 2004) reported that the internal reliability, Kuder-Richardson coefficient, was 0.70. The researcher also analyzed this scale to obtain its reliability coefficient before analyzing the research hypotheses. The Cronbach's Alpha Rotter's scale was 0.70 for 23 items on 163 valid cases. In this study, 6 items from 29 items were excluded, since they are as filter for the scale. As shown in table 4, using parallel reliability method, the correlations between Levenson's Subscales and Rotter's Internal and External subscales are partially significant.

Scrutinizing the table indicates, Levenson's Subscale of Chance has a positive correlation with Rotter's Subscale of External. There also is a positive association between Levenson's Subscales of Chance and Powerful Others, which reveals both of them assess the external locus of control.

Table 5: The correlation Between Levenson and Rotter Scales for Locus of Control

	Levenson- Chance	Levenson- Powerful Others	Levenson- Internal	Rotter Internal	Rotter External
Levenson Chance	1	.555**	-.007	-.168*	.168*
Levenson Powerful Others	.555**	1	.121	-.128	.125
Levenson Internal	-.007	.121	1	.091	.090
Rotter Internal	-.168*	-.128	.091	1	-.998**
Rotter External	.168*	.125	.090	-.998**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Demographic questionnaire:

To examine the effects of other variables such as age, gender, living status and ethnicity on mental health a demographic questionnaire was designed. This questionnaire assesses the noted variables based on nominal or ordinal scale (see Appendix D).

Research Design

The current study is a correlational research. Therefore, the researcher used correlational coefficient, predictive equation and regression methods to examine possible relationships between mental health components and locus of control along with demographic factors. In correlational method, researchers try to explain the strength of relationships or associations between phenomena (Wiersma et al., 2009). Although there is no causal relationship in this method, to the extent that two variables are associated or related researchers can predict one event from the other (Cohen, 1996). Since this method provides researchers with the possibility of prediction (Cohen, 1996; Whitley, 2002 cited in Santrock, 2005; Wiersma et al., 2009); statistical methods such as regression may be

used to draw a predictive equation (Cohen, 1996). In this study, the researcher assessed all the assumed relationships within hypotheses and research questions.

Data Analysis

The researcher used descriptive analysis including mean, standard deviation, variation and others to summarize the characteristics of all participants. The descriptive analysis provided bases to examine the relationships between variables in research hypotheses (Cohen, 1996).

Since dependent and independent variables in this study were defined operationally as measurable variables, and because the statistical scales of those questionnaires are interval or at least categorical scale, the researcher used parametric statistics to analyze data along with nonparametric statistics for categorical or nominal variables (e.g., demographic variables) by using SPSS and MANITAB. In this step the following statistical methods were used.

- 1) Linear Regression Analysis
- 2) Bivariate Correlation, T-Tests and ANOVA

However, the researcher ensured that the samples and data have met the statistical assumptions of the noted methods.

Ethics

Confidentiality of participants was guaranteed both verbally and in written form. Since personal identifying information did not require in all questionnaires, it was assured that participants felt comfortable completing questionnaires. Also the researcher informed participants about all the stages of current research. In this study, only statistical

data was reported in thesis and in future presentations or papers. Students were not required to take part in this study, nor were they required to answer all of the questions put forth. This was mentioned in questionnaires' instruction, the cover letter and verbal explanation. The potential for emotional harm in this study was very low. All questionnaires were distributed after MSVU's ethics approval.

Limitations

First limitation is related to the sample population that was limit to students enrolled in Mount Saint Vincent University. This restriction dose not let the results to be generalized to all other students in Nova Scotia. The second limitation is the number of samples. Although 172 participants allowed the researcher to meet all major assumptions to employ the required statistical method to analyze the data, this size of sample reduced the correlational coefficients in some variables partially.

Missing value was another limitation. Despite of the easiness and clarity of the questions and having adequate time, there were some participants who did not respond to all questions. Thus there are some missing values and different N in statistics. Due to this problem, the probability of attaining positive results to all hypotheses may have been affected.

Even though the research method, quantitative method and surveys, resulted to the greater number of students and reliable answers; this method did not allow researcher to go in-depth for understanding the issue.

Chapter IV

Results

After collecting data, the data was analyzed based on hypotheses and research questions. This chapter allocated to descriptive and inferential statistical findings and explanation of data.

Descriptive Characteristics of Participants

One-hundred and seventy two participants completed the surveys. All of them were Mount Saint Vincent University's students within the age range of 19 to 30 years old. Categorizing the age range in 3 groups, the first group was between 19 and 21 years old (n= 43, 25% participants). The second group was between 22 and 26 years old (n=96, 56%) and the last group was aged from 27 to 30 years old (n= 31, 18%). Two participants did not indicate their ages. Regarding gender, 99 participants were female (58%) and 71 were male (41%). Another demographic characteristic was marital status. Of the participants, 103 persons were single (60%), 21 (12%) of individuals were married, 10 (6%) were divorced/separated people, 19 (11%) were in common law/partner relationships, and 17 (10%) did not specified their marital status. Regarding participants' program degree, 91 students were enrolled in professional programs (53%) and 79 or 46% of participants were in arts/science programs. Students' citizenship varied with 72% identifying as Canadian and 27% as international or landed immigrant students. In regard to participants' current living arrangement, it was found that 33% of students were living with their family/siblings, 32% of participants were living with their friends or roommates, 15% with their partners, 23% were living on their own, and about 9% were in student residence. In relation to the number of siblings, 9% of the

participants did not have any siblings, 36% had just one sibling, 24% had two siblings, and approximately 30% had three and more.

The analysis of how participants spend their free time reveals that they do physical activity, text to each other, use social media such as face-book or twitter as well as having face to face contact with friends and other people. The data reveals that 13% of participants do not do any physical activity, 47% of them do less than 2 hours, and 38% do physical activity for 2 or more than 2 hours. Of the participants who do physical activity, 17% do slow paced physical activity such as yoga and walking, 31% were interested in medium paced such as jogging, gym exercises, and 37% do fast paced physical activity such as basketball, swimming. Regarding the time of contacting face to face, about 29% of participants had just 1 to 3 hours contacting face to face per day, and almost 20% of them had more than 12 hours. Finally 54% of students spent less than two hours of their time on texting or using social media, and more than 12% spent more than 9 hours per day (see Table 6).

In order to ensure that missing data in each scale is not a threat to meet statistical assumptions, the researcher explored all the scales to find valid Ns and missing data. As shown in Table 7, the percentages of missing values ranged from 2% to 11%, that is, some participants did not answer some questions. Although valid N was different in each measure, this difference did not violate the primary statistical assumptions.

