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# Courage, Psychological Well-being, and Somatic Symptoms

Christopher J. Keller  
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Courage, Psychological Well-being, and Somatic Symptoms

Christopher J. Keller

A dissertation submitted in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

In

Clinical Psychology

Seattle Pacific University

School of Psychology, Family and Community

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**Christopher J. Keller**  
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### **Abstract**

The purpose of this study was to examine the relationship between courage, psychological well-being (PWB), and somatic symptoms in an adult population. Courage is the ability to pursue goals or a purpose despite risk or fear. While courage has been shown to be associated with decreased mental health symptoms, little is known about health outcomes associated with courage. The hypotheses of this study were that higher reported levels of courage would predict lower reported somatic symptoms, and that PWB would account for significant variance in the relationship between courage and somatic symptoms. Participants, mean age 38, were given online surveys at three time points. At time point one, 202 participants completed a demographic questionnaire and measures of courage, PWB, and somatic symptoms. There were 142 and 125 participants who completed a subjective somatic symptoms measure at two and six weeks after baseline, respectively. Mediation analyses were conducted through the PROCESS bootstrapping method. At time point one, courage did not predict somatic symptoms ( $B = -.039$ ;  $p = .063$ ), however a significant indirect effect of courage on somatic symptoms through PWB was found ( $B = -.074$ ; CI:  $-.100$  to  $-.050$ ). At time point two, courage was found to significantly predict lower somatic symptoms ( $B = -.054$ ;  $p = .048$ ), and the indirect effects analysis was also supported ( $B = -.101$ ; CI:  $-.156$  to  $-.065$ ). Time point three yielded similar results, as courage was shown to predict somatic symptoms ( $B = -.052$ ;  $p = .031$ ), and the indirect effects model was also supported ( $B = -.085$ ; CI:  $-.122$  to  $-.056$ ). Residual change analyses were also conducted. At both two weeks ( $B = -.031$ , CI:  $-.065$  to  $-.007$ ) and six weeks ( $B = -.026$ , CI:  $-.050$  to  $-.006$ ), indirect effects models were supported. Implications for mental health practice with patients who somaticize are discussed.

Keywords: courage, wellness, somatization, psychological well-being, virtues

## CHAPTER I: Introduction and Review of Literature

### Introduction

The purpose of this study was to examine the relationship between courage, psychological well-being (PWB) and somatic symptoms in an adult population. Understanding courage as a predictor of wellness, specifically lower somatic arousal and symptoms, may inform clinicians how to effectively provide positive interventions. Courage has been shown to predict PWB, which is a construct associated with positive health outcomes. Therefore, PWB may be a mediating variable in the relationship between courage and somatic symptoms. This study has two hypotheses. The first hypothesis was that the presence of courage will predict lower somatic symptoms. The second hypothesis was that PWB will partially account for the relationship between courage and somatic symptoms.

The study of wellness is integral to the field of psychology. Historically, wellness has been conceptualized through a disease model paradigm, implicitly defined as the absence of pathology, personal vulnerabilities, and illness (Jahoda, 1958). An explicit focus on wellness, albeit less emphasized, has also been a consistent thread throughout the history of psychology. This vein of research can be traced to the individual psychology of Alfred Adler in the early 20<sup>th</sup> century, the humanistic psychology of both Maslow and Rogers in the mid-20<sup>th</sup> century, and most recently the positive psychology movement. Positive psychology is a field of research emphasizing strengths that has grown toward the end of the 20<sup>th</sup> century and into the 21<sup>st</sup> century (Peterson & Seligman, 2004). Though the disease model and concomitant foci on pathology and deficits have garnered much of the attention of researchers, wellness research has a rich lineage and is an enduring focus within the field of psychology.



Psychology researchers have emphasized wellness less than other disciplines, particularly in contrast to major world religious and philosophical traditions. One facet of wellness found across philosophical and religious disciplines are positive traits known as virtues. Virtues—valued by all major religious traditions such as Buddhism, Judaism, Christianity, Hinduism and Islam—are constructs also studied within positive psychology (Dahlsgaard et al., 2005; Peterson & Seligman, 2004; Snyder, Lopez, & Predrotti, 2010). Virtues are hallmark traits of wellness, studied to understand what psychological qualities indicate optimal, holistic functioning (Fowers, 2012). This study focuses on courage, a virtue that is not only heralded by most major religious and philosophical traditions (Yang, Milliren, & Blagen, 2010), but also a virtue that has been increasingly researched in positive psychology (Snyder, Lopez, & Predrotti, 2010).

