

The Influence of Hardiness Levels on the Rate of Return to Work

For Those who Have Sustained a Back Injury

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Noah Justin Anderson, candidate for the degree of Master of Science in Kinesiology & Health Studies, has presented a thesis titled, ***The Influence of Hardiness Levels on the Rate of Return to Work for Those Who Have Sustained A Back Injury***, in an oral examination held on August 13, 2014. The following committee members have found the thesis acceptable in form and content, and that the candidate demonstrated satisfactory knowledge of the subject material.

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Abstract

Existentialists suggest that our responsibility is to discover our own meaning in life which can be recognized through creative works, experiences and relationships, and attitudinal acknowledgement and/or choice of one's current circumstances (Frankl, 2006). It is through the will to meaning, the primary motivational drive noted by Frankl, that humans are able to transcend and live a fulfilled life despite perceptions of unavoidable sufferings. Therefore, existential courage/hardiness helps one to engage in coping with problems rather than denying or avoiding them. Furthermore, it also relies on socially supportive interactions with others and the capacity to learn from this perpetual process (Maddi, Khoshaba, Harvey, Fazel, & Resurreccion, 2011), which can have a profound influence on one's overall health status. In times of suffering, such as a debilitating physical injury or illness, the concept of hardiness could potentially be used to facilitate recovery or coping for those individuals.

The current practice of rehabilitation for those who are not working due to work-related injury or illness, is a combination of physiological and psychosocial therapy (i.e., physical therapy, occupational therapy, and psychological therapy) (Saskatchewan Workers' Compensation Board, 2013). In the review of the research in this thesis, the researcher was unable to find other studies that explored hardiness in a therapeutic context. Therefore, the purpose of this study was to explore the relationship between hardiness and the rate of recovery and return to work. Specifically, this study investigated those who had a back injury and an accepted

Workers' Compensation Board (WCB) claim in Saskatchewan. WCB provided several hundred contact names to be used as prospective participants for this study.

The first hypothesis, which predicted a significant negative correlation between hardiness and return to work, revealed no statistically significant relationship ($r = .002$, $p = .98$, $n = 127$). Contrary to expectations, the second hypothesis, which measured the influence of hardiness on the rate of return to work after accounting for demographical variables, resulted in hardiness score not being statistically significant predictor; $F(1, 74) = .55$, $p = .46$. There were, however, statistically significant differences found in supplementary analyses.

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Dedication

I am extremely fortunate to have many wonderful people involved in my life. These people, who have played an integral role in my life and continue to do so, offer me encouragement, devotion, support, patience, ideas, and love. I think it is only fitting for me to dedicate portions of this thesis to those individuals. First and foremost, I would like to dedicate a quarter of my thesis in honour of my mother. She has been a source of encouragement and inspiration to me throughout my life. Furthermore, I would also like to dedicate a portion of my work to other family members and friends. My grandfather, Dr. John A. Havers, who in his own subtle way challenged me to enrol in graduate school. My grandmother, Dorothy Havers, whom I miss dearly. My father, my brother, Tristan, sister, Zoe, nephew, Laughlin, nieces, Scarlett and Taylor. Mother-in-law, Doris, sister-in-law, Amanda, brothers-in-law, Jeff (Corinne) and Mike (Fiona), and also to my long-time friends, Blair, Darcy, Eric, and Chris. I dedicate and split the remaining half of my thesis into two parts. I owe a great deal of gratitude to my exceedingly beautiful and loving wife, Shauntel. She has gone above and beyond, making sacrifices so that I could be successful in my graduate studies. Not only is she a source of encouragement, but she has kept me grounded and made our marriage what it is today; a success. I am so thankful to be sharing my life with you. Finally, I would like to dedicate the last portion of my thesis to my little baby daughter, Keira. Since I have met you, Keira, life before you holds not much meaning. Despite inevitable struggles in life, my hope for you is that you can create opportunities to fulfil your dreams (i.e., playing for Team Canada's national hockey team) as I have been trying to fulfil mine. Love, Daddy.

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Influence of Hardiness Levels on Returning to Work

Chapter 1

Introduction

Yearly, thousands of individuals in Canada are forced out of work due to work-related stress and injury. Aside from the physical injury and the loss of wages, the injured worker who is not working may also encounter several undesirable affects (i.e., emotional stress arising from feelings of depression and lowered self-esteem, loss of identity, feelings of helplessness, the inability to participate in family activities, and diminished sex life) (Dawson, 1994; Strunin & Boden, 2004).

Some researchers (e.g., De Meuse, 1985) who have investigated the relationship between stressful life events and physical or psychological illness found evidence to support the idea that stressful life events, or life changes, are related to some types of illness (e.g., stomach ulcers) and an increased incidence of death due to heart attacks (Tang & Hammontree, 1992).

The economic impact of injured workers not only affects the injured worker, it also impacts society in general. According to the Saskatchewan Workers' Compensation Board (WCB) annual report, Saskatchewan had 39,343 work-related injury claims reported in 2012 (WCB, 2013). Of the 39,343 work-related injuries, 33,424 reported claims were accepted (WCB, 2013). WCB's operation claim costs for the year in 2012 were reported as \$204.6 million; primarily the result of claim costs, administration, safety and prevention, annuity fund and interest and legislation obligations (WCB, 2013). Since the physical, psychological and economic impacts are apparent as a result

of a work related back injury, recovery and return to work in a timely manner is most salient.

Currently, some factors that help to reduce work disability duration, according to Franche, Severin, Hogg-Johnson, Cote, Vidmar, and Lee (2007), include having an appointed return-to-work coordinator present in the work-place and have workplace based ergonomic visits. While another influential factor may also include whether or not the injured worker feels respected in their work environment. MacEachen, Clarke, Franche, Irvine, and the Workplace-Based Return to Work Literature Review Group (2006), suggest that the individual who perceives him/herself as one who is respected in their work environment would make a sincere effort toward returning to work. Furthermore, Franche et al., (2007), suggest having the workplace make early contact with the injured worker and offer work accommodations (e.g., reduced hours of work, flexible schedules, lighter work duties). A supervisor who has early contact with the injured worker and reacts positively (i.e., not doubting the injury or appear angry), helps lessen the risk of the worker experiencing some sort of stigmatization. The concern regarding stigmatization in the workplace, which is typically brought about by "...others' belief in stereotypes that some injured workers are malingerers taking advantage of the system" (Lippel, 2007, p.433) is that it often results in mental health problems.

We live in a world in which people regularly experience potentially stressful situations. Varying degrees of stress are commonly understood to have an impact on one's physical health and psychosocial well-being (Judkins & Rind, 2005). Although stress can be manifested in many facets of life, it has been particularly evident in the

workforce (e.g., financially unstable times, escalating demands of responsibility, work-related injuries, and job loss). However, individual responses to these stressful events vary greatly. While some individuals seem to have physical and psychosocial breakdowns, others seem to thrive in these stressful circumstances seeing opportunity and not despair (Maddi, 2007).

Over the last three decades, researchers (i.e., Maddi and Kobasa) have been interested in investigating the personality trait known as hardiness; a learnable trait which helps to distinguish between those who fail and those who thrive under stressful situations (Khoshaba & Maddi, 1999). The theoretical concept of hardiness was developed from existential philosophy. Early existential philosophers (i.e., Kierkegaard, Nietzsche, and Sartre) seem to agree that the intent of existentialism is to examine what it is like to be a unique individual living in an absurd universe; a universe which includes despair and suffering, yet one in which people have free will to make choices which help them find meaning in their lives. In other words, since we as humans have been tossed into the world without knowing beforehand our purpose in life (seemingly absurd and meaningless), our responsibility is therefore to discover our own meaning; to define ourselves against an absurd universe that ultimately determines everything will amount to nothing, because we will die (Heidegger, 2008). While existential concepts (i.e., choice and freedom) are important and interesting from a philosophical perspective, it was Viktor Frankl who was likely the first person to have put these concepts into a formal therapeutic context.

Frankl is known partly as a psychotherapist and an existential philosopher, but is known predominately through his experiences as a survivor of the Holocaust (Esping,

2010). Frankl's most renowned and influential work is his approach to psychotherapy known as logotherapy. Logotherapy is based on three premises or assumptions: (a) freedom of will, (b) will to meaning, and (c) meaning of life (Das, 1998).

Essentially, freedom of will is understood to be that individuals can choose their actions as well as their attitude even in times of unavoidable suffering (i.e., environmental influences) (Frankl, 2006). Frankl (2006) suggests that the will to meaning is the primary motivational force of people. In other words, the most fundamental reason why we behave the way we do is to discover some sense of meaning. The meaning of life cannot be defined in a general way, since it is thought to be relative and/or subjective. Frankl (2006) suggests that a specific meaning of one's life at a distinct moment in time is what matters most. Frankl (2006) identified values, specifically, creativeness, experimental, and attitudinal that may lend one to realize meaning in life.

From the theoretical work of Frankl, specifically his personality theory, hardiness is acknowledged as an operationalization of the existential courage that assists in the long-term exploration for meaning in life (Maddi, 2004). Ramzi and Besharat (2010) describe hardiness as "...a combination of attitudes that provides the necessary courage, motivation and capability to turn developmental and environmental stressors into opportunities for growth..." (p. 823).

Kobasa identifies the personality disposition of hardiness as an assortment of individual characteristics which include commitment, control, and challenge (Maddi, 2004). Together, these three inter-related self-perceptions of commitment, control, and challenge (attitudes rather than behaviour), are sometimes referred to as the 3 Cs.

Mathews and Servaty-Seib (2007) define commitment as having an ability to be extensively involved in or dedicated to one's activities in life. They define control as the belief that one can influence outcomes and experiences. They also define challenge as one who views change as an interesting opportunity for growth. Maddi, Khoshaba, Harvey, Fazel, & Resurreccion (2011) suggest that the 3 Cs

provide the existential courage needed in turning life's ongoing stresses from potential disasters into growth opportunities and, in this way, continuing to construct and appreciate the meaning of experience rather than just holding on to old, preconceived ways of understanding life (p. 370).

Maddi took the 3 Cs conceptually and operationalised them in the form of a questionnaire whereby hardiness can be quantitatively measured. The most current questionnaire is the Personal Views Survey III-R questionnaire (PVS III-R); an 18-item Likert scale designed to assess the dimensions of the three Cs and provide an overall hardiness score for an individual. Although there has been substantial criticism of the early measures of hardiness, subsequent revisions of the hardiness measure seem to have corrected these problems and have since consistently attained adequate psychometric standards (Maddi, 2002). As a function of this questionnaire, more than 600 research studies (Maddi & Khoshaba, 2005) have been conducted in a variety of different areas (e.g., military, nursing, law, education, and sport) which demonstrate the effect of hardiness, or existential courage.

The possibility of using hardiness in a practical context seems to be almost limitless. For example, there has been some research that has explored the relationship of

hardiness and various chronic illnesses (i.e., multiple sclerosis, hypertension, rheumatoid arthritis, diabetes mellitus in the elderly, HIV, AIDS, chronic obstructive pulmonary disease, osteoarthritis, and systemic lupus erythematosus) (Brooks, 2003). In times of suffering, such as a debilitating physical injury or illness, the concept of hardiness could potentially be used as a therapeutic modality to facilitate recovery or coping for those individuals. However, there have been no investigations of the extent to which hardiness plays a role as therapeutic modality.

Research Questions

From the foregoing, two questions were formulated to guide this research: (1) Will people with higher levels of hardiness return to work sooner than those with lower levels of hardiness? (2) Can hardiness be used as a predictor of rate of return to work?

Purpose of the Study

The current strategies of rehabilitation, for those who are not working as a result of a work-related injury or illness, seem to be physiological and psychosocial therapy (i.e., physical therapy, occupational therapy, and psychological therapy) (WCB, 2013). Currently, hardiness has not been used as a therapeutic modality. Therefore, the purpose of this study was to explore the aforementioned research questions to learn if hardiness training could, in conjunction with current therapeutic practices, enhance the rate of return to work. Specifically, this study investigated those who have reported and had an accepted claim from WCB in Saskatchewan with a back injury, defined by WCB.

Basic Assumption

Individuals who score high in hardiness may recover more rapidly than those who score lower in hardiness (Malloy, 2011). Assuming a positive association is found, the potential implication is that a hardiness rating might be used in two ways. First, hardiness may be a useful predictive tool in rehabilitation as the high hardy may recover at a more rapid rate than those who score lower in hardiness. Second, if an individual is initially assessed as having low hardiness, then a rehabilitation strategy could include hardiness training which may positively contribute to a positive recovery and return to work (Malloy, 2011). If positive outcomes are found as a result of this study, WCB could potentially incorporate hardiness into their current therapeutic modalities which would provide the injured worker with a valuable life-long skill set, and may result in fewer time loss claims, thereby reducing expenditures.

Chapter 2

Literature Findings and Implications

Origins of the Hardiness Concept

The theoretical concept of hardiness developed from the discipline of existential philosophy which emerged in the late 1800s. May and Yalom (1995) assert that early philosophical thought that included principles of existentialism can be traced back to scholars such as the Danish philosopher Søren Kierkegaard, the German philosopher Friedrich Nietzsche, and the French philosopher Jean-Paul Sartre. In addition to Kierkegaard, Nietzsche, and Sartre, there were other major existentialists active in 20th century Europe such as Karl Jaspers, Martin Heidegger, Martin Buber, Jean Wahl, Gabriel Marcel, José Ortega y Gasset, Miguel de Unamuno, Nikolai Berdyaev, and Lev Shestov (Crowell, 2010).

The efforts of Sartre and his associates to disseminate postwar literary and philosophical ideas, existentialism became identified with a cultural movement which flourished in Europe in the 1940s and 1950s (Crowell, 2010). Consequently, the label of existentialism has been applied retrospectively to other philosophers for whom human existence was a key philosophical topic.