Table 6: Summary of Participants' Demographic Information

		N*	Valid Percent
Age	19 – 21	43	25
	22 – 26	96	56
	27 – 30	31	18
Gender	Female	99	58
	Male	71	42
Marital Status	Single	103	60
	Married	21	12
	Divorced/Separated	10	6
	Common Law	19	11
	Others	17	10
Program Degree	Professional Pro	91	53
	Arts/Science Pro	79	46
Citizenship	Canadian	123	72
	International/Landed Immigrant	47	27
Current Living Arrangement	Family/Siblings	57	33
	Friends/Roommates	32	19
	Partner	25	15
	On their Own	40	23
	Student Residence	16	9
Number of Siblings	None	15	9
	One	61	36
	Two	42	24
	Three & more	52	30
Hours of Physical Activity	Nothing	23	13
	Less than 2	61	47
	2 & more	66	39
Types of Activity	Nothing	23	13
	Slow Paced	30	17
	Medium Paced	53	31
	Fast Paced	63	37
Hours of Face-to-Face Contact	1 to 3 hours	50	29
	4 to 7 hours	40	23
	8 and more	80	47
Hours of Texting/Social Media	0 to 2 hours	93	54
	3 to 5 hours	38	22
	6 and more	40	23

*The valid number of participants who characterized their demographic features

Table 7: Exploring the Valid N in Each Scale

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Total Score of Levenson-Chance	168	98%	4	2%	172	100%
Total Score of Levenson-Powerful Others	167	97%	5	3%	172	100%
Total Score of Levenson-Internal	169	98%	3	2%	172	100%
Total Score of Rotter	163	95%	9	5%	172	100%
Total Score of Ryff's Psychological Well-Being Scale-42 Items	154	90%	18	11%	172	100%

Based on statistical methods, the significant level of the normality tests for all used scales should be larger than .000 ($P > .000$); otherwise, the assumption of normality is violated and scales are not reliable for measuring independent and dependent variables. Table 8 indicates that significant levels for all scales in both statistical methods, Kolmogorov-Smirnov and Shapiro-Wilk, are greater than .000 ($P > .000$). As Table 8 indicates, Ryff's Psychological Well-Being Scale (PWB) (.087, $df=154$, $P > 0.000$) met the assumption of normality. Similarity, the Rotter Locus of Control Scale (.080, $df=163$, $P > .000$) met the normality assumption. Regarding the three subscales of Levenson, Table 8 shows that all subscales have appropriate normality. assumption. Regarding three subscales of Levenson, Table 7 shows that all subscales have appropriate normality. Although some scales do not meet the assumption of normality very strongly, they can be used to analyze the hypotheses and research questions (Beshlideh, 2012). Furthermore, inspection of the histograms, the Box Plot, the Detrended Normal Q-Q Plot, and the

Normal Q-Q Plot for the Rotter Locus of Control Scale and Ryff's PWB scale revealed that the normality requirements regard to the N for both scales were approximately satisfied.

Table 8: Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
The Ryff's Psychological Well-Being Scale-42 Items	.087	154	.006	.968	154	.001
Rotter Locus of Control	.080	163	.012	.978	163	.011
Levenson-Internal	.074	169	.025	.973	169	.002
Levenson-Powerful Others	.080	167	.011	.983	167	.045
Levenson-Chance	.098	168	.001	.980	168	.017

After analyzing the normality of the scales, it was necessary to attain the statistical central values (e.g., Mean and Standard Deviation) based on demographic characteristics of participants for both measures related to independent and dependent variables. As it shown in Table 9, there are no remarkable differences in means in Rotter LOC scale (M from 12.61 to 13.14) in terms of age. Unlike the Rotter LOC scale, Ryff's PWB showed greater differences in means in terms of age. Results of the Rotter LOC scale by gender indicated that females scored slightly lower than males on Internal Locus of Control (12.79 versus 13.22 respectively). In contrast, females had a higher mean score than the males on Ryff's PWB scale (M=177.35 for male and M=199.40 for female). Regarding marital status, Table 9 shows that means for both the Rotter LOC and Ryff's PWB scales are notable different with divorced/separated participants having

lower scores on both measures while participants in a relationship (married or common law) had higher scores on both measures. In relation to the degree program and hours of texting or using social media such as face-book, the differences in means are minor in both scales (Ryff's PWB and Rotter LOC scales). To determine the differences among demographic factors in terms of LOC and well-being, T-Tests, and ANOVA were used.

The Analysis of the Research Hypotheses and Questions

First Hypothesis:

For the first hypothesis, it was assumed that individuals who score high on measures of internal locus of control will also score high on Ryff's measure of mental health for all six components (purpose in life, personal growth, environmental mastery, autonomy, self acceptance, positive relationship with others). To test this hypothesis, bivariate correlation was used and results are presented in Table 10.

As Table 10 shows, the Rotter-internal LOC has positive correlations with all components of Ryff's PWB scale, and all correlations are significant ($p < 0.01$). Of all the components on the Ryff PWB scale, Purpose in Life, as a component of mental health, had the highest correlation with the Rotter-Internal LOC measure ($r=0.34$, $P < 0.000$), whereas, the component of Personal Growth on the Ryff's had the lowest association with the Rotter-Internal LOC ($r= 0.20$, $P < 0.05$). In contrast, the Rotter-External LOC had significant negative correlations with all of the components of Ryff's PWB scales.

Overall, it can be said that individuals who had high scores on the Rotter-internal (had internal LOC), also had high scores on the components of Ryff's PWB scale. Participants whose scores were high on the Rotter-External had lower score on the different mental health components of the Ryff's PWB scale. This finding indicates that

Table 9: Score Distribution of Participants by Categories of Ryff's PWB & Rotter LOC

		Rotter Locus of Control			Ryff's Well-Being Scale		
		N	Mean	SD	N	Mean	SD
Age	19 – 21	41	12.61	3.73	37	186.19	29.86
	22 – 26	91	12.68	3.70	87	191.56	28.19
	27 – 30	29	13.14	4.69	30	192.50	27.06
Gender	Female	96	12.79	3.90	93	199.40	23.60
	Male	65	13.22	3.99	60	177.35	29.56
Marital Status	Single	98	12.79	3.72	97	188.03	28.96
	Married	21	14.38	4.72	19	192.16	29.62
	Divorced/Separated	7	10.43	3.46	4	172.00	21.57
	Common Law	19	13.74	4.50	18	208.28	19.57
	Others	16	12.31	3.09	14	192.64	24.40
Program Degree	Professional Pro	85	12.66	3.98	81	187.83	28.99
	Arts/Science Pro	77	13.27	3.85	72	193.74	27.44
Citizenship	Canadian	119	13.09	3.96	118	197.14	24.93
	International/Landed Immigrant	43	12.42	3.87	35	169.00	28.24
Current Living Arrangement	Family/Siblings	56	13.48	3.74	51	198.08	22.55
	Friends/Roommates	29	13.69	4.19	26	188.92	29.91
	Partner	25	13.72	4.70	23	208.13	17.17
	On their Own	37	11.92	3.07	37	177.76	29.76
	Student Residence	15	10.80	3.65	16	174.06	32.05
Number of Siblings	None	13	11.23	4.30	10	168.20	18.79
	One	56	13.30	3.79	53	196.19	27.74
	Two	42	13.00	3.64	42	198.26	24.23
	Three & more	50	12.92	4.23	49	182.10	29.81
Hours of Physical Activity	Nothing	20	13.00	3.80	12	171.50	25.42
	Less than 2	79	12.18	3.72	80	190.38	27.41
	2 & more	62	13.70	4.10	61	193.84	28.98
Types of Activity	Nothing	20	12.80	3.90	12	168.75	23.41
	Slow Paced	29	12.17	4.20	29	191.24	29.07
	Medium Paced	50	12.90	4.09	51	194.27	27.09
	Fast Paced	61	13.51	3.69	59	191.47	28.65
Hours of Face-to-Face Contact	1 to 3 hours	47	11.89	4.00	42	169.76	24.69
	4 to 7 hours	40	12.55	3.39	37	192.46	29.68
	8 and more	75	13.75	4.03	74	201.70	22.51
Hours of Texting/Social Media	0 to 2 hours	87	13.10	4.15	85	188.53	29.65
	3 to 5 hours	38	13.26	3.78	36	195.72	28.42
	6 and more	37	12.27	3.48	33	189.67	24.45

mental health components are associated with internal LOC. Therefore, the first hypothesis, by which mental health components were assumed to be correlated with Rotter's Internal LOC, was accepted.