Woodard and Pury define courage as “the voluntary willingness to act, with or without varying levels of fear, in response to a threat to achieve an important, perhaps moral, outcome or goal” (2007, p.136). They developed the Woodard Pury Courage Scale-23, in which they identified are 4 subtypes of courage—work/employment, religious/patriotic, social/moral, and independent or family based. The work/employment subtype of courage involves engaging in behavior at work (i.e., taking part in a work conflict), or taking a vocational direction (i.e., publish a work despite criticism), that doesn’t rely on playing it safe or remaining comfortable. Religious or patriotic courage involves taking a stand at the risk of one’s life for higher religious and patriotic ideals, perhaps in war or to resist religious oppression. Social-moral courage involves acting in a way that one believes is moral at the risk of social rejection, material cost, or physical danger. The independent subtype of courage involves acting as an individual altruistically

toward others in need (e.g., rescuing pet in burning house, intervening in abusive family, giving up material goods) or resisting oppressive forms of authority (e.g., hiding Jews during the Holocaust). Courage is measured through self-report in the Woodard Pury Courage Scale-23 (WPCS-23).

Keller et al. (2012) has shown that the presence of courage predicts the presence of increased PWB. PWB is a construct that emphasizes personal meaning and self-actualization. It is a comprehensive construct of wellness, comprised of self-acceptance, positive relationships, autonomy, environmental mastery, purpose in life, and personal growth (Ryff & Keyes, 1995). Psychological well-being has been linked to positive health outcomes, including better neuroendocrine regulation, improved immune functioning, lower cardiovascular risk, improved sleep, and enhanced neural circuitry (Ryff & Singer, 2008; Ryff, Singer, & Love, 2004; Urry et al., 2004). In regards to mental health outcomes, individuals with lower levels of PWB are more likely to be depressed (Rafanelli et al., 2000; Fava & Mangelli, 2001) and exhibit a lower quality of life evidenced in the presence of anxiety and affective disorders (Rapaport, et al., 2005). Ryff's Scale of PWB-54 (RSPWB-54; 1989), a self-report measure designed to test each of the six domains of PWB, will be used in this study.

An abundance of research has demonstrated strong correlations between physical health and mental health (Fleischhacker et al., 2008; Main, 1983; Tully & Cosh, 2013). One main intersection of mental and physical health is the somaticizing phenomena, or the presence of symptoms that are medically unexplainable (Kirmayer et al., 2004). Common somatic symptoms include physically feeling faint, nausea, stomach churning, mouth dryness, tightness in chest, and weakness in legs.

This study examined the relationship between courage, psychological well-being (PWB) and somatic symptoms in an adult population. This research may support existing and novel interventions for working with individuals who somaticize. Clinical implications and directions for future research will be discussed.

## **Literature Review**

**Tracing the history of wellness within psychology.** Throughout the history of psychology, numerous strands of research have been concerned with promoting wellness, but wellness has not been the dominant focus of the field. Psychology as a modern practice has grown concomitantly with the industrial and post-industrial ages. With the rise of scientific knowledge in the post-enlightenment age, tremendous triumphs in medicine were made through the application of the disease model, a pathology-focused methodology that focused on deviations from what is considering normal functioning. Aided by psychology, this approach has led to significant milestones, including medicinal advances to healing, extinguishing disease, and significantly extending the average human lifespan. However, psychology's unification with the disease model has often come at the expense of understanding what it means to be well.

Psychology as a discipline has also been formed alongside, and influenced by, significant historical events throughout the modern age of science. The horrors and atrocities of the 20<sup>th</sup> century, in which millions of people were killed via war, famine, and genocide, illustrated that advances in science were somewhat Faustian; technological growth magnified the ability to both heal and destroy like never before witnessed in human history. Fear, therefore, was also a prominent theme of the 20<sup>th</sup> century, and the field of psychology concomitantly focused on the nature and manifestation of this fear,

rather than studying the capacity to overcome fear, which is courage (Yang, Milliren, & Blagen, 2010).