Applied Existentialism

The impression given by early existential philosophers, is that the objective of this school of thought is to examine what it is like to be a unique individual living in an illogical universe; a universe which includes despondency and affliction, yet one in which people have free will to make choices which help them discover meaning in their

lives. In other words, since we as humans have been brought into the world without knowing in advance our purpose in life (seemingly absurd and meaningless), our responsibility is therefore, to discover our own meaning; to identify ourselves against an absurd universe that eventually determines everything will amount to nothing, because we will die (Heidegger, 2008). Discovering our own meaning in life is the first belief of existentialism.

In addition to what has been already described as the first principle of existentialism, discovering meaning, Sartre (2007) contributes to the description by stating that “existence precedes essence.” Our essence, or who we are as humans, is not something predetermined; rather it is our responsibility to consciously create our own values and to determine our own meaning of life which will assist to define what it is to be human. Sartre (2007) explains, from an atheistic existential point of view, what is meant by the phrase “existence precedes essence” in this passage:

We mean that man first exists: he materializes in the world, encounters himself and only afterwards defines himself. If a man as existentialists conceive of him cannot be defined, it is because to begin with he is nothing. He will not be anything until later, and then he will be what he makes of himself. Thus, there is no human nature since there is no God to conceive of it. Man is not only that which he conceives himself to be, but that which he wills himself to be, and since he conceives of himself only after he exists, just as he wills himself to be after being thrown into existence, man is nothing other than what he makes of himself... (p. 22).

According to the existentialists, humans define and give themselves meaning, and establish their essence only through their existence (Barash, 2000); hence, the concept of choice becomes especially important because it implies that humans are uniquely free. Or as Sartre (2007) paradoxically asserts; “we are condemned to be free” (p. 29). The irony of these words is that since we lack essence other than our own freedom, we are ever forced to make choices, in a world which lacks objective values and rules, to define ourselves. However, someone choosing not to choose is in no way an out from that responsibility; “...it is an abdication of that responsibility” (Kalderimis, 2010, p. 82). Giving up that responsibility would result in eradicating our possibility to transcend our circumstance and for an opportunity to discover potential meaning; which ultimately takes away the opportunity to understand what it is to be human. This is an example of what Sartre identifies as living an inauthentic life. Therefore, the ‘authentic’ person must challenge existential reality by accepting responsibility for their choices and actions, despite feeling “...overwhelmed by the full implications of this radical freedom and experiences moral anguish and a sense of absurdity in recognizing that everything is ultimately arbitrary” (Williams, 2007, p. 376). While these existential concepts (i.e., choice and freedom) are key and noteworthy from a philosophical point of view, it was Viktor Frankl, who was likely the first person to have put these concepts into a therapeutic system.

Viktor Frankl

Frankl, born in Vienna, Austria in 1905 to middle-class Jewish parents is known in part as a psychotherapist and an existential philosopher (having earned a Ph.D. in

philosophy in 1949, subsequent to his M.D. in 1930) but is chiefly known due to his experience as a survivor of the Holocaust (Esping, 2010). Frankl would eventually publish over thirty books on his psychological theories, but by far his most renowned and influential work is (*Man's Search for Meaning, 1959*) a revised and extended edition of (*From Death Camp to Existentialism, 1946*). The first two-thirds of *Man's Search for Meaning* describe in detail the prisoners' experiences, as well as Frankl's personal experiences, during their time in concentration camps. In this book, Frankl describes experiences which include

The brutality of the SS thugs, the treachery of the Capos (certain prisoners with special privileges), the despair of Frankl's fellow Jews, their coping mechanisms, and his attempt to counsel them to choose life over suicide, hope over hopelessness, meaning over nihilism (Zimmerman, 2002, p. 4).

The last third of Frankl's book defines and explicates the basic concepts of Frankl's new approach to psychotherapy known as logotherapy. Frankl's new approach, which is considered to be the Third Viennese School of Psychotherapy, the first two being the Freudian and Adlerian Schools, is based on three premises or assumptions: (a) freedom of will (b) will to meaning, and (c) meaning of life (Das, 1998,).

Frankl's Personality Theory

Freedom of will. Frankl, opposed to the deterministic view held by others (e.g., Freud & Adler), agrees with Sartre that all humans have the freedom of will to find and actualize unique meanings and meaning-potentials. Frankl acknowledged, from his experiences in the Nazi concentration camps, that although people are subjected to an

expansive assortment of limiting conditions and influences (biological, psychological, and sociological), he does not believe that these limiting conditions or influences totally determine a person's response to his/her life situation. No matter what limiting conditions and influences exist, an individual can prevail against them (Frankl, 2006).

Through self-reflection, one is able to discover meaning in his/her existence. According to Frankl (2006), "man *can* preserve a vestige of spiritual freedom, of independence of mind, even in such terrible conditions of psychic and physical stress" (p. 65). Therefore, despite unavoidable suffering (i.e., environmental influences) individuals can choose their actions as well as their attitude even in the worst set of circumstances (Frankl, 2006).

Will to meaning. Frankl's will to meaning differs from Freud's pleasure principle (the will to pleasure), which is the center of psychoanalysis, as well from Adler's notion of the will to power (Frankl, 2006). Frankl's idea of the will to meaning differs from those who support a deterministic view, since a deterministic view suggests that people have no choice or freedom. Freud, the father of psychoanalysis, and his followers suggest that human motivation and behaviour are the result of impeded or latent sexual impulses (Hoffman, 1995). Whereas Adler, Freud's former colleague within the Vienna Psychoanalytic Society and eventually his ardent adversary, was very much influenced by Nietzsche, and "saw our basic human drive as oriented toward accomplishment, mastery, or superiority" (Hoffman, 1995, p. 18). This is not to suggest that Frankl rejects Freud and Adler's concept of human motivation outright, rather, Frankl simply claims that it is incomplete. In other words, Frankl acknowledges and

accepts that desire, power and insecurity may play a role, but the most fundamental reason why we behave the way we do is to find some sense of meaning.

Therefore, Frankl (2006) suggests that the will to meaning is the primary motivational force of humans. It is not a “secondary rationalization of instinctual drives” (Frankl, 2006, p. 99) such as self-actualization, which humanistic psychologists, such as Maslow, emphasize to be what individuals ought to strive for. Although Maslow’s concept and the need to strive for self-actualization may not be the primary motivational force of humans, a lower level of human function regarded by Frankl, self-actualization may be fulfilled as a by-product of self-transcendence. In other words, self-transcendence is understood as one having an ability to find as much meaning in existence as possible and focus on what one still could accomplish in life rather than the desire of self-fulfilment (Frankl, 2006; Ragheb, 1996). Frankl (2006) recognized that one’s search for meaning may elicit inner tension rather than a state of inner equilibrium. However, a tensionless state is not what a man needs “...but rather the striving and struggling for a worthwhile goal, a freely chosen task” (Frankl, 2006, p. 105). Frankl (2006) suggests that having the knowledge that there exists a meaning in one’s life can effectively help one to survive the worst conditions. In the words of Nietzsche “he who has a *why* to live for can bear almost any *how*” (Nietzsche, 1895/1962, p. 468).

Meaning of life. The meaning of life cannot be defined in a general way; rather it is thought to be relative and/or subjective. Frankl (2006) suggests that what matters most is a specific meaning of one’s life at a particular moment in time. In others words, Frankl (2006) suggests that the meaning of life differs from individual to individual and from time to time. Since people experience unique meanings in their lives, “there cannot be

any universal meaning of life. However, there are situations that have something in common and, therefore, give rise to common meanings” (Das, 1998, p. 3). In this sense, meanings, which Frankl refers to as values, are shared by people. Values, in typical situations of life, assist in one’s search for meaning. Frankl identified three main groups of values in which one may realize meaning in life. The three main groups of values include creativeness, experimental, and attitudinal.

One of the three ways Frankl (2006) suggests for humans to discover meaning in one’s life is by creating something of value (i.e., a creative work or voluntarily doing a deed). Secondly, one may discover meaning in one’s life is by experiencing something such as beauty, truth, goodness, nature, culture, and love for another human being. Thirdly, Frankl suggests that meaning in one’s life can be realized by the attitude we choose towards a fate one cannot change in unavoidable suffering (2006).

Unlike Freud’s and Adler’s therapeutic approach, reducing “life meaning questions to unresolved conflicts about sexuality or power needs” (Hoffman, 1995, p.18), logotherapy, developed by Frankl, is a psychotherapeutic approach essentially used as a treatment for those who experience problems arising from feelings of meaninglessness, value conflict, and moral perplexity (Das, 1998). As a result of Frankl’s work, the primary focus of which is to discover meaning in one’s life, the general aim of logotherapy is to help people discover meaning in their life. Frankl (2006) describes logotherapy as “a meaning-centred psychotherapy” (p. 98) which in comparison “with psychoanalysis, is a method less *retrospective* and less *introspective*. Logotherapy focuses rather on the future, that is to say, on the meanings to be fulfilled by the patient in his future” (Frankl, 2006, p. 98). Frankl (2006) states that “life

ultimately means taking the responsibility to find the right answer to its problems and to fulfill the tasks which it constantly sets for each individual” (p. 77). In other words, from an existential analytical and a logotherapeutic context, meaning “is understood as a *correlation of two given facts*: the demand of the situation; and one’s understanding of oneself, (i.e., what a person thinks and feels in terms of who they are or should be)” (Langle, 2005, p. 3).

Hardiness

The existential work of Frankl, particularly his psychotherapeutic approach of logotherapy (e.g., a means to help people discover meaning in their life through creative works, experiences and relationships, and attitudinal acknowledgement and/or choice of a one’s current circumstances), is recognized to be one of the influences of Kobasa’s work; specifically the concept of hardiness. From the theoretical work of Frankl, specifically his personality theory, hardiness is acknowledged as an operationalization of the existential courage that can contribute to the continuing exploration for meaning in life (Maddi, 2004).

Although making decisions for the future brings ontological anxieties, as expressed in fear of ambiguity and potential failure (Maddi, 2004), it can also facilitate in elaborating life’s meaning. Therefore, bravely not choosing the past habitually, albeit recognizable and less threatening than choosing something unknown, which may stagnate the quest for meaning, one may want to choose the future consistently, since “one simultaneously excels at satisfying organismic needs and personal learning and development” (Maddi, 2004, p. 284).

Feeling that lives are devoid of any meaning, which Frankl (2006) refers to as the existential vacuum, is a prevalent phenomenon of the twentieth century. The existential vacuum can be exhibited as blind conformity to the most prevailing social trends as well as a single-minded quest for sensory pleasures, but is commonly expressed as boredom (Frankl, 2006). Frankl identifies three factors which underlie prevalent feelings of meaninglessness. The first factor Frankl (2006) suggests is the disappearance of animal instincts from the behaviour of humans. As a result, people have to make complex choices involving learning and problem solving rather than rely on hard-wired behaviour patterns. With the vanishing of instincts, humans lost one set of guidelines for behaviour (Das, 1998). The second factor which contributes to a sense of meaninglessness is the perpetual attrition of traditional values brought about by the progression of science (Das, 1998). The third factor is the seemingly diverse value orientations in many modern cultures, which makes commitment to any specific set of values challenging (Das, 1998).

While attending the University of Chicago and under the supervision of Dr. Salvatore Maddi, Kobasa in 1979 initially introduced the concept of hardiness, a resilient disposition, “in an attempt to explain why some individuals develop somatic and psychological disease when confronted with stressful life events whereas others remain healthy” (Hanton, Evans, & Neil, 2003, p. 167).

Ramzi and Besharat (2010) describe hardiness as “...a combination of attitudes that provides the necessary courage, motivation and capability to turn developmental and environmental stressors into opportunities for growth...” (p. 823). This definition of hardiness is certainly reminiscent of Frankl’s notion that humans, despite one’s unavoidable suffering influenced by the surroundings (i.e., concentration camps), can in

fact choose their actions as well as their attitude even in the worst set of circumstances and discover meaning in one's life (Frankl, 2006).

The total amount and intensity of stress in one's life can have a substantial impact on one's overall health, (e.g., physically, psychologically, socially, emotionally, and spiritually) (Maddi & Khoshaba, 2005). For instance, if stress becomes chronic as a result of continual conflicts and is not moderated effectively, one may be at risk for physical and mental breakdowns as well as deterioration in one's performance (Maddi, 2007). Typically, the physical health breakdowns are manifested as "...wear and tear disorders (i.e., heart disease, strokes, cancer, Alzheimer's disease)" (Maddi, 2007, p. 63). Debilitating depression, anger, and anxiety disorders may be the result of mental health breakdowns, whereas performance shortfalls may result in not being able to meet deadlines, reach goals, follow directions, take an initiative, be a leader, think constructively, play within the rules, or provide necessary empathy (Maddi, 2007). Kobasa (1979) found that a hardy disposition regulates the relationship between stressful life events and the overall well-being of an individual (Judkins & Rind, 2005). According to Maddi (2007), the hardy attitudes offer the courage and motivation to take on the demanding but necessary undertakings of "...socially supportive interactions, transformational coping, and felicitous self-care" (p. 63). Therefore, someone who is high in hardiness will not likely experience this debilitating process since the high-hardy individual alters perceptions of stressors and transforms circumstances as less overwhelming and less undesirable (Judkins & Rind, 2005).

Hardiness Characteristics

Kobasa identifies the personality disposition of hardiness as a collection of personal characteristics which includes commitment, control and challenge (Maddi, 2004). Together, these three inter-related self-perceptions of commitment, control and challenge (attitudes, rather than behaviour) which are sometimes referred as the three Cs, provide the existential courage needed in turning life's ongoing stresses from potential disasters into growth opportunities and, in this way, continuing to construct and appreciate the meaning of experience rather than just holding on to old, preconceived ways of understanding life (Maddi, Khoshaba, Harvey, Fazel, & Resurreccion, 2011).

Commitment. The first C, commitment (vs. alienation), is the ability to be able to stick with whatever one is doing, and believing one is capable of attaining a goal, even when stress is present (Hanton, Evans, & Neil, 2003). Additionally, if one is strong in commitment, he/she would intentionally remain involved with the people and the happenings around them, since it seems to be the best way to discover what is experientially interesting and meaningful (Maddi, 2004).