Table 10: Bivariate Correlations between Rotter LOC and Components of Ryff's PWB Scale

		Rotter- Internal LOC	Autonomy	Positive Relation with Others	Environment al Mastery	Personal Growth	Purpose in Life	Self- Acceptance
Rotter- Internal LOC	Pearson r	1	.21**	.23**	.28**	.20*	.34**	.28**
	Sig (2-tailed)	.00	.008	.004	.001	.012	.000	.001
	N	163	158	154	155	157	151	156
Rotter- External LOC	Pearson r	-.99**	-.21**	-.24**	-.26**	-.20*	-.34**	-.28**
	Sig (2-tailed)	.000	.009	.003	.001	.013	.000	.000
	N	163	158	154	155	157	151	156

* Correlations are significant at the $P < 0.05$

** Correlations are significant at the $P < 0.01$

In addition, the correlation between total score of Rotter LOC and total score of the Ryff's PWB Scale was calculated. As noted in Table 11, there is an overall positive association between these two scales ($r=.312, P < .01$).

Second Hypothesis:

In the second hypothesis, it was assumed that the variables of age, gender, citizenship status, number of sibling, program degree, and living arrangements as measured by demographic questionnaire will have an impact on participants' mental health as measured by Ryff's PWB Scale. To examine the effects of collected demographic

Table 11: The Relationship between Rotter LOC and Ryff's PWB

		Rotter LOC	Ryff's Total PWB
Rotter LOC	Pearson Correlation	1	.312**
	Sig. (2-tailed)		.000
	N	163	148
Ryff's Total PWB	Pearson Correlation	.312**	1
	Sig. (2-tailed)	.000	
	N	148	154

** . Correlation is significant at the 0.01 level (2-tailed).

information of the participants on their mental health, ANOVA, t-test and partial correlation were used. Based on these statistical methods, the researcher attempted to ascertain whether there are significant discrepancies between the means score of participants' on Ryff's PWB and different categories of demographic information that were collected.

The results in Table 12 revealed that there were no significant differences among the categories of age (19 to 21, 22 to 26, and 27 to 30 years old) and the degree of mental health in participants as measured by the Ryff's, $F(2, 151) = 0.562$, $P > .05$. Therefore, age was not a differentiated factor in mental health. ANOVA was used in order to observe whether mental health levels differed according to marriage status. The result (Table 12) showed that mean differences were significant, for mental health level for different marital status $F(4, 147) = 2.54$, $p < .05$. The Tukey HSD test was used to compare the means of mental health on the Ryff's and marital status. Results indicated that the mean score of mental health on the Ryff's for participants who were divorced or separated ($M=172.00$, $SD=21.57$) was significantly different from the mean of mental health for participants who had a common law relationship ($M=208.28$, $SD=19.57$), $P \leq$

0.05. Since the mean difference ($M = -36.28$) was negative, it indicated that the level of mental health was higher in participants whose marital status were common law in comparison with those who were divorced or separated.

The current living arrangement of participants (See Table 12) also had a significant impact on their mental health $F(4, 148) = 7.46, p < .05$. Results of the Tukey HSD test for Post hoc comparisons indicated that the mean of mental health for participants who were living in student residence ($M=174.06, SD=32.05$) was significantly different from the mean of mental health for participants who lived with a partner, $P \leq 0.05$. Since the mean difference ($M = -30.37$) was negative, this indicated that the level of mental health was higher in participants who lived with a partner in comparison with those who lived in student residence.

The number of siblings was categorized into four categories from none (without siblings) to having more than three siblings. A one-way between subjects ANOVA was conducted to observe whether the mean scores on Ryff's PWB Scale differed according to the number of siblings. The result revealed that there was a significant difference between participants' scores on mental health and the number of siblings they had $F(3, 150) = 5.765, P \leq .05$ (Table 12). Post hoc comparisons using the Tukey HSD test indicated that the mean of mental health for participants who had no siblings ($M=168.20, SD=18.79$) was significantly different from the mean of mental health for participants who had two siblings, $P \leq 0.05$. Since the mean difference ($M = -30.02$) was negative, it indicated that the level of mental health was higher in participants who had two siblings in comparison with those who had no sibling.

Table 12: ANOVA for the Demographic Information and Ryff's PWB Scale

	Categories	N	Mean	SD		Sum of Squares	df	Mean Square	F**	Sig
Age	19 - 21	37	186.19	29.86	Between Groups	905.6	2	452.8	.562	.571
	22 – 26	87	191.56	28.19	Within Groups	121694.58	151	805.92		
	27 - 30	30	192.50	27.06	Total	122600.18	153			
Marital Status	Single	97	188.03	28.96	Between Groups	7735.32	4	1933.83	2.54	.042
	Married	19	192.16	29.62	Within Groups	111950.26	147	761.566		
	Divorced/ Separated	4	172.00	21.57	Total	119685.58	151			
	Common Low	18	208.28	19.57						
	Other	14	192.64	24.40						
Living Arrangement	Family/ Siblings	51	198.08	22.55	Between Groups	20472.58	4	5118.15	7.46	.000
	Friends/ Roommates	26	188.92	29.91	Within Groups	101573.89	148	686.31		
	Partner	23	208.13	17.17	Total	122046.47	152			
	On their Own	37	177.76	29.76						
	Student Residence	16	174.06	32.05						
Number of Siblings	None	10	168.20	18.79	Between Groups	12673.86	3	4224.62	5.77	.001
	One	53	196.19	27.74	Within Groups	109926.32	150	732.84		
	Two	42	198.26	24.23	Total	122600.18	153			
	Three & more	49	182.10	29.81						

Regarding citizenship, gender and program degree, t-tests were used to analyze if the discrepancies between the mean on the Ryff measure of mental health and these variables were significant. Results from the t-test for citizenship indicated that the mean level of mental health was $\bar{X}=197.14$ (SD=24.93) for Canadian students and $\bar{X}=169$ (SD=28.24) for international or landed immigrant students. As Table 13 revealed, t for both Canadian and international or landed immigrant students was significant at $P < .000$, that is, the level of mental health in Canadian students was higher than the other group.

Regarding gender, the mean level of mental health was $\bar{X}=199.40$ (SD 23.60) for females and $\bar{X}=177.35$ (SD=29.56) for males. T-test showed that the difference between means was significant $t(151) = 5.10$, ($p < 0.05$), with females in this sample having higher levels of mental health than males (see Table 13). Results of t-test also revealed that participants did not show any difference in their levels of mental health in terms of the program degree $t = -1.29$, $P > .05$. As can be seen in Table 13 the mean score of mental health level for professional program students ($M=187.83$, $SD=28.99$), and the mean score of mental health for art/science program students ($M=193.74$, $SD=27.44$) was not significantly differences (see Table 13).

Research Question 1: What is the relationship between participants' locus of control and the variables: 1) hours of physical activity, 2) type of physical activity, 3) hours of texting or using social media, and 4) hours of contacting face to face?

As Table 14 indicates, the discrepancies between the means of LOC in all four variables were not significant, except for the hours of face to face contact with people ($F(2, 159) = 3.54$, $P \leq .05$). This implies that participants, who had more direct contact with people, had greater internal locus of control (see Table 14).

Table 13: T-Test for the Demographic Information and Ryff's PWB Scale

		N	Mean	SD	t	Df	Sig (2-tailed)	Mean Difference
Citizenship	Canadian	118	197.14	24.93	5.69	151	.000	28.14
	International/Landed Immigrant	35	169.00	28.24				
Gender	Female	93	199.40	23.60	5.10	151	.000	22.05
	Male	60	177.35	29.56				
Program Degree	Professional Pro	81	187.83	28.99	-1.29	151	.199	-5.90
	Art/Science Pro	72	193.74	27.44				

Research Question 2: What is the relationship between the variables hours of physical activity, type of physical activity, hours of texting or using social media, and hours of contacting face to face and participants' mental health as measures by Ryff's PWB?