Preoccupation with fear and pathology limited the robustness of wellness research conducted within psychology in the 20<sup>th</sup> century, hampering an understanding and promotion of wellness. Seligman (2002) noted that before World War II (1939-1945), the field of psychology had three general emphases—curing psychopathology, improving the lives of individuals by making them more productive and successful, and locating and growing exceptionally talented individuals. Seligman (2002) argued that psychologists narrowed their focus after World War II due to the founding of the Veterans Administration and the National Institute of Mental Health. Psychologists could find gainful employment by treating mental illness, and could receive grant funding through focusing research efforts on mental illness. The funding of illness-focused research and treatment led to tremendous advances in treating mental illness; Seligman notes that 14 psychological disorders can now either be cured or significantly reduced (1994).

Despite a dominant focus on mental illness through the disease model lens, wellness theories and research have nevertheless endured throughout this history of psychology. Alfred Adler is a seminal figure who stressed wellness during psychology's burgeoning age. Once part of Freud's inner circle known as the Vienna Psychoanalytic Society, he was the first (of many) to leave Freud's psychoanalytic school of thought and start his own theoretical approach known as *individual psychology*. The name *individual psychology* is somewhat of a misnomer in that Adler's approach rested on the conviction that individuals were social beings that could not be divided into discrete parts, neither intrapersonally nor interpersonally (Yang, Milliren, & Blagen, 2010).

Adler, and later his students, postulated that life was comprised of five basic tasks indicative of wellness or full functioning: being interested in people, being part of the whole, contributing to human welfare, self-acceptance, and existential belonging (Yang, Milliren, & Blagen, 2010). These five aspects of life provide the structure for a life fully lived according to individual psychology. Adler viewed psychological problems arising from this complex network of relationships, when the striving for a relational connection between these domains fomented frustration and developed inferiority. It was Adler who coined the phrase “inferiority complex,” and he focused on courage as the antidote to overcoming inferiority. In fact, he saw courage as the primary ingredient in both overcoming one’s inferiority complex, as well as resisting the urge to overcompensate in reaction to inferiority feelings (Ferguson, 1989).

In the wake of Adler’s individual psychology, two seminal figures emerged within American psychology that advanced the project of promoting wellness and flourishing—Abraham Maslow (1908-1970) and Carl Rogers (1902-1987). Maslow’s vision of wellness and flourishing congealed around the concept of self-actualization, a concept involving an individual realizing their full, authentic potential (Ryff & Singer, 2006). Rogerian client-centered psychology stressed optimal development and living into one’s potential. Rogers (1961) articulated seven components of optimal functioning which share an affinity with Adlerian theory—openness to experience, living existentially in the here-and-now, organismic trust or an ability to make discerning choices by living in the moment, the freedom to choose, creativity, reliability and constructiveness, and life full of deeply felt experiences.

Positive psychology (PP) is a contemporary field of psychological research and clinical application built upon the work of Adler, Maslow, and Rogers. PP was defined by Seligman and Csikszentmihalyi (2000) at the turn of the century as a holistic exploration of flourishing. They describe the field as an exploration of positive subjective experiences and individual traits, as well as health within groups and institutions. The authors recognize that a legacy of exploring wellness and optimal functioning has existed in psychology long before the advent of PP. However, they distinguish the field of PP through an emphasis on accumulating empirical research, including developing constructs and assessment instruments. PP, therefore, is an empirically rigorous exploration of the contours of optimal functioning on biological, psychological, and social levels. This study was consistent with the purpose of PP as outlined by Seligman and Csikszentmihalyi, as it focused on virtues and wellness, constructs central to positive psychology research. This study will explore the relationship between the virtue of courage, somatic symptoms, and a type of wellness called psychological well-being.

**Virtues as a common denominator of wellness theories.** Virtues were first catalogued in Western thought by Plato (429-347 B.C.E.; 1968). In his reflection on the ideal society, Plato introduced four virtues: “wisdom (*sophia*), courage (*andreia*), self-restraint (*sophrosune*), and justice (*dikaisune*)” (1968, IV, 427e; Dahlsgaard, Peterson, & Seligman, 2008, p. 208). Aristotle further developed the concept of virtues, so much so that PP has been considered a modern Aristotelian project (Fowers, 2012). Aristotle posited that virtues are the characteristics that allow humans to pursue human flourishing, or what he referred to as the good life. He expands on Plato’s taxonomy of virtues, adding “generosity, wit, friendliness, truthfulness, magnificence, and greatness of soul”

(Aristotle, 1999, IV; Dahlsgaard, Peterson, & Seligman, 2000, p. 208). Aquinas also built upon Plato's original four virtues—courage, justice, temperance, and wisdom—and named them cardinal virtues (Hauerwas, 1997). The cardinal virtues were also developed through an explicitly Christian framework, and he added to them three virtues central to Christian theology—faith, hope, and love.