Control. The second C, control (vs. powerlessness), is expressed as the ability to feel and act as if one is influential in the face of varied contingencies of life rather than feeling passively helpless (Hanton et al., 2003). In other words, if one is strong in control, one will want to endure the struggles in order to influence the outcomes associated with them, despite the difficulties of one's circumstance (Maddi, 2004).

Challenge. The third C, challenge (vs. security), is expressed as the belief that change rather than stability is normal in life and the anticipation of changes represent

interesting incentives for growth rather than threats to security (Hanton et al., 2003).

Therefore, someone who is strong in challenge finds the course of action in continuing to learn from one's experiences, be they negative or positive, developmentally satisfying (Maddi, 2004).

Variations in the Three Cs

Theoretically, a hardy individual possesses all of the three Cs, since no one of the three Cs alone is enough to provide the required courage and motivation to turn stressful changes to advantages (Maddi, 2004). For instance, if someone were high in control but low in commitment and challenge, they would want to influence outcomes, however, they would not want to waste time and effort learning from their experience or feel involved with people, things, and events (Maddi, 2004). This type of individual would be overwhelmed with feelings of "...impatience, irritability, isolation, and bitter suffering whenever control failed them" (Maddi, 2004, p. 287).

If someone were high in commitment but low in control and challenge, they would be quite involved with people, things, and events around them. They would not think, though, that they had an influence on outcomes, nor would they reflect on their experiences in the interactions (Maddi, 2004). As a result, this individual would have very little or no individuality and their sense of meaning would be recognized completely by social institutions in which they would lose themselves (Maddi, 2004).

Lastly, someone who is high in challenge but simultaneously low in control and commitment, would be preoccupied with innovation, risk taking, having little regard for others, things, and events around them and not being able to imagine that they can have

an influence on anything (Maddi, 2004). Their concern for thrill of adventure far exceeds, in comparison, to their concern for learning experiences (Maddi, 2004).

Inception of Hardiness

In 1975 Maddi and his graduate student, Kobasa, conducted a 12-year longitudinal study which resulted in being the first empirical evidence in support of hardiness, or existential courage, (Kobasa, 1979). Their initial research was carried out at the Illinois Bell Telephone company (IBT) which had seen at this time a substantial number of workers laid-off. As Maddi and his research team expected, the deregulation was indeed a profound catastrophe (Maddi, 2004). Incidentally, the upheaval produced by the deregulation on IBT and sister companies of AT&T in 1981, is still regarded as among the greatest in corporate history (Maddi, Khoshaba, Harvey, Fazel, & Resurreccion, 2011). For instance, in just one year alone (1981-1982) IBT went from 26,000 employees to 14,000. Furthermore, one manager in particular from this study, indicated that he had ten different supervisors in just one year. These supervisors would come and go before they ever knew what was happening; which resulted in uncertainty and confusion for both the manager and the supervisors (Maddi, 2004).

Several years following the upheaval, two-thirds of their sample displayed major signs of being undermined by stress (Maddi, 2004). According to Maddi (2004) “there were suicides, violence in the workplace, divorces, depressive and anxiety disorders, heart attacks, strokes, and cancers” (p. 286). However, the other third of the participants not only survived, they, in fact thrived, feeling invigorated, strengthening their relationships, and ascending within the company (whether IBT or with another

employer) (Maddi, 2004). As a result of conducting this study, the recognition of the differences between the thriving and declining managers six years before the cataclysm is in effect how the concept of hardiness was first discovered (Maddi, 2004). This retrospective study of more than 400 highly stressed upper and middle-level executives, essentially demonstrated that under equal stress, high-illness executives tend to be less hardy than their low-illness colleagues (Klag & Bradley, 2004; Maddi, 2004).

Hardiness as a Learnable Trait

Few researchers have investigated how the hardiness personality trait is developed, although some researchers (e.g., Khoshaba & Maddi, 1999) suggest hardiness can be a learned and/or fostered personality trait. Personality traits are described to be essentially innate; they also seem to be relatively consistent and enduring over one's life span (Olver & Mooradian, 2003). In addition to innate or hereditary personality traits, some researchers (e.g., Funder, 1991) suggest that some personality traits are learnable. For instance, Funder (1991) argued that personality traits are the result of not only our genes, but also as a result of how one has learned to interact with the world. Furthermore, Khoshaba and Maddi (1999) suggest that hardiness can be developed in people who are encouraged by those around them to believe that they can turn adversity into opportunity and from those who observe themselves actually making this happen. The feedback an individual obtains over time from this pattern of reaction to stress, will likely build the hardy attitudes of the three Cs (Maddi, 2002). Therefore, it seems reasonable to assume that some personality traits such as hardiness could be learned if there were to be facilitating conditions made available (i.e., hardiness training).

Khoshaba and Maddi (1999), using the data from the IBT study, suggest that hardiness may be learnable. Although Maddi and Harvey (2006) identified "...two-thirds of the IBT sample fell apart" (p.409) in this comparative study under the deregulation upheaval, one third of those succeeded and thrived in this circumstance (Maddi & Harvey, 2006). The sub-sample who thrived during this event recalled childhood as being disruptive and stressful. However, they also recall that they were chosen by their parents to be the success of the family. Consequently, their having accepted the committed and meaningful role in early life is apparent in their lives today (Maddi & Harvey, 2006). Thus, under the right conditions, hardiness may be influenced and developed from positive childhood learning experiences (i.e., attainable challenges and experiences). Therefore, it seems reasonable that people could learn hardiness if they involve themselves with some type of training (i.e., hardiness training).

Based upon Khoshaba and Maddi's (1999) IBT findings, a hardiness training program has been developed (Maddi & Khoshaba, 2005). The program helps people to "...handle stressful circumstances by turning them to advantage (rather than by avoiding or attacking them) and to help them interact with others by giving and receiving assistance and encouragement (rather than by deepening ongoing conflicts)" (Maddi & Khoshaba, 2005, p. 43). In addition, hardiness training includes ways to utilize feedback from these efforts to deepen the attitudes of the three Cs (Maddi & Khoshaba, 2005). Maddi (2007) asserts that hardiness training "...will increase in the courage and motivation to do the hard work of transformational coping, socially supportive interactions, and effective self-care, in order to turn stressful circumstances from potential disasters into constructive growth opportunities instead" (p. 68). Already there

is evidence "...that hardiness training is effective, not only in increasing hardy attitudes, but also in enhancing performance, and decreasing illness symptoms for working adults and college students" (Maddi & Harvey, 2006). Therefore, hardiness training may be a useful addition for those who struggle with stressful circumstances and are looking for ways to improve their situation.

Criticisms of the Hardiness Construct

Since the IBT study in the 1970s, the hardiness construct has undergone numerous criticisms. Much of the criticisms could be grouped into three main areas: the way hardiness has been measured, its relationship to other psychological constructs (e.g., neuroticism), and the fundamental accuracy of the concept of it.

Measurement. There has been substantial criticism of the early measures of hardiness (Maddi, Khoshaba, Persico, Lu, Harvey, & Bleecker, 2002). Most notably, when the first developed measure was used with undergraduate samples, originally used for working adults, it occasionally showed insufficient intercorrelations of the three Cs to justify considering a total hardiness score (Funk & Houston, 1987). Additionally, the correlates of the first measure of hardiness, which had heavily loaded, negatively worded items, indicated that it might be slightly more than the opposite of negative affectivity (Hull, Van Treuren, & Virnelli, 1987). Negatively worded questionnaire items used to measure hardiness raised concerns about hardiness research, since these items have been found, albeit inadvertently, to resemble measures of general maladjustments (Klag & Bradley, 2004). According to Maddi et al. (2002), subsequent revisions of the hardiness measure seem to correct these problems (e.g., they have balanced negatively with

positively worded items) and have since consistently attained good psychometric standards.

Independence. It is important and necessary to have conceptual distinctions of constructs in order to help identify independently from similar constructs. The early hardiness constructs seemed to struggle with this concern. In previous literature hardiness sometimes has been confused with neuroticism, primarily due to the similarity of the original measurement scale of hardiness and that of neuroticism (Sinclair & Tetrick, 2000). Among several studies Funk (1992) conducted, he identified significant correlations between hardiness and neuroticism. However, revisions of the measurement have found that there is a distinction between hardiness and neuroticism and they are not identical. The methodological study conducted by Sinclair and Tetrick (2002), confirms that the three Cs are related subcomponents of a higher-order hardiness factor and that this factor is empirically distinct from negative affectivity or neuroticism. In another study, Kravetz, Drory, and Florian (1993) examined the independence of hardiness from measures specifically of anxiety, depression, and anger in men with coronary heart disease. They concluded that, through the use of confirmatory factory analysis, hardiness is a distinct construct.

Another issue deals with discrepancies in some of the literature regarding the differences between hardiness and resilience (e.g., some researchers use hardiness and resilience synonymously). For instance, Maddi and Khoshaba (2005) make assertions in their book *“Resilience at Work”* that “...the resilient group had the hardy attitudes of commitment, control, and challenge” (p. 3); differentiating hardiness as a group of attitudes or resources that lead to resilience (Cash, 2009). Later on in their book, Maddi

and Khoshaba (2005) seem to present resilience as the personality trait rather than hardiness; “the three resilient attitudes” (p. 19). Although these seemingly interchangeable terms of hardiness and resilience are somewhat confusing and difficult to separate or distinguish from one another, some researchers have made clear distinctions between the two (Cash, 2009). For example, Luthar and Cicchetti (2000) clearly distinguish hardiness from resilience by defining resilience as “...a dynamic process wherein individuals display positive adaption despite experiences of significant adversity or trauma” (p. 858). Therefore, Luthar and Cicchetti (2000) suggest that this definition of resilience is neither a personality trait nor an attribute of an individual. More accurately, the concept of resilience is a two-part construct; “...it implies exposure to adversity and the manifestation of positive adjustment outcomes” (Luthar & Cicchetti, 2000, p. 858). Conversely, the 3 Cs which make up hardiness are described as an attitude (e.g., personality trait) rather than behaviour (e.g., the description of resilience). In other words, one could infer that hardy attitudes are the personality trait that influences one’s resilient behaviour.

The concept of self-efficacy is sometimes confounded with the hardiness concept due to similarities. Self-efficacy was initially defined as the “... conviction that one can successfully execute the behaviour required to produce the outcomes” (Bandura, 1977, p. 193). Therefore, by definition, it is an individual’s belief in his/her ability to achieve a specific outcome by behaving in a particular way. This definition seems to imply that self-efficacy cannot be generalised in terms of domains since it is task and ability specific (i.e., repairing an engine, building a shelf, or riding a unicycle). Consequently, someone high in self-efficacy in one area may not be as high in other domains.

Therefore, hardiness seems to be distinct from self-efficacy since people high in hardiness, particularly in control, have expressed as the ability to feel and act as if they are influential in the face of varied contingencies of life rather than task specific accomplishments (Hanton et al., 2003). In other words, if one is strong in control, one will want to endure the struggles in order to influence the outcomes associated around them, despite the difficulties of one's circumstance (Maddi, 2004). Furthermore, self-efficacy is only concerned with the aspect of control, whereas hardiness is a collection of attitudes of challenge, commitment, and control.

Structure. A third concern is regarding whether it should be studied as a unidimensional construct (e.g., hardiness as whole) or as a multidimensional construct (e.g., separating the components of commitment, control and challenge) (Chan, 2003). For instance, Funk and Houston (1987) state that the three Cs have not been represented consistently across different samples. Only control and commitment have been shown to be strongly related dimensions and are psychometrically adequate and systematically relevant to health outcomes (Funk, 1992; Hull et al., 1987). The relationships between challenge and the other dimensions seem to have been weak in comparison (Funk, 1992). However, in light of more recent studies and the revision of the hardiness measure, Personal Views Survey III-R (PVS III-R), researchers such as Maddi, Harvey, Khoshaba, Fazel, and Resurreccion (2009) have found that the subscales of hardiness, the three Cs, are positively intercorrelated and related to hardiness. According to Maddi et al (2011), the PVS III-R appears to “produce results that are consistent with what hardiness theory predicts” (p. 381).

PVS III-R Questionnaire

Maddi has taken the 3 Cs conceptually and put them into concrete terms in form of a questionnaire; whereby the 3 Cs can be quantitatively measured. This current questionnaire, PVS III-R, is an 18-item Likert scale designed to assess the dimensions of the three Cs and provide an overall hardiness score of an individual. The questions are to be answered by identifying a number that best reflect one's answer (e.g., 0- not true, 1- a little true, 2- mostly true, and 3- true). A copy of the PVS III-R questionnaire is located in the appendix section; (see Appendix A).

Currently, the PVS III-R has been used in more than six hundred research studies (Maddi & Khoshaba, 2005) in a variety of different areas (e.g., military, nursing, law, education, and sport) which demonstrate the use of hardiness as a viable construct.

Empirical Hardiness Research

One particular study conducted by Zakin, Solomon, and Neria (2003), in a military context, reports that hardiness does in fact "...mitigate the pathogenic effects of extreme traumatic stress of captivity and combat" (p. 825). Furthermore, their findings indicate that both combat veterans and ex-prisoners of war who are higher in hardiness in comparison to those who are low in hardiness, were less vulnerable to post-traumatic stress disorder (PTSD) and the related symptoms of depression, anxiety and somatization (Zakin et al., 2003).

In a nursing context, Judkins and Rind (2005) recognize that since high levels of stress are linked to absenteeism, productivity, job satisfaction, and quality patient care, it seems necessary to look for new ways to improve work environments. Judkins and

Rind's (2005) findings are consistent with similar studies among nurses, which indicate that as hardiness levels increase, stress decreases and as a result, job satisfaction increases. The implications of Judkins and Rind's (2005) study seems to advocate a proactive approach; whereby assessing staff for hardiness, in order to create an ideal high-hardy workforce, could assist in identifying those who may be at risk for stress or for leaving their job due to job dissatisfaction.