Findings indicated that there was a significant difference between the mean score on the mental health scale and the two variables of hours of physical activity and hours of interacting with people directly. This result revealed that participants' mental health increasingly changed with their hours of physical activity, that is, their level of mental health goes up as their hours of physical activity increase. Post Hoc tests indicated that participants who had more than 2 hours physical activity per day were healthier mentally than participants who had no physical activities per day $F(2, 150) = 3.213, P < .05$ (see Table 15). In addition, mean discrepancies in the variable of hours of face to face contact

Table 14: ANOVA for the Second Part of Demographic Information and Rotter's LOC

Scale-Internal										
	Categories	N	Mean	SD		Sum of Squares	df	Mean Square	F**	Sig
Hours of Physical Activity	None	20	13.00	3.78	Between Groups	90.62	2	45.31	3.013	.052
	0 < x < 2	79	12.18	3.72	Within Groups	2375.79	150	15.04		
	X > 2	62	13.79	4.10	Total	2466.41	152			
Type of Physical Activities	Nothing	20	12.80	3.90	Between Groups	36.89	3	12.30	.793	.500
	Slow Paced	29	12.17	4.20	Within Groups	2419.08	156	15.51		
	Medium Paced	50	12.90	4.09	Total	2455.98	159			
	Fact Paced	61	13.51	3.69						
Hours of Texting or Using Social Media	0 – 2 hours	87	13.10	4.15	Between Groups	22.87	2	11.44	.742	.478
	3-5 hours	38	13.26	3.78	Within Groups	2448.74	159	15.40		
	6 and more	37	12.27	3.48	Total	2471.61	161			
Hours of Contacting Face to Face	1 to 3 hours	47	11.89	4.00	Between Groups	106.24	2	53.12	3.54	.031*
	4 to 7 hours	40	12.55	3.39	Within Groups	2388.56	159	15.02		
	8 and more	75	13.75	4.03	Total	2494.79	161			

were significant in terms of mental health levels. As the amount of time spent with people increased, so did participants levels of mental health. $F(2, 150) = 22.00, P < .000$.

Unlike the mentioned variables, for the variable of hours of texting or using social media, participants' mental health scores had no significant changes. $F(2, 151) = .831, P > .05$. Also, the researcher could not find any major differences between the types of physical activities and participants' mental health scores. In other words, there was no

difference in the mean of participants' mental health among the three categories of the type of physical activities, including the slow paced, medium paced, and fast paced.

Table 15: ANOVA for the Second Part of Demographic Information and Ryff's PWB Scale

	Categories	N	Mean	SD		Sum of Squares	Df	Mean Square	F**	Sig
Hours of Physical Activity	None	12	171.50	25.42	Between Groups	5004.36	2	2502.18	3.213	.043*
	0 < x < 2	80	190.38	27.41	Within Groups	116832.1	150	778.88		
	X > 2	61	193.84	28.98	Total	121836.5	152			
Type of Physical Activities	Slow Paced	29	191.24	29.07	Between Groups	268.27	2	134.13	.169	.845
	Medium Paced	51	194.27	27.09	Within Groups	107972.18	136	793.91		
	Fact Paced	59	191.47	28.65	Total	108240.45	138			
Hours of Texting or Using Social Media	0 – 2 hours	85	188.53	29.65	Between Groups	1334.45	2	667.22	.831	.438
	3-5 hours	36	195.72	28.42	Within Groups	121265.73	151	803.08		
	6 and more	33	189.67	24.45	Total	122600.18	153			
Hours of Contacting Face to Face	1 to 3 hours	42	169.76	24.69	Between Groups	27485.90	2	13742.95	22.00	.000*
	4 to 7 hours	53	192.46	29.69	Within Groups	93702.27	150	624.68		
	8 and more	74	201.70	22.51	Total	121188.17	152			

Predictors of Mental Health; Locus of Control and Demographic Factors

Since one of the purposes of this study was to investigate the predictive role of locus of control along with other demographic factors in mental health, a linear regression was calculated to determine the portion of each predictor factor in mental

health levels. Recent literature and findings from the current study revealed that there are positive and significant correlation between locus of control and mental health and its all components (see Table 10). Based on this association, the hierarchical model of linear regression was used to observe the predictive portion of each independent variable in mental health. In this process, the demographic factors, whose correlations with mental health were not significant, were not entered. Therefore, locus of control was the first variable to enter the regression model, followed by the gender, citizenship status, marital status, and spent time for face to face contact. The results of the analysis of model 1 to model 5 were presented in Table 16.

In model 1, after entering locus of control in the equation, $R = .300$, $F(1, 143) = 14.115$, $p < 0.000$, locus of control had a significant ($UBeta = 2.13$, $SBeta = .300$, $p < 0.000$) contribution in predicting mental health among respondents. About 9% of the variability of mental health could be predicted by knowing scores on locus of control (Rotter LOC Scale, see Table 14). After step 2, in model 2, gender was added to the prediction of mental health by locus of control, $R = .483$, $F(1, 142) = 26.537$, $p < 0.000$. Thus, the addition of the gender variable in the equation results an increase in R^2 by .143 from .090 to .233. Locus of control and gender jointly accounted for 23.3% of the variance in participants' mental health. In model 3, citizenship variable was entered in the equation to observe whether differences in citizenship status were related to mental health. The results were significant with $R = .562$, $F(1, 141) = 17.053$, $p < .000$. The addition of the citizenship status variable to the regression equation improved R^2 by .083 from .233 to .316. In model 4, marital status was added to the model to see the effect of that on mental health, $R = .587$, $F(1, 140) = 6.002$, $p < 0.000$. By adding marital status, R^2

improved .028, from .316 to .344. In the last model, the variable of time spent in contacting people face to face or directly entered in the equation. By that $R = .641$, $F(1, 139) = 15.752$, $p < 0.000$. The addition of this variable to the regression equation improved R^2 by .067 from .344 to .411. In this regard, it can be said that these five variables jointly can explain and predict 41.1% of the variance in participants' mental health (see Table 16).

The P.P Scatter plot for locus of control and noted variables in model 2, 3, 4, and 5 (Figure 3) also shows that the relationship between the five predictor variables (locus of control, gender, citizenship, marital status and time spent in face to face contact) and well-being is positive and linear with a linear equation.

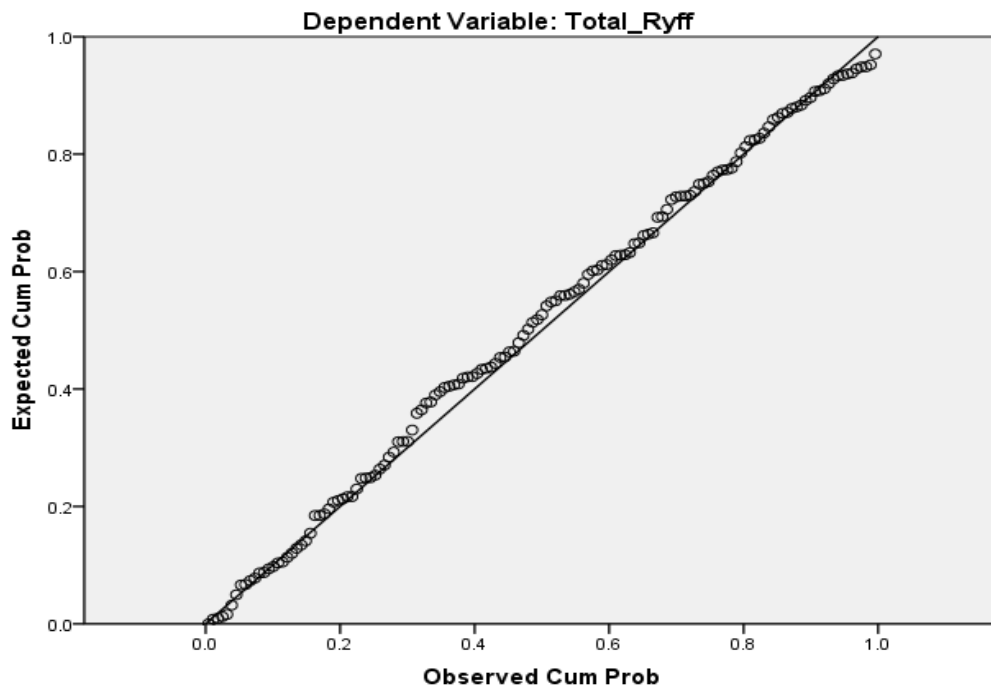


Figure 3: Normal P-P Plot of Regression Standardized Residual

Table 16: Results of Hierarchical Regression of Locus of Control, Gender, Citizenship, Marital Status, and Time Spent Face to Face on Mental Health (Well – Being)^f