While the presence of virtues are ubiquitous and central throughout the history of Western thought and relatedly within the Christian tradition, virtues are also present in Eastern philosophical and religious traditions. Dahlsgaard, Peterson, and Seligman (2000) analyzed all major religious and philosophical traditions (e.g., Confucianism, Taoism, Buddhism, Hinduism, Athenian philosophy, Judaism, Christianity, and Islam) and distilled from these traditions six common core virtues: courage, justice, humanity, temperance, wisdom, and transcendence.

Courage, therefore, is a virtue emphasized throughout all major influential religious and philosophical traditions. While in Eastern traditions such as Confucianism, Taoism, and Buddhism, courage appears to not be valued, some have argued that courage is indeed valued but in more subtle manifestations outside of the context of battle or conflict (Dahlsgaard, Peterson, & Seligman, 2000). Yang, Milliren, and Blagen (2010) also argue that courage is not easily recognized in Eastern traditions because the cultural values (e.g., harmony, order) are distinct from Western values. Courage is a virtue foundational across all religious and philosophical traditions and manifested uniquely across cultures.

### **Courage.**

*Courage from Aristotle to Positive Psychology.* Aristotle conceived of virtues as being a balance, or golden mean, between extremes. The first virtues he introduced were courage and temperance, two strengths related to the most basic of human emotions—pleasure and fear (Hauerwas, 1997). Aristotle defined courage as the middle path between fear (or fearfulness) and fearlessness (or recklessness). Putman describes Aristotle’s notion of courage this way: “Courage is the mean between the two extremes of cowardice and what is usually translated as rashness. Cowardice is easy to comprehend: It is running away or avoiding danger. Rashness is facing danger in a careless way or in a manner that masks other motives” (Putman, 2010, p.10). Aristotle recognized that although an individual may appear to be acting out of courage, that individual could be acting out of fear or rashness instead (e.g., posturing, fulfilling a masochistic desire, stimulus seeking, etc...). Aristotle viewed cowardice as more common than recklessness, but identified both extremes as vices to be avoided (Aristotle, trans. 1999; Putman, 2010).

Aquinas (trans. 1981) introduced courage through a Christian theological lens, and began to shift how courage was conceptualized in Western thought. For Plato and Aristotle, courage was imagined as a virtue manifested on the battlefield, a decidedly masculine virtue exercised in war. Aquinas, on the other hand, expanded the notion of courage based on a different *telos*, one that has an eye toward Christian ethics. Aquinas predominantly viewed courage through the lens of martyrdom, a concept which, “stands over all of Aquinas’ thinking about courage. He thus has a completely different paradigm and example that was unavailable to Aristotle” (Hauerwas, 1993, p. 259). Part of the paradigm shift, therefore, has to do with the ends toward which virtues are employed.



The work of Aquinas is also important to modern conceptualizations of courage insofar as—echoing Aristotle—he saw courage as a virtue requiring practice and cultivation, consistent with the Christian construct of sanctification (Lester et al., 2010; Worline, Wrzesniewski, & Rafaeli, 2002).

Aristotle in antiquity and Aquinas in the middle ages provided an enduring framework, now relevant to modern, psychological theories of courage. In the comparatively short history of psychology, Adler's (1870-1937) work provides the most sustained attention on courage, and the deleterious effects of lacking it. Adler postulated that fear was the central component to psychopathology, and courage was needed for healthy functioning, both individually and relationally (Yang, Milliren, & Blagen, 2010). Adler emphasized courage as the alternative to fearful, maladaptive coping styles. On one end of the response style to a threat, an individual may develop an inferiority complex, and on the other end, they may develop overcompensating strategies. While one response style is seemingly passive and the other proactive, they both are still fear-based; inferiority and overcompensation prevent individuals from moving toward the goals of life (e.g., work, love, social relations, being, belonging) and instead lead to pathological conditions. An individual who is fearful will likely struggle to cope with challenges effectively in numerous ways, facing obstacles “with blaming, wishful thinking, self-centering, double mindedness, competition, [...] and other methods that create a need for undue attention, power struggles, revenge, or depression” (Yang, Milliren, & Blagen, 2010, p. 8). The movement from timidity to creative engagement, according to an Adlerian framework, will be fraught with problems if an individual lacks courage, and overcompensation to inferiority often breeds perfectionism. The perfectionistic strategy

necessarily leads to frustration, resulting in antisocial strategies such as “defying authority and power or seeking other immediate goals less approved by society” (Yang, Milliren, & Blagen, 2010, p. 9). Both inferiority and overcompensation strategies preclude healthy resolution or growth; the individual with an inferiority complex undercompensates and feels helpless, while the individual who overcompensates feels insecure about losing status.