In a sporting context, Ramzi and Besharat (2010) examined the impact of hardiness on sport achievement and mental health among seventy-four student athletes. They indicate, as a result of their findings, that there is a positive correlation between hardiness and its components of three Cs with sport achievement and psychological well-being (Ramzi & Besharat, 2010).

Health and Hardiness

This next section presents the empirical research, although very limited, that investigates the concept of hardiness and its impact on one's health recovery (e.g., physical, illness, surgical, and or injury). Since stressors are ever-present among people who are recipients of liver transplants (i.e., collective pressures created by their disease, the transplant procedure, and adapting to life after the transplant), Newton's (1999) study was designed to investigate the relationship of hardiness and sense of coherence to post-liver transplant recipients and their return to work. Three hundred and fifty three questionnaire packets were mailed out to recipients of liver transplant for this cross-sectional study. Demographic data (e.g., age, cause and end-stage liver disease, and length of time after transplant), were obtained using the questionnaire (Newton, 1999).

In this study, the Health-Related Hardiness Scale (HRHS), which was created to measure hardiness in those who have a known health problem (Newton, 1999), was used. The HRHS is scored on a 34-item Likert scale (e.g., 14 measure control, 20 measure commitment and challenge) (Newton, 1999). Of the 353 liver transplant recipients, 230 completed questionnaires were received for a response rate of 66%.

According to Newton (1999), the recipients of a liver transplant who were able to meet daily demands (i.e., facing daily challenges of living with a potentially terminal disease and that every day demand a commitment to themselves to control the ubiquitous influences that could threaten their survival), demonstrate that, in doing so, the potential for return to work is enhanced. Conversely, recipients lacking hardiness demonstrate an inability to provide effective care for themselves, thereby lessening their opportunity to return to work after a transplant (Newton, 1999). Since the post-transplant success of this study is dependent upon the participants' hardiness levels and returning to work, the implications of this particular study are two-fold. The first implication is that hardiness is recognised to be an effective health buffer for post-transplant recipients since hardiness “increases in the courage and motivation to do the hard work of transformational coping, socially supportive interactions, and effective self-care, in order to turn stressful circumstances from potential disasters into constructive growth opportunities” (Maddi, 2007, p. 68). Secondly, the acquired knowledge of the recipient's hardiness before and post-transplant, may assist professional medical staff (i.e., nurses) “...to plan and implement better interventions to facilitate their post-transplant adaptations” (Newton, 1999, p. 77). Additionally, health care professionals may also recognise that individuals,

who live with life-threatening illnesses, may still have long-term health goals, which for some may include returning to work (Newton, 1999).

Another example of a study that explores the relationships between hardiness and health was conducted by Taylor, Pietrobon, Taverniers, Leon, and Fern (2011) whose primary purpose was to investigate the relationship of hardiness to mental and physical health among men in the military. They hypothesized that mental health (MH) would mediate the association of hardiness with physical health (PH) (Taylor et al., 2011). Based on their findings, they report that not only did "...hardiness positively associates with MH and PH, but also that MH mediates the relationship of hardiness to PH" (Taylor et al., 2011, p. 6).

In addition to this study, there have been other studies that have explored the relationship of hardiness and various chronic illnesses (i.e., multiple sclerosis, hypertension, rheumatoid arthritis, diabetes mellitus in the elderly, HIV, AIDS, chronic obstructive pulmonary disease, osteoarthritis, and systemic lupus erythematosus) (Brooks, 2003).

The Impacts on an Injured Worker.

Yearly, thousands of individuals in Canada are forced out of work due to work-related stress and injury. Aside from the physical injury and the loss of wages, the injured worker who is not working may also encounter several undesirable affects on their psychological well-being and behaviour (Tompa, Scott-Marshall, & Fang, n.d.). For instance, injured workers who have been away from work, especially those who have been away for a year or more, claim a variety of adverse consequences for themselves

and their families including emotional stress arising from feelings of depression and lowered self-esteem, loss of identity, feelings of helplessness, the inability to participate in family activities, and diminished sex life (Strunin & Boden, 2004; Dawson, 1994).

People who suffer from back injuries, for example, typically report feelings of anger, depression, and strain on family relationships due to chronic pain and other limitations (Strunin & Boden, 2004). Furthermore, Jensen and Smith (1990) suggest that an unforeseen change in one's health, such as an injury, and if an unexpected circumstance of unemployment that arises (i.e., not being able to work due to an injury or an illness) may contribute to the likelihood of marital dissolution. Incidentally, the probability of marital breakdowns increase more when a husband experiences more unemployment circumstances; and the probability is more than doubled if he is unemployed for longer than a year (Jensen & Smith, 1990).

Some researchers (i.e., De Meuse, 1985) who have investigated the relationship between stressful life events and physical or psychological illness, found evidence to support the fact that stressful life events, or life changes are, "... related to tuberculosis, diabetes, stomach ulcers, increased incidence of, and death due to, myocardial infarction, dysphoria, and depression..." (Tang & Hammontree, 1992). Typically, a combination of life changes (i.e., out of work due to an injury, and an economic change) will occur immediately prior to the aforementioned illnesses (Tang & Hammontree, 1992).

In other instances, reports of Post-Traumatic Stress Disorder (PTSD) symptoms are found to be present among those who have sustained a work-related injury (Asmundson, Norton, Allerdings, Norton, & Larsen, 1998). Asmundson et al., (1998) identify, as a result of their study, a substantial portion of injured workers (34.7%) who

reported symptoms consistent with a diagnosis of PTSD. Furthermore, several other injured workers (18.2%) reported symptoms representative of partial PTSD (Asmundson et al., 1998). Therefore, Asmundson et al., (1998) draws attention to the important role that PTSD may play in mediating the continual pain, fear, anxiety, and affective distress that is often presented by the injured worker with chronic pain.

Saskatchewan Workers' Compensation Board (WCB) Statistical Information

For injured workers and employers, the period of time until the worker returns to work has important consequences. For instance, if returning to the workforce is delayed, lost wages becomes a concern, so to, is the concern of potential depreciation of skill and work habits (Galizzi & Boden, 2003).

The economic impact of injured workers not only affects the injured worker, it also impacts society in general. According to the Saskatchewan Workers Compensation Board's annual report, Saskatchewan had 39,343 work-related injury claims reported in 2012 (WCB, 2013). Of the 39,343 work-related injuries, 33,424 reported claims were accepted (p. 13). Men, between the ages of 25-34 appeared to have the highest reported and accepted claims in 2012 (5,754). The highest reported and accepted claims for women between the ages of 45-54 in 2012 were 3,002 (p. 14). The top five areas of the body which sustained a work-related injury in 2012, were reported as the following: back injuries ranked number one with 5,414 cases, followed by 4,610 finger injuries, 2,192 eye injuries, 2,033 shoulder injuries, and a reported 2,008 head injuries (WCB, 2013).

Of the 33,424 accepted claims in 2012, a reported number of time loss claims due to injury was 10,774 (p. 13). There was a 13.0 percent increase of reported time loss

claim duration resulting in an average of 38.89 days paid (p. 18). The target set out for the year, 32.35 paid days, fell short of their strategic objective due to the "...decrease in the proportion of short-term Time Loss claims (less than 5 days) relative to medium and long-term claims in the system" (WCB, 2013, p. 28). The more severe or complex claims remaining in the system, will impact the increase to the average durations (p. 28) In total, there were 517,555 compensation days paid out in 2012; a 3.1 percent increase from 2011 which had 502,073 compensation days paid out (p. 32).

WCB's operation claim costs for the year in 2012 were reported as \$204.6 million. Most of these expenses in 2012 were the result of claim costs, administration, safety and prevention, annuity fund and interest and legislation obligations (p. 32).

Summary

Hardiness alone is not enough to cope with high degrees of stress; rather it is the characteristics of commitment, control, and challenge (3 Cs) which enable an individual to bring other resistance resources into play (Schwab, 1996). Hardiness, a disposition which regulates the relationship between stressful life events and the overall well-being of an individual (Judkins & Rind, 2005), is certainly an asset when unexpected, potentially disruptive changes (i.e., accidents, economic set-backs, illness and /or injury) occur or are imposed (Maddi et al., 2011). Therefore, someone who is high in hardiness will not likely experience debilitating breakdowns in physical health, psychological health, and in performance since the high-hardy individual alters perceptions of stressors and transforms his perception of his circumstances to being less overwhelming and less undesirable (Judkins & Rind, 2005).

The possibility of using hardiness in a practical context seems to be almost limitless. For example, research has been done in various contexts in which the researchers investigate issues such as coping with stress and burn-out. In times of suffering, such as a debilitating physical injury or illness, the concept of hardiness could potentially be used as a therapeutic modality to facilitate recovery or coping for those individuals.

Since the first empirical evidence in support of hardiness, or existential courage was established from the IBT study in 1979, hardiness has been recognised in a variety of contexts to be an effective learned personality trait. Hardiness "...increases the courage and motivation to do the hard work of transformational coping, socially supportive interactions, and effective self-care, in order to turn stressful circumstances from potential disasters into constructive growth opportunities" (Maddi, 2007, p. 68). Despite early criticisms of the hardiness construct, the revisions seem to have addressed the concerns and now are consistently attaining adequate psychometric standards (Maddi, 2002).

Millions of dollars are paid annually in compensation benefits to thousands of individuals in Canada who are not working as a result of work-related stress or injury. The 10,774 time loss claims due to injury translates to 517,555 compensation days paid out in 2012 (WCB, 2013).

If a positive association is found between hardiness and recovery from an injury and rate of return to work, hardiness may play a role as a therapeutic modality for those who are receiving compensation from WCB, in the sense that a rehabilitation strategy

could include hardiness training which may positively contribute to a positive recovery and return to work (Malloy, 2011).

Chapter 3

Methodology

The purpose of this study is to explore the relationship between the rates of return to work among those who have sustained a back injury in a work related context and the level of their hardiness. This study is part of a larger project led by Dr. David Malloy. The larger study involved hardiness, pain beliefs, ethical climate, and rate of return to work following a lower back injury. This particular thesis is based upon hardiness and the rate of return to work following a back injury. To be consistent with other research that has investigated hardiness and health, this research study is survey based. Based upon the existing literature for this exploratory study, the following hypotheses were formed:

Hypothesis 1. Participants with higher levels of hardiness will have a faster rate of return to work than those with lower levels of hardiness.

Hypothesis 2. After statistically controlling for the effect of demographic variables, hardiness will remain a significant predictor of rate of return to work.

Participants

The rationale of recruiting participants who have had a work related back injury were for two of reasons. Firstly, to have some sense of homogeneity amongst the participants, it was decided to choose one specific injury (i.e. back injury) since it was important to have a degree of consistency among injuries. In other words, comparing more or less a similar injury rather than comparing back injury to neck injury and to wrist injury. Secondly, back injuries rank as the most prevalent work related incident in Saskatchewan (e.g., 5, 414 back injury cases were reported in 2012) according to the

Saskatchewan Workers' Compensation Board (WCB). Therefore, the population of interest in this study are those who have sustained a back injury due to a work-related incident and have had an accepted time loss claim with WCB. The sample of participants who are used in this study, which intends to represent the population of interest, are those identified from the WCB's data base.

Procedure

Permission had been granted by the WCB to carry out this study and approval from the University of Research Ethics Board (REB) to conduct the study (see Appendix B) had been received.

Since the sample was drawn from a predetermined population, a cross-sectional survey was used to collect data. WCB provided a data base of people who identified that they would be interested in participating in future research studies. This data base consisted of 1600 people who have sustained a work-related back injury with an accepted time-loss claim in 2010. The recruitment process of this study, with the help of two other graduate assistants and with the use of an interview script (see Appendix C), was to phone each individual from the WCB data base and ask for their participation in this study. Sixteen hundred people were phoned to see if they would be interested in participating in this study. Of the 1600 people phoned, 653 people agreed to participate in this study. Therefore, 653 packages, containing two copies of an informed consent form (Appendix D), demographic questionnaire (see Appendix E), a copy of the Personal Views Survey III-R (PVS III-R) (see Appendix A), and a self-addressed envelope, were mailed out to these individual who expressed an interest in participating in this study.

The completed consent forms and questionnaires were returned by mail delivery in a self-stamped envelope.

Questionnaires

The participants were asked to provide self-report demographic information such as age, gender, annual income, the type of work, and education level. The participants were also asked how long they remained off work due to their injuries. Since WCB's data base only provided the date of the injury and did not include a date of return to work, the participants were asked to provide both of these dates. Finally, the participants were asked to complete the PVS III-R, the survey that is designed to measure hardiness.

Measures

The PVS III-R self-report questionnaire is an 18-item Likert scale which assesses the dimensions of commitment, control and challenge and provides an overall hardiness score. The measurement of commitment is identified as the attitude of getting involved with (rather than withdrawing from) what is going on, however stressful it may seem, perceiving this as the best way to learn from their experiences (Maddi et al., 2011) whereas the control attitude is identified by the belief that one can influence his/her outcomes by the decisions he/she makes, despite stressful situations. Lastly, the measurement of challenge is identified as the belief that change rather than stability is normal in life and the anticipation of changes represent interesting incentives for growth rather than threats to security (Hanton et al., 2003).

The current edition of the PVS III-R has overcome many criticisms of earlier constructs of hardiness through several revisions. According to Maddi et al. (2002),

subsequent revisions of the early hardiness constructs, seem to have addressed the criticisms and have since consistently attained adequate psychometric standards (Maddi, 2002).