	Unstandardized Beta	Standardized Beta	R	R ²	F**	R ² Change
Model 1 (Constant)	164.225		.300 ^a	.090	14.115	.090
Locus of Control	2.130	.300				
Model 2 (Constant)	191.243		.483 ^b	.233	26.537	.143
Locus of Control	2.354	.331				
Gender	-21.702	-.380				
Model 3 (Constant)	211.011		.562 ^c	.316	17.053	.083
Locus of Control	2.252	.317				
Gender	-17.367	-.304				
Citizenship	-20.117	-.298				
Model 4 (Constant)	202.104		.587 ^d	.344	6.002	.028
Locus of Control	2.268	.319				
Gender	-16.544	-.290				
Citizenship	-19.134	-.283				
Marital Status	3.418	.169				
Model 5 (Constant)	175.167		.641 ^e	.411	15.752	.067
Locus of Control	1.869	.263				
Gender	-14.444	-.253				
Citizenship	-11.915	-.176				
Marital Status	2.923	.145				
Time Spent for Face to Face Contact	9.699	.293				

** P < .000

General Predictive Equation

With regard to the positive correlation between locus of control and mental health ($r = .312$, $p < .000$), and the range of scores in Rotter LOC Scale (from 5 to 23), it is possible to use the predictive regression equation $\hat{Y} = a + (b_1 \times X_1)$ for the model 1 to predict participants' scores on mental health (Ryff's well-being scale). For example, if somebody has a score of 23 (**Maximum** score) on the Rotter LOC Scale, his or her score on Ryff's Well-Being Scale will be $\hat{Y} = 164.225 + (2.130 \times 23) = 213.215$. For a moderate score on Rotter LOC Scale, such as 13, the result will be $\hat{Y} = 164.225 + (2.130 \times 13) = 191.915$ on Ryff's Scale. For a person with high tendency of external locus of control with a score such as 5, the score on Ryff's Well-Being Scale will be $\hat{Y} = 164.225 + (2.130 \times 5) = 174.875$. Using these scores, it is possible to draw the regression line of prediction (Figure 4).

Table 17: Descriptive Statistics of Scales

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Total Score of Rotter LOC Scale	163	18	5	23	12.92	3.925
Total Score of Ryff's PWB Scale 42 Items	154	140	110	250	190.45	28.307
Valid N (listwise)	148					

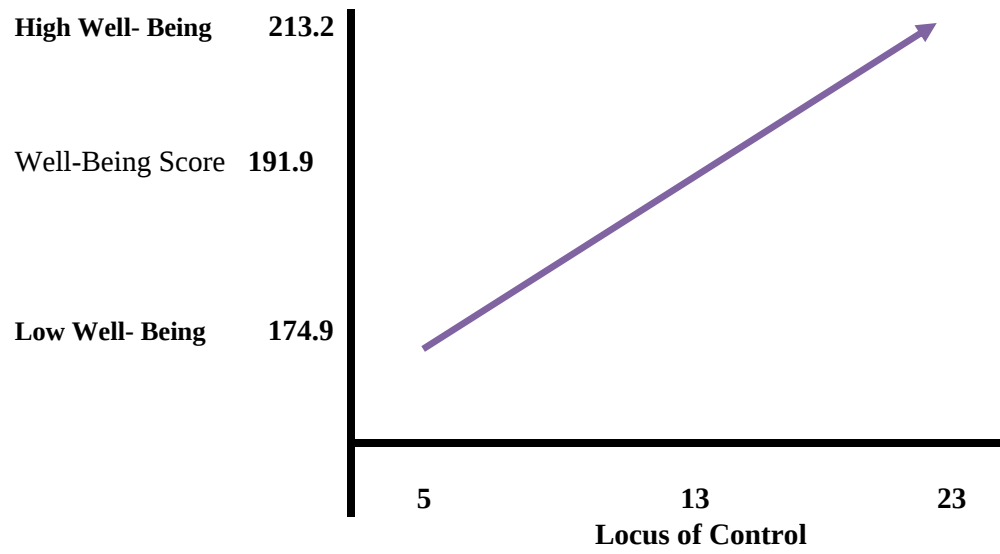


Figure 4: Regression Line of Well-being via Locus of Control Score

Chapter V

Discussion and Recommendation

Past research has focused on the role of locus of control in predicting mental illnesses or physical diseases, rather than its relationship with locus of control and various psychological components of mental health. Therefore, this study addressed the relationship between locus of control and the components of mental health outlined in Ryff's (1989) theory (e.g., autonomy, purpose in life, environmental mastery, personal growth, positive relationship with others, and self-acceptance). The purposes of this study were first, ascertaining the role of locus of control as a personality trait in all components of mental health based on Ryff's (1989) psychological well-being theory. A second purpose was to determine to what extent locus of control is associated with Ryff's mental health components in terms of socio-demographic factors such as age, gender, citizenship, program of study, and living arrangement. Using Ryff's (1989) theory of positive psychological well-being (mental health) and a quantitative approach, the current study kept distance from the medical (symptomatic) model and focused on the predictive effects of specific demographic factors and locus of control on mental health components (as measured by Ryff's (1989) Psychological Well-Being (PWB) Scale. One hundred and seventy two (n=172) international and Canadian students of Mount Saint Vincent University in Halifax, Nova Scotia participated in this study. Participants completed four measures, Ryff's Psychological Well-Being Scale (42 items), Rotter's LOC (29 items) in order to measure their tendency about locus of control, Levenson's Multidimensional Locus of Control Measure (24 items) to measure the students' locus of control, and Demographic Questionnaire to collect the students' information about their socio-

demographic. Data from 172 student participants on completed measures was analyzed to examine the hypotheses and research questions.

Locus of Control and the Components of Well-Being

Based on the first hypothesis, the researcher used bivariate correlation to examine the associations between locus of control and the components of mental health. The results showed that there are significant positive associations between each of Ryff's six components of mental health and locus of control as measured by Rotter's Scale (see Table 10). This finding rejects the null hypothesis and supports the first hypothesis by which the association between locus of control and each well-being component were assumed to be directed and positive. This association means that individuals with internal locus of control have higher level of mental health.

One of the components of Ryff's psychological well-being scale is Purpose in Life. As previously mentioned, mature individuals are characterized as having a purpose in life, having intentionality and directedness. It is assumed that people's well-being is identified by this component (Ryff & Singer, 2008). For example, if someone enjoys making plans for his or her future and works to make them a reality; or is active in carrying out his or her plans, he/she is seen as having a purpose in life (Ryff & Singer, 2008). In contrast, people with external locus of control would believe that outcomes are not the result of their own actions but the consequences of fate, luck, chance or environmental influences (Lloyd & Hastings, 2009; Pannells & Claxton, 2008). They usually do not plan for future; thus they do not have a clear purpose in life. Therefore, the results from the current study aligned with those of previous studies and indicated that purpose in life had a significant positive relationship with locus of control.