Contemporary courage studies have benefited from Adler’s legacy of identifying courage as a core virtue for wellness. Operationalizing courage for research, however, has been the subject of much debate in contemporary courage studies. One problem is that many different types of courage have been identified, including physical, moral, psychological, and vital courage. These variants of courage are related yet distinct, and represent unique facets of courage. Physical courage is often conceptualized as being actualized on a battlefield or in a crisis, manifested in acting in a value-centered way at the risk of death or physical harm to self (Rate, 2010). Moral courage is the constitution and composure in the face of fear to engage in behavior that is consistent with one’s values, even at risk of being socially ostracized (Lopez O’Byrne, & Petersen, 2003; Putman, 1997; Rate, 2010). Moral courage is often found in archetypes of social movements. Within the civil rights movement, Martin Luther King Jr. and Rosa Parks are considered icons of moral courage. Psychological courage is the ability to face illness or injury, both psychological and physical, with vitality and perseverance (Lopez, O’Byrne, & Petersen, 2003; Rate, 2010). Psychological courage is embodied in individuals with chronic conditions that have to face arduous treatment or rehabilitation regimens, or need to adapt to new realities brought about by their sickness (Haase, 1997). Vital courage is

defined as striving for life in the face of illness (Haase, 1997), and creating a more meaningful, vibrant life hampered by less regret (Finfgeld, 1999). Psychological and vital courage are particularly similar constructs; psychological courage involves having resilience in the face of adversity while vital courage involves imbuing one's life with energy and positive perspective taking. Psychological and vital types of courage have been conceptualized by Putman (2003) as a willingness to face one's own maladaptive patterns (intrapersonally and/or interpersonally) and self-destructive habits. It is these types of courage that clinicians strive to evoke in their patients, whether it is in facing trauma, engaging in positive health behaviors, or communicating more effectively in their relationships.

Beyond identifying these types of courage—physical, moral, psychological, and vital—there has been extensive debate as to the exact components of courage. Rate (2010) conducted a study in which he tested a parsimonious definition of courage, comprised of three necessary variables: (a) courageous behavior is chosen and not coerced (b) it is done for a noble purpose, and (c) the behavior is attempted or accomplished in the face of risk to the individual. By this definition, fear is not a necessary component of courage, which is contrary to classic definitions of courage. The presence of risk, in Rate's definition, is an adequate substitute for fear. Unsurprisingly, there is significant disagreement with Rate's definition, and many have argued the presence of courage necessitates the presence of fear. In analyzing courage on the battlefield, for instance, McGurk and Castro (2010) showed that the presence of fear is appropriate and necessary. They write: "Fear in combat is normal and healthy and helps ensure that service members (soldiers, marines, sailors, and airmen) and leaders do not

take unnecessary risks that might result in loss of lives” (p.168). In other words, fear in battle serves as a necessary instrument of discernment, beyond the more abstract notion of risk.

Nevertheless, while disagreement exists as to the exact parameters of courage, a comprehensive definition of courage seems to be emerging from the extant literature (Pury, Lopez, & Key-Roberts, 2010). There is consensus that courage involves a purpose or goal that is worthy to be pursued in the face of opposition. This opposition involves risk or a threat that may or may not produce fear. Finally, the ability to act despite this opposition likely involves some self-efficacy or internal locus of control—the courageous individual will experience in their self the ability to affect his or her environment.

*Defining the virtue of courage for the current study.* According to Peterson and Seligman, (2004), courage is one of six core virtues—the others being wisdom, humanity, justice, temperance, and transcendence—that are ubiquitous throughout major religious and philosophical traditions. In defining courage, they borrow from Putman (2004) and include core aspects or manifestations of courage—physical, moral, psychological, and vital. They see courage as being a virtue evidenced in both behaviors but also in an internal disposition; courage “has an inner life as well as an outer one” (Peterson & Seligman, 2004, p. 36). Peterson and Seligman classify virtues as being comprised of numerous character strengths. They define courage as the will to accomplish goals despite external or internal opposition through the character strengths of the bravery, persistence, integrity, and zest (Peterson & Seligman, 2004).