The PVS III-R is a shortened revision of the PVS III, a 30-item questionnaire (Maddi et al., 2011). Maddi, Harvey, Khoshaba, Lu, Persico, and Brow (2006) were interested in shortening the PVS III 30 item questionnaire for the purpose of decreasing administering time while providing the same effectiveness as the PVS III offers. Maddi et al., (2006) reports, as a result of their study comparing the 30 item questionnaire and the 18-item questionnaire, the “intercorrelation of hardiness and its components are very similar... and the components and the total score intercorrelate positively” (p. 582). As a result of Maddi et al. (2006) findings, the shorter version of the PVS III seems to measure the same thing and at the same level of conceptual adequacy as the PVS III. For instance, the PVS III-R and the earlier PVS III had the same coefficient alpha of 0.80 when tested against each other (Maddi et al., 2006). Additionally, the coefficient alphas for the latent variables of commitment, control and challenge obtained for the PVS III were; .69, .57 and .69, while .69, .57 and .73 were obtained for the PVS III-R (Maddi et al., 2006). A confirmatory factor analysis was performed on both PVS-III and PVS III-R indicating that the data collected in this study were consistent with the measurement model (Maddi et al., 2006). The validity of the PVS III-R in this study is adequate in showing “...the relationship between hardiness and both conceptually predicted and demographic variables” (Maddi et al., 2006, p. 583). Among the demographic variables (e.g., age, sex, race, education), stress, strain, active coping, regressive coping, work support, and family support were included as the other variables.

In another study, Maddi et al. (2011) hypothesized that “hardiness will show an emphasis on problem solving, (rather than denial or avoidance) coping and socially supportive (rather than conflictful or stultifying) interactions with others” (p. 374). The results of this study support their hypothesis; “...hardiness is positively associated with transformational (problem solving) coping and negatively associated with regressive (denial and avoidance) coping” (p. 381). The results obtained from the PVS III-R questionnaire specifically identify alpha for hardiness to be .79, the internal consistency reliability, which is consistent with findings of previous studies (Maddi, et al., 2011).

Maddi, Harvey, Khoshaba, Fazel, and Resurreccion (2009) were involved in another study which continues to support the construct validation of hardiness as existential courage. They compared “...the PVS III-R with other measures of emotion, attitudes, and beliefs concerning oneself and one’s developmentally relevant interactions with the environment” (p. 296). The results of this study demonstrated positive correlations with the commitment, control and challenge subscales of .82, .74, and .76 (Maddi et al., 2009). Furthermore, the internal consistency reliability for hardiness was .74, which again, seems to be adequate and consistent with other research findings of previous studies (Maddi et al., 2009).

Data Analysis

There were several steps in analysing the data upon receiving the completed surveys. First, the information collected from the PVS III-R was sent electronically to the Hardiness Institute so that the results could be formulated by their proprietary algorithm. The PVS III-R is copyrighted and the scoring formulas are not released for

general use. Once the results were returned from the Hardiness Institute, statistical analysis was conducted using Statistical Package for Social Science (SPSS) version 20.

The first hypothesis, the association between hardiness and return to work, was assessed by using bivariate correlations. When assessing the associations between hardiness and returning to work, a correlation coefficient between .40 and .60 may have practical value (Fraenkel & Wallen, 2009).

The second hypothesis, the influence of hardiness on the rate of return to work after accounting for demographical variables, was assessed using a hierarchical multiple regression. It was appropriate to use a hierarchical multiple regression since this model, according to Thomas, Pers, Mercier, Cambiere, Frasson, Ster, Herisson, and Blotman (2005), is "...used for predicting a criterion from two or more independent, or predictor, variables" (p. 139). The dependent variable was the rate of return to work following a back injury. The independent variables were demographic factors and total hardiness score. The first step in using the multiple regression was to enter the demographic variables (e.g., age, income, education, gender, and the type of work), while the second step was to enter the total hardiness score.

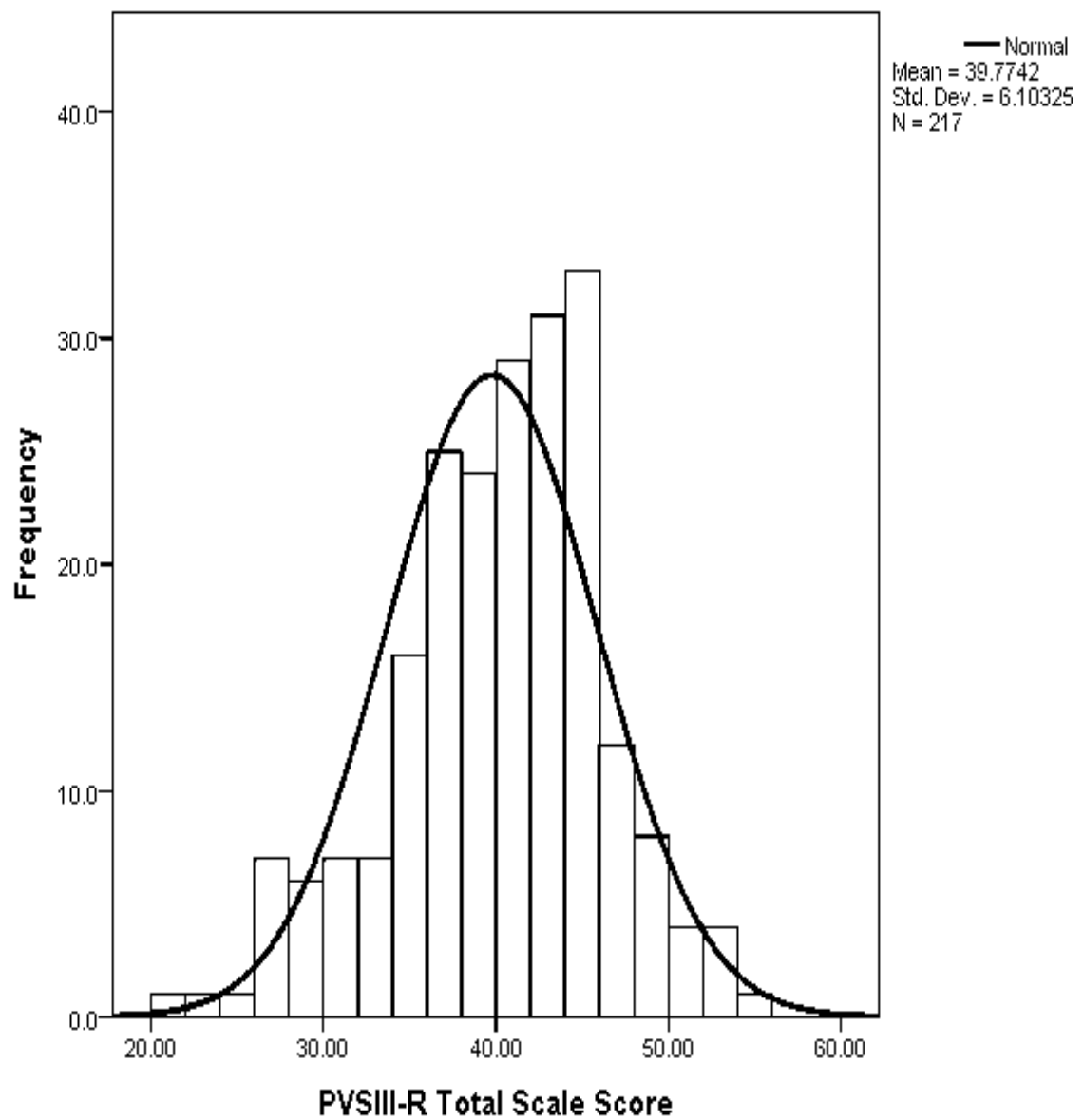
Chapter 4

Results

Preliminary Analyses

Of the 653 participants who agreed to participate in this study, 232 packages were returned (35.5% rate of return). Of the 232 packages received, 93.5% ($n = 217$) of participants completed the PVS III-R survey in its entirety. Therefore, the total hardiness score was determined for 217 participants (i.e., $n = 106$ males and $n = 111$ females) ranging in age from 19 to 70 years ($M = 46.95$, $SD = 11.71$). The total hardiness scores ranged from 21 to 54 ($M = 39.77$, $SD = 6.10$, $median = 41$). The PVS III-R total scale scores appear to follow normal distribution (see figure 1 on the following page).

Figure 1. Hardiness score distribution



Furthermore, according to Maddi, the Cronbach's coefficient alphas for the PVS III-R scales are as follows: Commitment = 0.66, Control = 0.37, Challenge = 0.55, and the PVS III-R total = 0.76. In this study the overall score of Hardiness was consistent with other research findings of previous studies (Maddi et al., 2009). However, subscale alpha scores were considerably lower than previous research and thus individual measures of commitment, control, and challenge were not considered further.

Considering the number of months between injury date and return to work date for the 217 participants who completed the PVS III-R in full, the sample size was reduced from 217 participants to 135 participants since there were 82 individuals who failed to provide usable dates. The 135 participants who have provided both dates ranged in duration between 0.03 and 15.54 months with the $M = 3.27$, $SD = 3.89$, and $median = 1.12$.

Main Hypotheses

Hypothesis 1. Participants with higher levels of hardiness were expected to show a faster rate of return to work than those with lower levels of hardiness. In other words, a negative correlation between hardiness score and return to work duration is anticipated. However, the bivariate Pearson correlation analysis revealed no statistically significant relationship ($r = .002$, $p = .98$, $n = 127$) between the total hardiness score and the rate of return to work. Therefore, this research hypothesis was not supported.

Hypothesis 2. After statistically controlling for the effect of demographic variables, hardiness would remain a significant predictor of rate of return to work. A hierarchical multiple regression analysis was conducted with return to work duration

being a dependent variable and hardiness score and demographic factors (e.g., age, gender, education, marital status, income) being independent variables. Refer to Table 1 (next page) for a more detailed description of the regression analysis. Contrary to expectations, the regression model resulted in hardiness score being not a statistically significant predictor; $F(1,74) = .55, p = .46$. Therefore, the second research hypothesis is not confirmed.

Table 1

Hierarchical multiple regression analysis table

Source	Type III Sum of Squares	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Corrected Model	17084.859 ^a	47	363.508	1.454	.074
Intercept	272.019	1	272.019	1.088	.300
PVS III-R Total	137.945	1	137.945	.552	.460
Age	667.911	1	667.911	2.671	.106
Gender	21.142	1	21.142	.085	.772
Education	450.857	4	112.714	.451	.772
Relationship	508.821	2	254.411	1.017	.367
Income	1159.672	3	386.557	1.546	.210
Gender * Education	991.600	4	247.900	.991	.418
Gender * Relationship	961.108	2	480.554	1.922	.154
Gender * Income	958.819	3	319.606	1.278	.288
Education * Relationship	57.776	4	14.444	.058	.994
Education * Income	5458.736	11	496.249	1.985	.042
Relationship * Income	718.932	3	239.644	.958	.417
Gender * Education * Income	2519.007	5	503.801	2.015	.086
Error	18503.960	74	250.054		
Total	60169.429	122			
Corrected Total	35588.819	121			
a. R Squared = .480 (Adjusted R Squared = .150)					

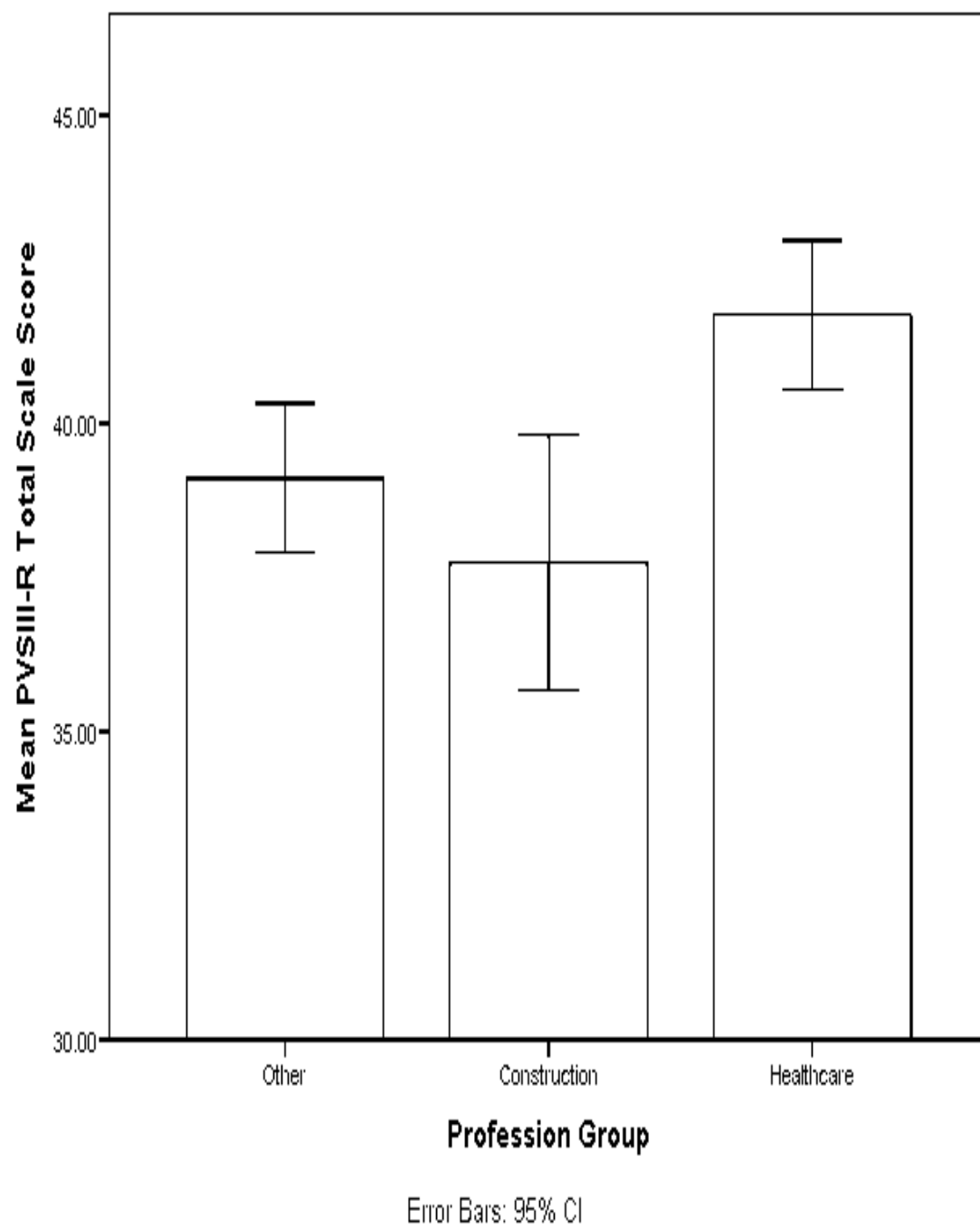
Supplementary Analyses

Additional exploration was conducted to see if there were any other factors that may have an association with the total hardiness score. Independent sample t-tests and one-way ANOVAs were used to investigate the differences between groups.