Self-acceptance is another component of mental health. It has been defined as a sense of recognition of personal abilities and achievements as well as acknowledging and accepting personal limitations (Ryff, 1989). Findings from the current study demonstrated that internal locus of control is positively associated with self-acceptance. Research by Pufal-Struzik's (1999) identified a similar relationship in which personal adjustment is associated with self-perception. Since personal adjustment is rooted in the personality trait of locus of control and determines how individuals interpret the cause-and-effect relationship between their behaviors and their outcomes, it is deduced that self-acceptance is affected by the individual's internal or external locus of control.

Another component of Ryff's theory of mental health, which had positive significant association with locus of control, was environmental mastery. This component deals with people's ability to select or make the environment around them suitable for their personal-psychological situation (Ryff & Keyes, 1995). Relating this component to locus of control, Karayurt and Dicle (2008) posited that persons with external locus of control were less self-confident and had poorer skills in problem-solving. It is assumed that if people would like to have a suitable environment for themselves, they need to solve their problems and make their personal and psychological atmosphere positive and appropriate. Therefore, it is assumed that environmental mastery has a strong association with internal locus of control. This assumption was supported by the findings from the present study.

Autonomy is the other component of Ryff's Psychological Well-Being Scale that positively correlated with locus of control in this study. Autonomy can be characterized by self-determination, independence, and the regulation of behavior from within (Ryff,

1989, Ryff & Singer, 2008). Based on Ryff's (1989, 2008) view, this component of mental health has close association with major characteristics of self-actualizers in personality theories such as having an 'internal locus of evaluation', 'showing autonomous functioning' and 'resistance to enculturation' (p.21). On the other hand, it was discussed that internal locus of control has close association with both self-regulation and autonomy (Monshi Toussi & Ghanizadeh, 2012), that it was corroborated by the present study.

Positive relationship with others is one of the major components of mental health, which is characterized by having warm and trusting interpersonal relationships, and also being able to love other people or having strong feeling of empathy (Ryff, & Singer, 2008). Many researchers stated that this component has a direct, positive and linear association with internal locus of control (Pufal-Struzik, 1999; Leotti, Iyengar, & Ochsner, 2010; Lloyd & Hastings, 2009). Findings from present study support this opinion that people with internal locus of control have more intimacy and a close affiliation with others.

The final component of Ryff's (1989) theory is personal growth which pertains to an individual's potential to develop positive characteristics (Ryff & Singer, 2008). Positive and significant associations between personal growth and internal locus of control revealed that people with internal locus of control have a tendency to develop their personal abilities and to actualize their potentialities in positive ways. The relationship noted above was verified in the current study and aligns with the Robitschek's (1998) and Pufal-Struzik's (1998) research findings on this issue. The link positive between internal locus of control and personal growth not only applies to

academic and social conditions, but also to health-related behaviors, such as to stop smoking and looking health-related knowledge.

Mental Health, Locus of Control and Demographic Factors

The second hypothesis and also the research questions were about the relationship among participants' mental health, locus of control and their demographic information (e.g. age, gender, citizenship status, number of sibling, marital status, degree program and living arrangements). As the statistical findings indicated, some variables such as age, program degree, type of physical activities, and hours of texting and using social media did not have significant relationship with the mental health of participants. Findings from this research indicated that citizenship did have an impact on mental health. The ANOVA analysis revealed that participants who were international or landed immigrant students had lower levels of mental health when compared to Canadian students. Even though possible reasons for this deficit were not examine, one possible cause for this issue for immigrants and international students may be acculturation. People who immigrate to other country from different cultures may face differences and difficulties when integrating or adopting new culture (Neto, 2010). Trying to balance new and old beliefs and traditions may cause stress and impact the mental health of individuals within this group.

Regarding gender, results showed that there was a significant difference between the mean scores of females and males in terms of mental health, with females having higher levels of mental health than the males. The ANOVA calculation to test whether marital status can impact mental health revealed that participants who were divorced or separated had significantly lower level of mental health, especially when compared to

those who were married or in common law relationships. Participants in relationships had the healthiest level of mental health.

Current living arrangement was the other demographic variable which resulted in significant differences among the participants. The current study revealed that this variable can impact an individual's mental health. One explanation for this discrepancy may be that students who were living in student residence and had the lowest level of mental health may feel alone and disconnected from their family and friends. Contrary to residence students, students who lived with a partner better mental health. Using ANOVA to examine the variable of number of siblings indicated that students who had no siblings had lower levels of mental health than participants who had two siblings. These results were similar to the Shahidi's (2013) who noted that having more than three siblings did not help increase levels of mental health.

The research questions were about whether there are associations among participants' locus of control, mental health and the following variables; 1) hours of physical activity, 2) type of physical activity, 3) hours of texting or using social media, and 4) hours of contacting face to face. No relationship between type of physical activities and hours of texting and participants' mental health was found. On the other hand, hours of physical activity had an impact on students' mental health, that is, when their hours of physical activity increased, their mental health levels also rose. Likewise, students' mental health was influenced by hours of direct contact with people. These results were not surprising in that personal contact and physical activity promote a sense of well-being and make people feel better about themselves.

Regarding the locus of control, there was no association between hours of physical activity, type of physical activities and hours of texting in different categories of participants and locus of control. Unlike the above variables, there was a significant association between locus of control and hours of contacting face to face. Indicating students with internal locus of control prefer direct contact with people rather than using phone, texting or using social media like face book and twitter.

The Predictive Power of Locus of Control and Demographic Factors

Using hierarchical linear regression shows that locus of control had an acceptable effect size when predicting well-being (mental health, see Table 16). However, some of the demographic factors including, gender, citizenship, marital status, and time spent in face to face contact also had undeniable effects on predicting participants' well-being. For this group, gender made a remarkable contribution to predicting mental health among participants. However, given that participants were from a university with 80% of its student body female, this is not surprising. In addition to this power of prediction, the regression line for the equation in Figures 3 revealed that the relationship between locus of control and well-being (mental health) has a linear pattern. Adding other variables (e.g., gender, citizenship status, and other variables) did not change this pattern.

Recommendations

Based on the findings and limitations in the present study, the following suggestions can be offered:

- Results of this study indicated that students living in residence scored the lowest on both the Rotter and Ryff's PWB. This issue needs to be examined further. What is it about life in student residence that impacts student's mental health and

internal locus of control? This issue is relevant given that it deviates from the perspective of past generations of students. Isolating reasons behind the current results could help administrators develop supports and services that enhance student's experiences in residence.

- Future research could build on the finding that individuals in relationships (married/common law) have better mental health than those who are separated or divorced. It would be interesting to ascertain which variables contribute to positive mental health in these different relationships.
- Since in Rotter's (1975) theory, locus of control is situation-based, and situation is directly related to the different environments and cultures, the researcher recommends that cross-cultural studies be implemented to study the similarities and differences of the cultures in terms of locus of control.
- The research sample in this study was university students. It would be meaningful to scrutinize a general segment of the population to assess whether locus of control and their mental health influences their life style and life choices and why it does.
- Follow-up studies may assess the relationship between mental health and locus of control in various populations. For example, in a longitudinal study, junior and senior high school students could be surveyed and interviewed to study locus of control and how it impacts problem solving, decision making, relationships, and career choices.
- Future studies could look at the effect of growing up in an urban versus a rural environment regarding locus of control and mental health.