The first exploration was to see whether or not there was a difference in hardiness score between people who have returned to work after an injury ($M = 39.86$, $SD = 5.79$, $n = 182$) and people who did not ($M = 40.21$, $SD = 8.44$, $n = 14$). Statistically, there was no significance found; $t(13.96) = .16$, $p = .88$.

Participants were reclassified into three groups (i.e., construction, healthcare, and other) to see if there were differences with respect to participants' chosen profession. A one-way ANOVA analysis was conducted to see if there was a difference in hardiness scores (mean) between the three groups of professionals. The test resulted in statistically significant, $F(2,214) = 7.00$, $p = .001$, difference overall (see figure 2 on the next page). The results from the Tukey HSD post-hoc test showed that the healthcare workers have significantly higher levels of hardiness ($M = 41.76$, $SD = 5.24$, $n = 74$) compared to the construction workers ($M = 37.74$, $SD = 6.31$, $n = 38$) or to the others ($M = 39.11$, $SD = 6.26$, $n = 105$), $p = .002$, $p = .01$, respectively.

Figure 2. Hardiness score across professional groups



Further analysis revealed that participants from the construction industry ($M = 37.74$, $SD = 6.31$, $n = 38$) were significantly lower in hardiness scores than people not in the construction industry ($M = 40.21$, $SD = 5.99$, $n = 179$), $t(215) = 2.29$, $p = .02$. The 95% confidence interval for the difference in mean hardiness scores between these two groups is 0.34 - 4.60 in hardiness score units. The Cohen's $d = .41$ indicated a medium effect size. Conversely, participants who are in the healthcare profession ($M = 41.76$, $SD = 5.24$, $n = 74$) were found to have significantly higher hardiness scores than people who are not in the healthcare industry ($M = 38.75$, $SD = 6.28$, $n = 143$), $t(215) = 3.53$, $p = .001$. The 95% confidence interval for the difference in mean hardiness scores between two groups is 1.33 - 4.69 in hardiness score units. The Cohen's $d = .51$ indicated a medium effect size.

In this study, women ($M = 40.61$, $SD = 6.50$, $n = 111$) were found to have higher hardiness scores than men ($M = 38.90$, $SD = 5.56$, $n = 106$), $t(215) = 2.09$, $p = .04$. The 95% confidence interval for the difference in hardiness scores between two groups is .10 - 3.34 in hardiness score units. The Cohen's $d = .29$ indicated a small effect size.

A one-way ANOVA analysis was also conducted to see if there was a difference in hardiness score between participants based on their levels of education. The test resulted in a statistically significant difference overall, $F(4,211) = 6.32$, $p < .001$. According to the Tukey HSD post-hoc test results, the university-educated professionals have significantly higher scores of hardiness ($M = 42.54$, $SD = 4.66$, $n = 26$) compared to people with high school education ($M = 37.36$, $SD = 5.70$, $n = 61$), $p = .002$. Furthermore, individuals with technical school certificate/diploma have significantly higher scores of hardiness ($M = 41.39$, $SD = 5.49$, $n = 85$) compared to people with high

school education ($M = 37.36$, $SD = 5.70$, $n = 61$), $p < .001$. However, there was no statistical significant difference between individuals with technical school certificate/diploma and university-educated professionals.

A one-way ANOVA analysis was conducted to explore whether or not income is associated with higher level of hardiness. As result of this investigation, the overall difference was statistically significant, $F(3,208) = 6.03$, $p = .001$; meaning that higher income was associated with higher level of hardiness. The Tukey HSD post-hoc test revealed that individuals with more than \$100,000 annual income have significantly higher levels of hardiness ($M = 42.60$, $SD = 4.08$, $n = 45$) compared to people with less than \$50,000 income ($M = 38.00$, $SD = 6.69$, $n = 64$) or income between \$50,000 and \$75,000 ($M = 39.16$, $SD = 5.73$, $n = 56$), $p < .001$, $p = .02$ respectively.

A few other factors were explored to see if they had different hardiness scores, but none were found to be statistically significant. The factors examined included the following: years of experience in their current position ($p = .27$), employment tenure ($p = .19$), work arrangement (e.g., working alone or in groups) ($p = .58$), age ($p = .85$), and marital status ($p = .16$).

Chapter 5

Discussion

The impact of work-related injury touches the lives of thousands of workers and their families each year. This disruptive change in life for the injured worker may result in collateral impact on their psychological well-being (i.e., stress, depression). Further, time lost due to injury and/or work-related stress costs the economy millions of dollars annually in compensation benefits paid to thousands of individuals in Canada. The purpose of this study was to explore the effect that hardiness has on the speed of recovery.

According to T. Robinson, a psychologist working at Wascana Rehabilitation Center in Regina, Saskatchewan, individuals who are admitted to the Functional Rehabilitation Program (FRP) have access to psychological services (personal communication, May 14, 2014). For the majority of Wascana Rehabilitation's clients, "...a strong psycho-educational component is a key element of rehabilitation, not only for the usual psychological issues but also for pain management" (T. Robinson, personal communication, May 14, 2014).

Since rehabilitation centres often have clientele with diverse cultural or social background, and although the predominant psychotherapeutic approach seems to be Cognitive-behavioural therapy, Robinson states that "we have to adapt to our patient's needs to the best of our abilities" (personal communication, May 14, 2014). In other words, there is not a typical therapy offered for individuals who happen to be experiencing stress or depression. Rather, the psychologists "...engage in a continual

process of evaluating and adjusting interventions according to patients' needs and responses" (T. Robinson, personal communication, May 14, 2014); they try to find other ways or methods that will help the individual succeed.

Since people's needs in a rehabilitation program are often unique, therapists continue to look for other ways to best assist in the recovery of their clientele. Therefore, it seems reasonable to consider a variety of therapeutic options that may assist the injured worker to recover and return to work as quickly and safely as possible. One untapped approach for functional rehabilitation program is hardiness training. While hardiness has been used in a variety of environments (e.g., military, police, firefighter organizations, business, and nursing) (Maddi et al., 2011; Mintz-Binder, 2014) it has not been explored fully in therapeutic contexts.

The present study was designed to explore whether hardiness has a role to play in recovery and return to work of those who have had an accepted back injury claim with the Saskatchewan WCB.

Main Findings

The first hypothesis described the relationship between hardiness and time it took for the participants to return to work. An inverse correlation between hardiness score and the length of time to return to work (e.g., participants with higher levels of hardiness were expected to show a faster rate of return to work than those with lower levels of hardiness) was expected. However, there was no statistical significance between the relationship of total hardiness score and latency to return to work. With regards to the second hypothesis, it was thought that hardiness would remain a significant predictor of

rate of return to work, after statistically controlling for the effect of demographic variables. Contrary to expectations, the hierarchical multivariate regression analysis resulted in hardiness score being not a statistically significant predictor.

The results of this study were surprising as the 3 Cs of hardiness logically fit into a regime that would aide in recovery. For instance, Newton (1999) asserts that hardiness is recognised to be an effective health buffer for post-transplant recipients. Newton (1999) found that the high hardy individuals were able to meet daily demands (i.e., facing daily challenges of living with a potentially terminal disease and that every day demands a commitment to themselves to control the pervasive influences that could threaten their survival). Whereas the recipients low in hardiness, demonstrate an inability to provide effective care for themselves (Newton, 1999).

Furthermore, according to Maddi (2007), collectively, the 3 Cs offer the courage and motivation to take on the demanding but necessary undertakings of "...socially supportive interactions, transformational coping, and felicitous self-care" (p. 63). Therefore, one may reasonably expect that a high hardy individual, who experiences chronic low back pain (CLBP), would seek social support, be able to cope with their pain and a variety of other challenges, and having the ability to be in control of providing care of oneself. This is an especially important consideration, since chronic low back pain "... is considered to be a patho-anatomical disorder, in addition to a multifactorial biopsychosocial problem such as fear of movement, anxiety, a faulty coping strategy which has an impact on social life" (Nagarajan & Nair, 2010, p. 87). Some individuals experience avoidance symptoms in response to trauma while some individuals may experience what is known as kinesiophobia; a fear of re-injuring (T. Robinson, personal

communication, May 14, 2014). Bergsten, Lundberg, Lindberg, and Elfving (2012), describe kinesiophobia as a “debilitating fear of movement...” (p. 852), and is seen “...as a factor that exacerbates activity limitation and contributes to the persistence of pain in patients with chronic back pain” (p. 852).

According to Thomas, Pers, Mercier, Cambiere, Frasson, Ster, Herisson, and Blotman (2010), the implication for those who experience kinesiophobia and avoidance behaviour while in a rehabilitation programme, is that “...all of which will lead to deconditioning and the perpetuation of pain” (p.4). Although physical therapy can improve function and reduced pain, Thomas et al. (2010), suggest that “...treatment could be further improved by addressing concomitant psychosocial factors” (p.4) for those who have lower back pain. The same recommendation for addressing psychosocial factors is evident in another study conducted by Coole, Drummond, Watson, and Radford, (2010).

According to Coole, et al., (2010), in their study, individuals with CLBP were found to be “...uncertain of how best to manage their lower back pain...and the impact back pain might have on their job security and future work capacity” (p. 472). Therefore, their recommendation, when addressing psychosocial factors for individuals who experience CLBP (e.g., justifying back pain at work, coping with reoccurring flare-ups, back pain impact on job security, kinesiophobia), is a “...multi-disciplinary biopsychosocial rehabilitation with an occupational focus” (Coole, et al., 2010, p.472).

Given that psychosocial factors (i.e., fear of re-injuring and/or avoidance behaviour) are evident among some individuals while attending a functional rehabilitation program, hardy attitudes might logically enhance quality and speed of

rehabilitation. For instance, an individual who is high in hardiness would feel intensely involved in or committed to the activities of one's life (Kobasa, 1979) including their involvement of their rehabilitation (i.e., attendance, participation). Additionally, a high hardy individual would have the belief that one can influence or control outcomes in one's life events (Kobasa, 1979) (i.e., rehabilitation outcome). In other words, the individual would believe that their efforts would have a direct impact on their end result thereby enduring the hard work of therapy and not giving up. Moreover, the high hardy individual is "...wanting to learn continually from one's experience, whether positive or negative, rather than playing it safe by avoiding uncertainties and potential threat" (Maddi, 2002, p. 174); thus being less tentative in their rehabilitation programme and not exhibiting avoidance behaviour. The high hardy individual would welcome change as a challenge. For instance, perhaps the individual may not be well suited to return to their old job on account of determined physical work restrictions. Nonetheless, he or she would be returning to the workforce despite having to find suitable work elsewhere. Seemingly stressful to some, the challenge attitude would help an individual when one is confronted with stressful changes or disruptions (i.e., back injury, starting a new job). The high hardy individual returning to work would "...react not only with a renewed attempt to control the situation, but also appraise the experience as interesting and worthwhile (commitment), and concentrate on the growth in knowledge and wisdom that is taking place (challenge)" (Hanton, et al., 2003).

According to Taylor et al. (2011), hardiness has been found to be positively associated with mental health (MH) and physical health (PH). Furthermore, Taylor et al. (2011, p. 6) found in their study that "...MH mediates the relationship of hardiness to

PH”. Thus, despite the conceptual or theoretical strength of hardiness in physical recovery from injury, there may be a number of factors that mitigate the hypotheses of this particular study.

Since there is no evidence in this study that hardiness, as measured by the PVS III-R, can influence physical therapy and a quicker return to work, hardiness may not have practical application in a therapeutic context after all. In other words, the speed of recovery may not be influenced by one’s attitudes; rather speed of recovery may well be completely a physiological adaptation to therapy. For example, consider two individuals who have similar lower back injury and are admitted in rehabilitation. Despite opposing attitudes towards their therapy, one having a dismal outlook and the other optimistic, as long as they participate in their therapy, they will likely physically recover and be discharged in a similar time frame. In essence, the body will do what it needs to do to heal regardless of one’s attitude. The inference here is that the mind is separate from the body. Incidentally, this supports the seventeenth century French philosopher’s, René Descartes, Cartesian dualism argument which ultimately suggests that the mind is separate from the body since “...the self or soul, mental substance, possesses no physical characteristics and hence lacks spatial location, is apparently faced with difficulty of explaining how any soul is causally related to its own body in particular” (Lowe, 2006, p.6).

From a methodological perspective, the PVS III-R may not be appropriate in a therapeutic context. For instance, there is some evidence that the questionnaire is not as robust as had hoped since we could not get strong construct scores (e.g., Commitment = 0.66, Control = 0.37, Challenge = 0.55). Since the PVS III-R questionnaire does not ask

questions that are specific to one's health, the face validity of this instrument can be questioned for a health/ therapeutic context. Possibly, the Health Related Hardiness Scale (HRHS) measure would have been more effective than the PVS III-R in this study since this questionnaire was created to measure hardiness in those who have a known health problem.

Supplementary Analyses Findings

There were statistically significant differences found in hardiness score based on the levels of education of participants. Those who were university-educated professionals had a significantly higher score of hardiness compared to people with a high school education. Furthermore, individuals with technical school certificate/diploma had significantly higher scores of hardiness compared to people with high school education. The statistically significant differences found in hardiness score between the levels of education can possibly be explained as a function of one's ability to work through intellectually ambiguous situations. For example, if one does not have the intellectual resources to reason successfully through a difficult situation, the individual may have greater anxiety. Conversely, if one has more education, and thus a greater capacity perhaps this individual is able to cope and/or navigate with difficult dilemmas more effectively. Theoretically, according to Maddi's 3 Cs, one who pursues higher level education is one who commits oneself and believes he/she can obtain this meaningful goal. This individual will likely be high in control and feel and act as if he/she can influence outcomes associated with them. Furthermore, this individual will likely welcome challenges since he/she finds the course of action in continuing to learn from

one's experiences, be they negative or positive, developmentally satisfying (Maddi, 2004).

There were also statistically significant differences found in hardiness score between the healthcare workers, construction workers, and others. On one hand, the healthcare workers had significantly higher levels of hardiness compared to the construction workers or to the others. On the other hand, the participants from the construction industry were found to have significantly lower hardiness scores than people not in the construction industry.

It could be that there might be greater support in place (e.g., health care benefits, sick days, and financial compensation benefits) for those who work in a healthcare, and perhaps, very little support for someone who works in construction. The healthcare worker would in all likelihood seek immediate support whereas the construction worker may elect to remain working, in spite of an injury due to job insecurity. The individual who is not financially compensated may not be able to participate in a rehabilitation programme, nor afford health care services (e.g., massage therapy, chiropractor treatments) since this individual cannot afford to miss out on showing up for work despite their injury; not working, no pay cheque.

Further analysis was conducted to explore whether or not income could be associated with higher level of hardiness. As result of this investigation, the overall difference was statistically significant; meaning that higher income was associated with higher level of hardiness. People with more than \$100,000 annual income had significantly higher levels of hardiness compared to people with less than \$50,000 income or income between \$50,000 and \$75,000 respectively. It seems reasonable to

assume that the more money one earns and has at their disposal, the more it will benefit the individual's quality of life. For instance, in a health context, someone who is earning \$100,000 per year versus someone earning less than \$50,000 per year, may benefit more by having the financial means to afford (control) additional support (e.g., house cleaner, cook, extended time away from work) when challenges arise. Furthermore, the individual who earns more money may be more committed to healthy lifestyle changes that can be long term and costly (e.g., diets, gym memberships, personal trainer).

Chapter 6

Conclusion

Hardiness is an attitude. The primary question in this study was whether or not hardiness influences the rate of return to work following a back injury. On the surface it seems to make sense that it would work, although there were no evidence in this study that supported this contention. Possibly, those who are hardy may have a positive predisposition to their circumstance, however this study suggest that there is no impact on the rate of recovery or the speed at which one returns to work. In other words, those with back injuries and high hardiness may not get back to work faster but they may have a better attitude as they are going through the process. The high hardy individual who has the back injury would recognize that they may have to adjust their expectations and be comfortable with that decision. Essentially, hardiness attitudes allow one to function in a manner that facilitates effective coping and learning.

Limitation of the Findings

There were several limitations found in this study. One limitation of the study was that the sample used was a group of people who live in Saskatchewan and who were past WCB clients who had self-selected to be participate in this study. Thus, providing no random selection of participants and may not be a true representation, other than regional. For a variety of reasons that was discussed earlier, the final data base was based upon 135 participants, representing only 8.44% of the 1600 names provided in the data base. One could question if this is a representative sample.

Although it was decided to have a sense of homogeneity amongst participants in this study by having those participants involved with a similar injury, the singularity of the injury (i.e., back injuries) may also be a limitation since other injuries were excluded. Further, the severity of the back injury was not known and this may create wide variance in response and recovery rates. In addition, the collection of data was a limitation since it relied heavily on using self-report measures that may limit generalizability of results.

The PVS III-R has been used extensively in the literature and has been shown to have valid and reliable psychometric properties (Maddi et al. 2002). However, the PVS III-R may not have been the best instrument to use in a therapeutic context since the questionnaire did not address specific questions that are related to health or therapy. Perhaps the PVS III-R may be more appropriate in a work context and may not be a suitable instrument for therapeutic situations. In this study, perhaps, the Health Related Hardiness Scale (HRHS) measure may have been more effective than the PVS III-R since the HRHS questionnaire is designed to measure hardiness in those who have a known health problem. Moreover, the face validity of the PVS III-R questionnaire may also be questioned in a health/ therapeutic context since one could not get strong construct scores from the sub-scales (e.g., Commitment = 0.66, Control = 0.37, Challenge = 0.55).

The PVS III-R is copyrighted and the scoring formulas are not released for general use. In other words, the researcher is not privy to the calculation process of one's data once sent to the Hardiness Institute. As a researcher, it raised some concern. Especially, since in this study there were low alpha scores of the sub scales and no explanation as to why this happened and no way to find out why; lack of transparency.

This is research; not consulting to other corporations, therefore all one's data must be completely open to replication. Some would argue that this is unethical because one is not seeing what is inside the "black box".

Future Research

Although there were statistically significant differences found within this study, the two hypotheses were not significant. The findings of this research present quantitative evidence that does not support a relationship between hardiness and the duration of recovery and return to work, nor does it support hardiness remaining a significant predictor of rate of return to work. A broader study that involves a larger sample size, potentially using multiple tools for measuring hardiness (e.g., Health Related Hardiness Scale, Revised Health Hardiness Inventory, and the PVS III-R), and using a combination of data collection methods (e.g., online survey and hard copy if requested) may provide more accurate results, in terms of generalizability. Perhaps one could develop a new hardiness questionnaire that is geared towards a health context since the PVS III-R does not address specific health related questions.

Given the complexity in the world we live in, there are no straightforward explanations for things (Corbin & Straus, 2008). Rather, events are the result of numerous factors interacting and coming together in complex and frequently unanticipated ways. Therefore, it seems logical to use any methodology that best helps an individual's attempt to understand experience and explain complex situations (Corbin & Straus, 2008). For instance, another option for investigation may be conducting a qualitative study on hardiness and/or include those with other injuries. There are several

qualitative studies used to investigate low back pain and return to work (e.g., Soklaridis, Ammendolia, & Cassidy, 2010; Shaw & Huang, 2005). There also appears to be some qualitative research out there concerning hardiness and sport-injury (e.g., Wadey, Evans, Hanton, & Neil, 2012).

The most widely used qualitative method in the social sciences is grounded theory (Soklaridis et al., 2010). According to Soklaridis et al., (2010), “grounded theory is a process of social inquiry that utilizes generalized knowledge that is derived from specific observations of phenomena from the field” (p.1558). One may use the observations to build theory. Predominately, the main objective of using a grounded theory method is to develop theory through comprehending concepts that are related by means of statements of relationships (Soklaridis et al., 2010). According to Rubin & Rubin (2005), the intent of using qualitative interviews is so that researchers can explore in depth important personal issues. Furthermore, a qualitative interview can help the researcher to “...understand experiences and reconstruct events in which [one] did not participate” (p. 3) (i.e., work-related back injury).

Another option for a study could have one using a mixed methods approach (i.e., qualitative and quantitative measures). In this case, the researcher could compare one’s time frame expectation to return to work following an injury and rehabilitation therapy, versus one’s actual return to work date and maybe identify specifically what type(s) of therapy did the participants receive (e.g., physical, medication, psychological, or other). Furthermore, one could conduct an interview or include a questionnaire that asks the participants to describe or rate, depending on selected data retrieving method, their perceived pain and see whether this may influence one’s return to work.

Perception of one's pain could be of particular interest since some researchers (e.g., Lau, Leung, & Wong, 2002) suggest that those who experience chronic pain, pain that persist for more than six months, tend to resist treatment efforts. Additionally, Lau et al., (2002) contend that "...patients with chronic pain face the fact that their pain is incurable and uncomfortable. As a result, their psychological distress and behavioural problems are probably long lasting and disabling" (p.13). This seems to relate to the idea of one who fears re-injuring. In other words, perhaps the individual perceives one's pain excruciating and intolerable and develops the fear of re-injuring thereby resisting therapeutic participation.

A potential study could involve following individuals in various professions to determine the relationship between hardiness and job satisfaction/stress overtime. The researcher could start off by obtaining baseline scores (i.e., hardiness levels) of newly graduated nurses, for example, and then track them over a pre-determined timeline (e.g., 5 years). As a result of the baseline scores, the researcher may want to provide hardiness training, randomly selected, to half of those who are low in hardiness. Essentially, the researcher would have three groups to follow; the group who receives the hardiness training, the group who are low in hardiness and would not receive training (i.e., control group), and the other group would be those who are high in hardiness. The researcher would then document nursing absenteeism from work due to illness, stress, or injury.

If hardiness was found to have an influence on or could be a predictor of absenteeism from work due to illness, stress, or injury, then the implication might be that Universities may then be better equipped to provide hardiness training for students in order to maximize students' chance of success in the workforce.

Post recovery attitudes and career success may well be worth investigating. For example, consider person x and person y who have both returned to work following a similar back injury. Each individual must address the possibility of a change in his/her career due to the injury. Person x who is high hardy may be optimistic about new career choices. Person y who is low hardy may not adapt well to the new reality and fail to cope with the situation in which he/she finds himself/herself. This study made this question more powerful because if hardiness doesn't influence physical recovery, it may well influence career success.

Although hardiness may not influence physical rehabilitation, it may influence one's ability to pursue new opportunities and/or better cope with new realities following an injury. For example, suppose that person x and person y are both construction workers and have the same back surgery. Person x comes from a long line of construction workers and identifies deeply with this trade. He believes that he cannot change and become something other than a construction worker with all of its ethos and values of hard work and comradery. Arguably this is an example of low hardiness. On the other hand, person y recognizes that she can no longer be a construction worker, and says "let us see what I can be/do now". This, in contrast, is an example of high hardiness. Person y is open to other courses of actions whereas person x is not. Maddi and Kobasa took this next step in their IBT study several years after the deregulation and found out what happened to those who lost their jobs. Thus exploring post rehabilitation career outcomes is a viable direction for future research. Will the high hardy individual be more likely to be successful in the next phase of their career? Will someone low in hardiness be stuck in their box while a high hardy individual flourishes and does something else?

In the supplementary findings of this study, healthcare workers were found to be significantly higher in hardiness than the construction workers and others. Therefore, subsequent research could be looking at what is it about the healthcare environment/culture that makes people high hardy and if these variables can be transferred to other organizational contexts (i.e., education, military, construction, and office workers). For instance, if one were able to tap into other kinds of job classifications (i.e., healthcare, construction, first responders, and office workers) one might be able to compare levels of hardiness between groups. This would be extremely important information and valued future research for those organizations and the WCB to know how to enhance hardy environments.

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List of Appendices

Appendix A: Personal Views Survey III-R Questionnaire

	NOT TRUE	A LITTLE TRUE	MOSTLY TRUE	TRUE
In general.....				
1. By working hard, you can always achieve your goal.	0	1	2	3
2. I don't like to make changes in my everyday schedule.	0	1	2	3
3. I really look forward to my work.	0	1	2	3
4. I am not equipped to handle the unexpected problems of life.	0	1	2	3
5. Most of what happens in life is just meant to be.	0	1	2	3
6. When I make plans, I'm certain I can make them work.	0	1	2	3
7. No matter how hard I try, my efforts usually accomplish little.	0	1	2	3
8. I like a lot of variety in my work.	0	1	2	3
9. Most of the time, people listen carefully to what I have to say.	0	1	2	3
10. Thinking of yourself as a free person just leads to frustration.	0	1	2	3
11. Trying your best at what you do usually pays off in the end.	0	1	2	3
12. My mistakes are usually very difficult to correct.	0	1	2	3
13. It bothers me when my daily routine gets interrupted.	0	1	2	3
14. I often wake up eager to take up life wherever it left off.	0	1	2	3
15. Lots of times, I really don't know my own mind.	0	1	2	3
16. Changes in routine provoke me to learn.	0	1	2	3
17. Most days, life is really interesting and exciting for me.	0	1	2	3
18. Its hard to imagine anyone getting excited about working.	0	1	2	3

Appendix B: Regina Ethics Board Approval



OFFICE OF RESEARCH SERVICES

Regina, Saskatchewan, Canada S4S 0A2
 Phone: 306.585.4775 Fax: 306.585.4893
www.uregina.ca/research

DATE: November 15, 2011

TO: Dr. David Malloy
 Faculty of Kinesiology and Health Studies

FROM: Dr. Bruce Plouffe
 Chair, Research Ethics Board

Re: **Work & Hardiness: Exploring Rate of Return and Existential Courage**
 (File # 43R1112)

Please be advised that the University of Regina Research Ethics Board has reviewed your proposal and found it to be:

1. APPROVED AS SUBMITTED. Only applicants with this designation have ethical approval to proceed with their research as described in their applications. For research lasting more than one year (Section 1F). **ETHICAL APPROVAL MUST BE RENEWED BY SUBMITTING A BRIEF STATUS REPORT EVERY TWELVE MONTHS.** Approval will be revoked unless a satisfactory status report is received. Any substantive changes in methodology or instrumentation must also be approved prior to their implementation.
2. ACCEPTABLE SUBJECT TO MINOR CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB. **** Do not submit a new application.** Once changes are deemed acceptable, ethical approval will be granted.
3. ACCEPTABLE SUBJECT TO CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB. **** Do not submit a new application.** Once changes are deemed acceptable, ethical approval will be granted.
4. UNACCEPTABLE AS SUBMITTED. The proposal requires substantial additions or redesign. Please contact the Chair of the REB for advice on how the project proposal might be revised.


 Dr. Bruce Plouffe

** supplementary memo should be forwarded to the Chair of the Research Ethics Board at the Office of Research Services (Research and Innovation Centre, Room 501.2) or by e-mail to research.ethics@uregina.ca

Appendix C

Hardiness WCB Study - Interview Script

“Hi [*potential participant's name*], my name is (*insert name*) and I am a graduate student working under the supervision of *Dr. David Malloy* from the *International Health Ethics Research Team* at the University of Regina. I am contacting you because your name and contact details were provided to us through the *WCB client research pool* as you had indicated you may be interested in being contacted about WCB funded studies needing participants. The reason I'm calling is that we are conducting a study to help us better understand some of things that may affect how quickly one is able to return to work following an injury. We are currently seeking volunteers from the *WCB client research pool* who have experienced work related injury as participants in this study and I wondered if you would be interested in hearing more about it?”