- Qualitative methods could be used to examine the dynamics of immigrant students encounter and how they impact their locus of control and mental health.
- Child and youth care workers need to be aware of the unique issues confronting immigrants. They must be culturally sensitive and assist child and youth, especially during the transition phase.
- Results of this study indicated that marital status and living arrangements have an impact on children and youth's sense of self, their mental health, and their locus of control. Child and youth workers (CYC) need to be aware this relationship and support those in their care. They need to be aware of the community programs and services that promote children's mental health and help families or youth access these services.
- In our technology age, too many children and youth feel disconnected. Results from this research indicated that those engaged in physical activity and who are in direct contact with others had better mental health and an internal locus of control. CYC workers need to keep these findings in mind when working with children and youth. Opportunities for physical activities/games/fitness and social interactions are essential and should be part of every planning session.

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Appendixes

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Appendix A

Ryff's Psychological Well-Being Scale 42-Items

Ryff's Psychological Well-Being Scale

Instruction

Dear respondent: This questionnaire is organized to evaluate general indexes of mental health (well-being). Please: First, read each question/item carefully. Second, choose the best choice that explains the degree to which you agree with. Third, put (X) into the box you have chosen. Please do not write your name on this scale.

Questions/Items	1= strongly disagree	2= moderately disagree	3= slightly disagree	4= slightly agree	5= moderately agree	6= strongly agree
A1: I am not afraid to voice my opinions even when they are in opposition to the opinions of most people						
A2: My decisions are not usually influenced by what everyone else is doing						
A4: I have confidence in my opinions even if they are contrary to the general consensus						
A6: Being happy with myself is more important than having others approve of me						
A3: I tend to worry what other people think of me						
A5: I often change my mind about decisions if my friends and family disagree						
A7: It is difficult for me to voice my own opinions on controversial matters						
R1: Most people see me as loving and affectionate						
R3: I enjoy personal and mutual conversations with family members or friends						
R6: People would describe me as a giving person, willing to share my time with others						

MENTAL HEALTH COMPONENTS AND LOCUS OF CONTROL

Questions/Items	1= strongly disagree	2= moderately disagree	3= slightly disagree	4= slightly agree	5= moderately agree	6= strongly agree
R7: I know that I can trust my friends and they know that they can trust me						
R2: I often feel lonely because I have few close friends with whom to share my concerns						
R4: I don't have many people who want to listen when I need to talk						
R5: It seems to me that most other people have more friends than I do						
E2: I am quite good at managing the many responsibilities of my daily life						
E4: I generally do a good job of taking care of my personal finances and affairs						
E5: I am good at juggling my time so that I can fit everything in that needs to be done						
E7: I have been able to build a home and a lifestyle for myself that is much to my liking						
E1: I do not fit very well with the people and the community around me						
E3: I often feel overwhelmed by my responsibilities						
E6: I have difficulty arranging my life in a way that is satisfying to me						

MENTAL HEALTH COMPONENTS AND LOCUS OF CONTROL

Questions/Items	1= strongly disagree	2= moderately disagree	3= slightly disagree	4= slightly agree	5= moderately agree	6= strongly agree
G3: I think it is important to have new experiences that challenge how you think about the world						
G5: I have the sense that I have developed a lot as a person over time						
G1: I am not interested in activities that will expand my horizons						
G2: I don't want to try new ways of doing things — my life is fine the way it is						
G4: When I think about it, I haven't really improved much as a person over the years						
G6: I do not enjoy being in new situations that require me to change my old familiar ways of doing things						
G7: There is a truth in the saying that you can't teach an old dog new tricks						
P5: I am an active person in carrying out the plans I set for myself						
P7: I enjoy making plans for the future and working to make them a reality						
P1: I tend to focus on the present, because the future nearly always brings me problems						
P2: My daily activities often seem trivial and unimportant to me						

MENTAL HEALTH COMPONENTS AND LOCUS OF CONTROL

Questions/Items	1= strongly disagree	2= moderately disagree	3= slightly disagree	4= slightly agree	5= moderately agree	6= strongly agree
P3: I don't have a good sense of what it is I am trying to accomplish in life						
P4: I used to set goals for myself, but that now seems a waste of time						
P6: I sometime feel I have done all there is to do in life						
S2: I have made some mistakes in the past, but feel that all in all everything has worked out for the best						
S5: The past had its ups and downs, but in general I wouldn't want to change it						
S6: When I compare myself with friends and acquaintances, it makes me feel good about who I am						
S7: In general, I feel confident and positive about myself						
S1: I feel that many of the people I know have got more out of life than I have						
S3: In many ways, I feel disappointed about my achievements in life						
S4: My attitude about myself is probably not as positive as most people feel about themselves						

Appendix B

Levenson's Multidimensional Locus of Control

Levenson Multidimensional Locus of Control Inventory

Dear Respondent: Following is a series of attitude statements. Each represents a commonly held opinion. There is no right or wrong answers. You will probably agree with some items and disagree with others. We are interested in the extent to which you agree or disagree with such matters of opinion. Read each statement carefully. Then indicate the extent to which you agree or disagree by using the following responses. Please choose one number for each statement by putting (X) in your favorite box:

Choose 1 if you agree strongly

Choose 2 If you agree somewhat

Choose 3 If you agree slightly

Choose 4 If you disagree slightly

Choose 5 If you disagree somewhat

Choose 6 If you disagree strongly

	Statements	1	2	3	4	5	6
1	Whether or not I get to be a leader depends mostly on my ability.						
2	To a great extent my life is controlled by accidental happenings.						
3	I feel like what happens in my life is mostly determined by powerful people.						
4	Whether or not I get into a car accident depends mostly on how good a driver I am.						
5	When I make plans, I am almost certain to make them work.						
6	Often there is no chance of protecting my personal interests form bad luck happenings.						
7	When I get what I want, it is usually because I'm lucky.						
8	Although I might have good ability, I will not be given leadership responsibility without appealing to those positions of power.						
9	How many friends I have depends on how nice a person I am.						
10	I have often found that what is going to happen will happen.						
11	My life is chiefly controlled by powerful others.						
12	Whether or not I get into a car accident is mostly a matter of luck.						
13	People like me have very little chance of protecting our personal						

MENTAL HEALTH COMPONENTS AND LOCUS OF CONTROL

	interests when they conflict with those of strong pressure groups.						
14	It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.						
15	Getting what I want requires pleasing those people above me.						
16	Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.						
17	If important people were to decide they didn't like me, I probably wouldn't make many friends.						
18	I can pretty much determine what will happen in my life.						
19	I am usually able to protect my personal interests.						
20	Whether or not I get into a car accident depends mostly on the other driver.						
21	When I get what I want, it's usually because I worked hard for it.						
22	In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.						
23	My life is determined by my own actions.						
24	It's chiefly a matter of fate whether or not I have a few friends or many friends.						

Appendix C

Rotter's Locus of Control Scale

Rotter's Locus of Control Scale

The locus of control personality test is designed to assess the extent to which an individual possesses internal or external reinforcement beliefs. It means where you place the power to influence how you feel about yourself and others. This questionnaire assesses your opinions about certain issues. Each item consists of a pair of alternatives marked with **A or B**. Select the alternative with which you most agree. If you believe both alternatives to some extent, select the one with which you most strongly agree. Since this is an assessment of opinions, there are obviously no right or wrong answers. You can circle **A or B**; you may also put (X) in front of the statement **A or B** you most strongly agree with.

1	A.	Children get into trouble because their parents punish them too much.
	B.	The trouble with most children nowadays is that their parents are too easy with them.
2	A.	Many of the unhappy things in people's lives are partly due to bad luck.
	B.	People's misfortunes result from the mistakes they make.
3	A.	One of the major reasons why we have wars is because people don't take enough interest in politics.
	B.	There will always be wars, no matter how hard people try to prevent them.
4	A.	In the long run people get the respect they deserve in this world.
	B.	Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5	A.	The idea that teachers are unfair to students is nonsense.
	B.	Most students don't realize the extent to which their grades are influenced by accidental happenings.
6	A.	Without the right breaks one cannot be an effective leader.
	B.	Capable people who fail to become leaders have not taken advantage of their opportunities.
7	A.	No matter how hard you try some people just don't like you.
	B.	People who can't get others to like them don't understand how to get along with others.