[IF NO] Thank you for your time. Good-bye.

[IF YES] Continue

“Participation in this study involves completing two brief questionnaires as well as providing us with some background information about yourself. One of the questionnaires will ask you about your beliefs with regards to pain and the other will ask you about your views on hardiness which can be considered the capacity of people to cope with stress and challenges. Once you have completed the questionnaires, please return them to us by mail. The completed forms and one signed copy the consent form should be placed in the stamped envelope that we will provide you with. Participation typically takes no more than 10 minutes of your time. I would like to assure you that this study has been reviewed and received ethical approval from the Research Ethics Board at the University of Regina. Whether or not you choose to participate will have no bearing whatsoever on your WCB claim.

However, your participation is completely voluntary and the final decision about participation is yours.

Would you be interested in participating?”

[If NO] Thank you for your time. Good-bye.

[IF YES] Thank you; we appreciate your interest in our research!

(Confirm on file mailing address)

“Let me give you some important information about the study. Have you got a pen and piece of paper?”

The name of the study is the *Work and Hardiness Study*, and my name is (*insert name*). The study is being conducted by the *International Health Ethics Research Team* at the main campus at the University of Regina. You are being asked to participate in a project that will help us better understand some of things that may affect how quickly one is able to return to work following an injury. The responses that you provide are an important step in helping to develop new and innovative treatments for WCB clients.

“If we haven’t received your completed package or heard back from you by 2-3 weeks after we have mailed you the questionnaires; someone from our research team will phone you to confirm that you have received your package and to answer any questions you may have at the time. If you have any questions once you have received your package you may contact me by phone at (*insert researcher phone number*) or email me at (*insert researcher email*). I look forward to your participation in our study. Thank you very much for helping us with our research!”

Appendix D

Consent Form

To appear on University Letterhead

Title: Work & Hardiness Study

Introduction: You are being asked to participate in a project that will help us better understand some of the factors that may affect how quickly one is able to return to work following an injury. The responses that you provide are an important step in helping to develop new and innovative treatments for WCB clients.

Procedure: You will be asked to complete two questionnaires and provide some background information about yourself. Once completed, please return to us by mail the completed forms and one signed copy of this consent form in the stamped envelope we have provided. Participation typically takes no more than 10 minutes.

Benefits, discomforts and risks: No discomfort or risks are anticipated with your participation in this study. The only cost to you will be the time required to complete the questionnaires and background form. While there is no direct benefit that you will receive for participating in this study; this research will shed light on some of the factors that may influence how quickly one is able to return to work following an injury.

Research Personnel: This study is being conducted by an interdisciplinary team at the University of Regina. If you have any questions about the study, please feel free to contact the team leader, Dr. David Malloy (Tel: 306-585-5184).

Confidentiality: The information collected during this study will be confidential. Your individual responses will not be shared with the WCB or any other party. While the results of the research study will be shared with others and published in scientific reports, no uniquely identifying information about you will be reported. The information you provide will only be used in aggregate with the responses of all other participants. All the information you provide will be kept in a locked cabinet at the University of Regina. This data will be kept for a minimum of five years upon the completion of the study. Access to this information will be limited to the primary researchers.

Voluntary Participation: Your involvement in this study is entirely voluntary and you can decline participation or withdraw at any time. However, this withdrawal request must be made prior to the completion of the data collection phase of the study since all identifiable links between yourself and your responses will be removed once we have collected responses from all our participants. Your decision whether or not to participate has no influence on your WCB claim or your status with the WCB. There is no penalty for declining to participate.

Funding: This research study is funded through a WorkSafeBC (WCB) research grant awarded in 2011.

Ethics Approval: This project was approved by the Research Ethics Board, University of Regina. If you have any questions or concerns about your rights or treatment as a participant, you may contact the Chair of the Research Ethics Board at (306)585-4775 or by email at research.ethics@uregina.ca.

Consent Statement

Having read the above, I agree to participate in this study and consent to the above. I acknowledge that I have received a copy of this form.

Signature of Participant

Date

Signature of Researcher

Date

Appendix E

Participant Demographic Information Questionnaire

Participant Number: _____

Date: _____

Work & Hardiness Study*First, please tell us a little bit about yourself..*

1. Gender: M F 2. Age: _____ 3. Job Title
(Position): _____

4. What is the highest level of education you have achieved?

___ Less than High School ___ Bachelor's degree
 ___ High School ___ Master's degree
 ___ Some post secondary ___ Doctoral degree
 ___ Tech school certificate/
 Diploma

5. What is your marital status?

___ Single ___ Separated
 ___ Common Law ___ Divorced
 ___ Married ___ Widow /Widower

6a. What is your approximate total household income?

<\$25,000 \$25,000-50,000 \$50,000-75,000 \$75,000-100,000
 >\$100,000

6b. Approximately what percentage do you contribute to your total household income?

_____%

7. How many years experience do you have at your current position?

8. How long were you employed at your current position prior to being injured?

9. Did you receive any rehabilitation for your work related injury (Circle all that apply)?

- a) Physical (e.g. physiotherapy, massage, chiropractic)
- b) Medical (e.g. medications)
- b) Psychological (including talk therapy)
- c) None
- d) Other (please explain)

10. If you answered yes above, please specify the date you **first** received treatment for your work related injury

(MONTH – DAY – YEAR)

11. If you answered yes above, please specify the date you **last** received treatment for your work related injury

(MONTH – DAY – YEAR)

12. On what date did you **first** return to work?

Appendix F

List of Figures

Figure 1. Hardiness score distribution

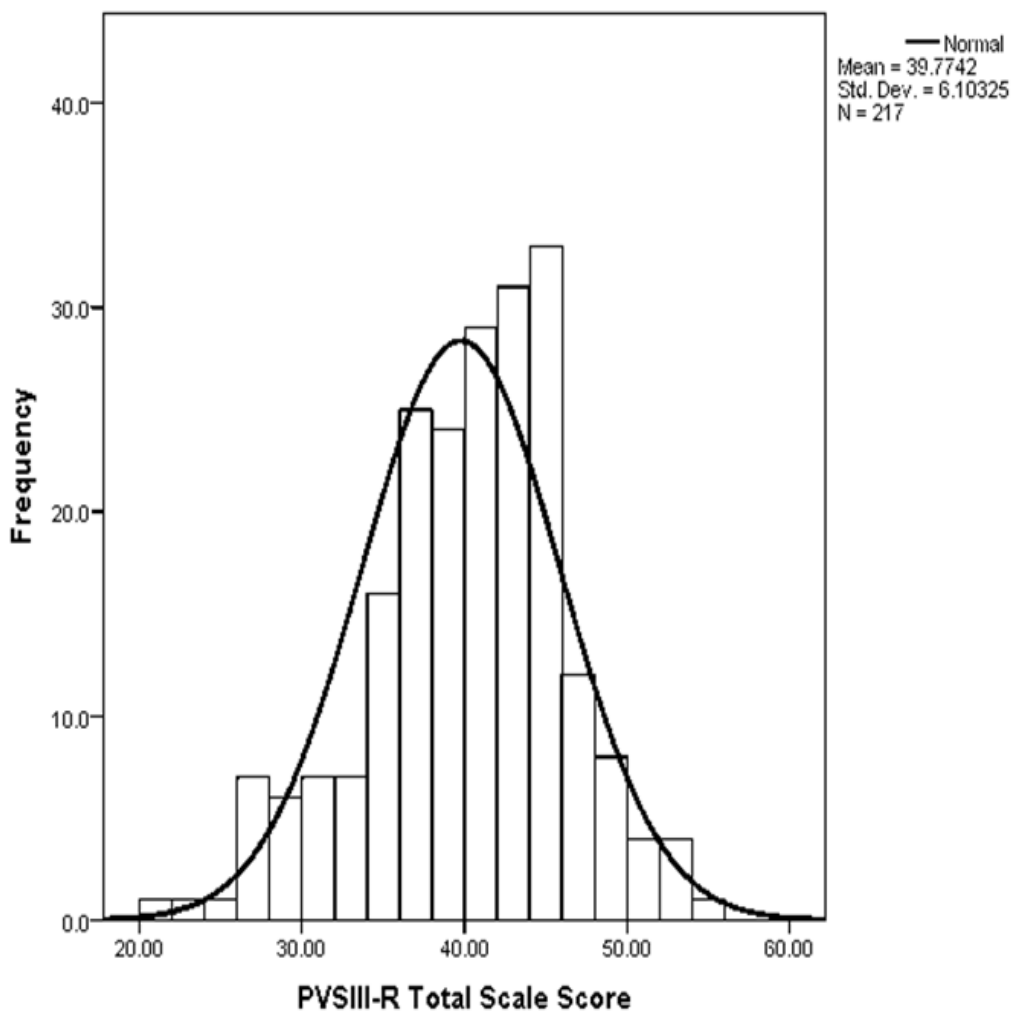
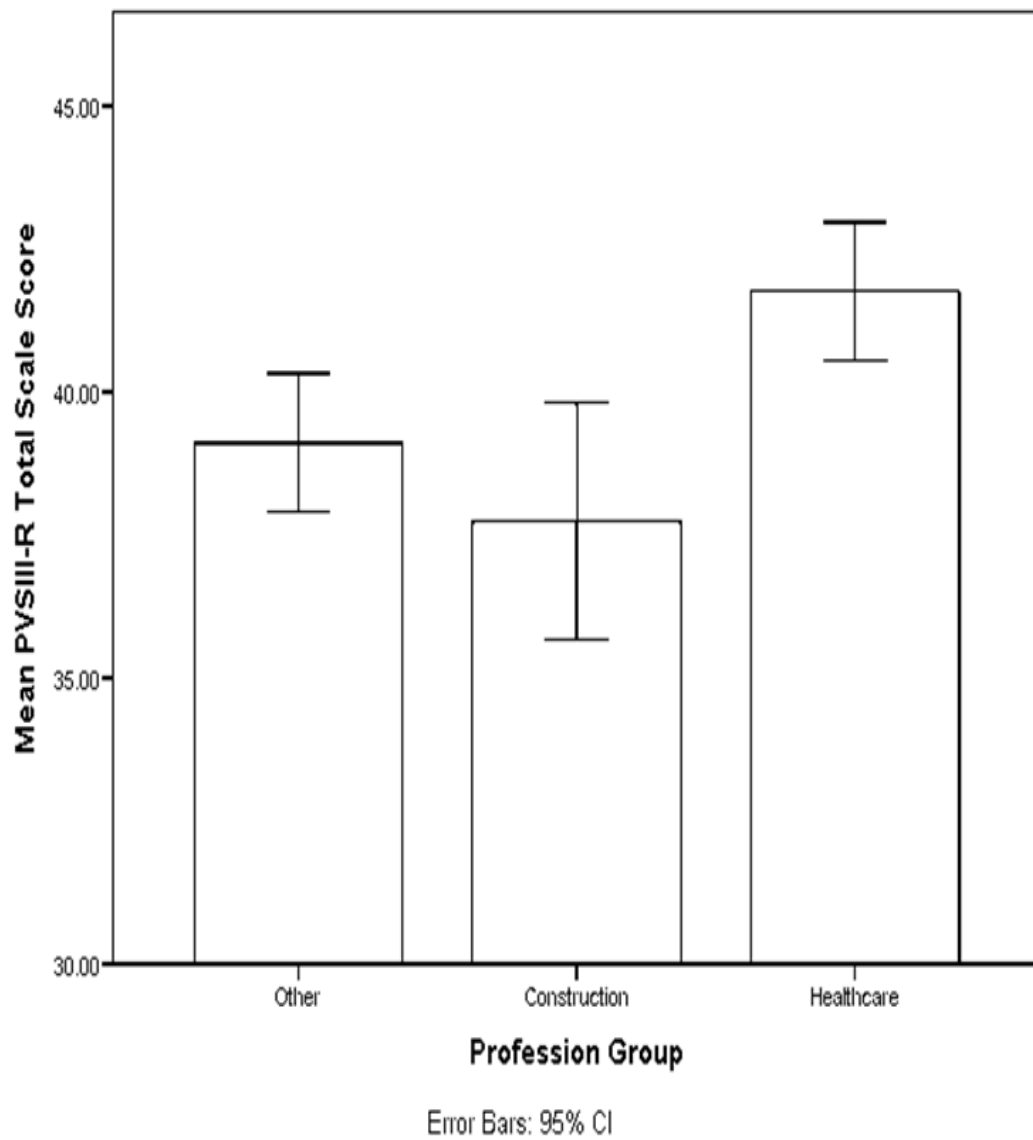


Figure 2. Hardiness score across professional groups



Appendix G

List of Tables

Table 1

Hierarchical multiple regression analysis table

Source	Type III Sum of Squares	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Corrected Model	17084.859 ^a	47	363.508	1.454	.074
Intercept	272.019	1	272.019	1.088	.300
PVSTotal	137.945	1	137.945	.552	.460
Age	667.911	1	667.911	2.671	.106
Gender	21.142	1	21.142	.085	.772
Education	450.857	4	112.714	.451	.772
Relationship	508.821	2	254.411	1.017	.367
Income	1159.672	3	386.557	1.546	.210
Gender * Education	991.600	4	247.900	.991	.418
Gender * Relationship	961.108	2	480.554	1.922	.154
Gender * Income	958.819	3	319.606	1.278	.288
Education * Relationship	57.776	4	14.444	.058	.994
Education * Income	5458.736	11	496.249	1.985	.042
Relationship * Income	718.932	3	239.644	.958	.417
Gender * Education * Income	2519.007	5	503.801	2.015	.086
Error	18503.960	74	250.054		
Total	60169.429	122			
Corrected Total	35588.819	121			
a. R Squared = .480 (Adjusted R Squared = .150)					