8	A.	Heredity plays the major role in determining one's personality.
	B.	It is one's experiences in life which determine what they're like.
9	A.	I have often found that what is going to happen will happen.
	B.	Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10	A.	In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
	B.	Many times exam questions tend to be so unrelated to course work that studying in really useless.
11	A.	Becoming a success is a matter of hard work, luck has little or nothing to do with it.
	B.	Getting a good job depends mainly on being in the right place at the right time.
12	A.	The average citizen can have an influence in government decisions.
	B.	This world is run by the few people in power, and there is not much the little guy can do about it.
13	A.	When I make plans, I am almost certain that I can make them work.
	B.	It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14	A.	There are certain people who are just no good.
	B.	There is some good in everybody.
15	A.	In my case getting what I want has little or nothing to do with luck.
	B.	Many times we might just as well decide what to do by flipping a coin.
16	A.	Who gets to be the boss often depends on who was lucky enough to be in the right place first.
	B.	Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17	A.	As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
	B.	By taking an active part in political and social affairs the people can control world events.

18	A.	Most people don't realize the extent to which their lives are controlled by accidental happenings.
	B.	There really is no such thing as "luck."
19	A.	One should always be willing to admit mistakes.
	B.	It is usually best to cover up one's mistakes.
20	A.	It is hard to know whether or not a person really likes you.
	B.	How many friends you have depends upon how nice a person you are.
21	A.	In the long run the bad things that happen to us are balanced by the good ones.
	B.	Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22	A.	With enough effort we can wipe out political corruption.
	B.	It is difficult for people to have much control over the things politicians do in office.
23	A.	Sometimes I can't understand how teachers arrive at the grades they give.
	B.	There is a direct connection between how hard I study and the grades I get.
24	A.	A good leader expects people to decide for themselves what they should do.
	B.	A good leader makes it clear to everybody what their jobs are.
25	A.	Many times I feel that I have little influence over the things that happen to me.
	B.	It is impossible for me to believe that chance or luck plays an important role in my life.
26	A.	People are lonely because they don't try to be friendly.
	B.	There's not much use in trying too hard to please people, if they like you, they like you.
27	A.	There is too much emphasis on athletics in high school.
	B.	Team sports are an excellent way to build character.
28	A.	What happens to me is my own doing.
	B.	Sometimes I feel that I don't have enough control over the direction my life is taking.
29	A.	Most of the time I can't understand why politicians behave the way they do.
	B.	In the long run the people are responsible for bad government on a national as well as on a local level.

Appendix D

Demographic Questionnaires

Demographic questionnaire

The following information is collected in order to have a better sense of participants.

Please answer as many of the questions with which you feel comfortable.

Age: < 19 ☐ 19- 21 ☐ 22-24 ☐ 25-27 ☐ 28-30 ☐ >30 ☐

Gender: Female ☐ Male ☐ Other ☐

Are You a Single ☐ Married ☐ Divorced ☐ Separated ☐ Common Law ☐ Other ☐

Degree program in which you currently enrolled:

Are you: Canadian student ☐ Landed immigrant student ☐ International student ☐

Current Living Arrangement: _____

(Please note whether you are living at home, in residence, an apartment, alone, with a partner/friend, pet, etc)

How many siblings do you have? None ☐ 1 ☐ 2 ☐ 3 ☐ >3 ☐

Number of hours per day spent on physical activity _____

Types of physical activity engaged in _____

Time spent each day interacting with others face-to-face _____

Time spent each day texting or using social media _____

Appendix E

Cover Letter for Professors

Letterhead

Dear professors,

My name is Mahnaz Shojaee, and I am currently enrolled in the Master of Arts (Child and Youth Studies) program at MSVU. As part of my degree requirements, I am conducting research on mental health, specifically the relationship between locus of control and mental health components in young adults. In this regard, I am targeting undergraduate students aged between 19 to 26 years old as it is expected they will represent the range of sample to gather information about their locus of control and how they perceive their mental health status. The goal of this research is to expand our current knowledge regarding young adults' mental health in order to predict the role of influential factors, particularly locus of control, in mental health.

For this, I am seeking your permission to distribute the attached letter of invitation, scales and questionnaires in your class to attract the student's participation in my thesis research.

Participation in this research is completely voluntary. Your students do not have to answer any questions on this survey that causes them discomfort. All information will be confidential and no identifying information will be required on the survey. While quotes from individual surveys may be cited in the thesis and future publications to illustrate a point, there is no way to identify the source of the quote. The focus is on group results. Data from the surveys will be coded and stored on a secure server at MSVU. Hard copies of the surveys will be shredded once the data has been entered. To allow time for dissemination of the information through conference presentations and published articles, electronic data files will be kept for three years following the thesis defense and then deleted from the computer.

The process should take approximately 10 to 20 minutes to complete the scales and questionnaires. If you would like a summary of the research findings, you can contact me at the below email address and a copy will be provided.

Should you have any further questions regarding this study, please contact me, Mahnaz Shojaee at mahnaz.shojaee@msvu.ca or my thesis supervisor, Dr. Carmel French. If you have any questions regarding how this study is being conducted, you may contact the University Research Ethics Board (UREB) c/o MSVU Research and International office at (902) 457-6350 or via e-mail at research@msvu.ca.

I would like to appreciate you for your permission to carry out my research project. It is my hope that this research will result in more effective intervention programs for enhancing young adults' mental health.

Sincerely,

Mahnaz Shojaee

Graduate Student, MSVU

Dr. Carmel French

Dept. of Child and Youth Study, MSVU

Appendix F

Cover Letter for Students

Letterhead

Dear Student,

My name is Mahnaz Shojaei, and I am currently enrolled in the Master of Arts (Child and Youth Studies) program at MSVU. As part of my degree requirements, I am conducting research on mental health specifically the relationship between locus of control and mental health. I am gathering information and perspectives from people regarding their locus of control and how they perceive their mental health status. The goal of this research is to expand our current knowledge regarding young adults' mental health in order to be predicted by the role of influential factors, particularly locus of control, in mental health.

Participation in this research is completely voluntary. You do not have to answer any questions on this survey that causes you discomfort. All information will be confidential and no identifying information will be required on the survey. While quotes from individual surveys may be cited in the thesis and future publications to illustrate a point, there is no way to identify the source of the quote. The focus is on group results. Data from the surveys will be coded and stored on a secure server at MSVU. Hard copies of the surveys will be shredded once the data has been entered. To allow time for dissemination of the information through conference presentations and published articles, electronic data files will be kept for three years following the thesis defense and then deleted from the computer.

If you choose to participate in this research, please complete Section A of the survey and Sections B, C, and D. Should you need any clarification regarding any of the questions please ask me, I will remain in the room until everyone is finished. You can then place the completed survey in the large envelope at the front of the room. The process should take approximately 10 to 20 minutes depending on how many sections are applicable to you. If you would like a summary of the research findings, you can contact me at the below email address and a copy will be provided.

Should you have any further questions regarding this study, please contact me, Mahnaz Shojaei at mahnaz.shojaei@msvu.ca or my thesis supervisor, Dr. Carmel French. If you have any questions regarding how this study is being conducted, you may contact the University Research Ethics Board (UREB) c/o MSVU Research and International office at (902) 457-6350 or via e-mail at research@msvu.ca.

I would like to thank you for participating in my research project. It is my hope that this research will result in more effective intervention programs to enhance young adults' mental health.

Sincerely,

Mahnaz Shojaei

Graduate Student, MSVU

Dr. Carmel French

Dept. of Child and Youth Study, MSVU