According to Peterson and Seligman, courage can be understood as an aggregate of bravery, perseverance, honesty, and zest. These strengths map on to the different facets

of courage (i.e., physical, moral, psychological, vital). Bravery is the ability to act according to what one needs to do in the face of fear often through physical courage. Although this strength is often recognized and praised in warfare, and associated with a traditionally masculine archetype, bravery can also be manifested in the face of social and moral resistance (Peterson & Seligman, 2004). Persistence is defined by Peterson and Seligman as the “voluntary continuation of a goal-directed action in spite of obstacles, difficulties, or discouragement” (2004, p. 229). Persistence, synonymous with perseverance or industriousness, contributes to the construct of courage by adding a dimension of fastidious dedication to one’s goals or values. Honesty, also known as authenticity or integrity, is defined as “a character trait in which people are true to themselves, accurately representing—publicly and privately—their internal states, intentions, and commitments” (Peterson & Seligman, 2004, p. 249). The final ingredient of courage is zest. Also known as vitality or vigor, zest is defined as being full of life, energy and enthusiasm—both mentally and physically (Peterson & Seligman, 2004, pp. 273-274). An individual who has zest possesses a positive energy that can enhance the moment. This conceptualization of courage and concomitant character strengths is notable for its complexity and how the character strengths map on to subtypes of courage. Other courage researchers, however, have developed more parsimonious definitions of courage, with accompanying psychometrically robust measures for courage.

Woodard and Pury (2007) developed a courage scale that includes core elements of Peterson and Seligman’s character strengths, but they used factor analysis to identify courage subtypes. They defined courage as “the voluntary willingness to act, with or without varying levels of fear, in response to a threat to achieve an important, perhaps

moral, outcome or goal” (2007, p.136). They identified four subtypes of courage—work/employment, religious/patriotic, social-moral, and independent courage. The work/employment type of courage involves engaging in behavior at work (i.e., taking part in a work conflict), or taking a vocational direction (i.e., publish a work despite criticism), that doesn’t rely on playing it safe or remaining comfortable. Religious or patriotic courage involves taking a stand at the risk of one’s life for higher religious and patriotic ideals, perhaps in war or to resist religious oppression. Social-moral courage involves acting in a way that one believes is moral, risking social rejection, material cost, or physical danger. Independent courage is acting altruistically toward others in need (e.g., rescuing pet in burning house, intervening in abusive family, giving up material goods) or resisting oppressive forms of authority (e.g., hiding Jews during the Holocaust). Independent courage requires an individual to set aside their own needs in service of helping others who are vulnerable. These four types of courage contain aspects of the moral, physical, psychological, and vital forms of courage that have been identified in previous literature (Lopez, O’Byrne, & Petersen, 2003; Putman, 1997; Rate, 2010).

This study will examine courage defined by Woodard and Pury (2007). It includes being willing and having the ability to act toward an outcome consistent with one’s morals or goal. These facets of courage include but surpass individual acts of bravery seen on the battlefield, and span physical, moral, psychological, and vital domains. While fear may or may not be a component of this view of courage, the presence of threat is a necessary component within this definition.

***Courage is associated with reduced somatic arousal.*** While courage has been hailed as a hallmark virtue of wellness throughout numerous philosophical and religious

traditions, the hypotheses of the current study aim to understand the impact of courage on somatic symptoms. The relationship of courage to the somatization phenomenon is paradoxical in that courage requires an engagement of risk or threat, and often involves fear. Particularly in the short term, courage often brings individuals in contact with challenges that are stressful and as such, it is physiologically arousing. Courage, therefore, may not eliminate fear or associated somatic symptoms, but instead limit or temper the physiological reality experienced when acting under stressful situations.

That courage serves to temper physiological reactivity is precisely what Cox et al. (1983) found in a study of bomb-disposal operators. Two groups were contrasted: the first group was comprised of bomb-disposal operators who received awards of valor and they were compared with the second group comprised of bomb-disposal operators who did not receive awards of valor. Both groups were given a performance task that had a threat of shock if done improperly. The participants who had been recipients of awards of valor exhibited lower cardiac rates, as compared to non-decorated operators, during a test that naturally elicited stress. This study supports the theory that courage reduces physiological arousal in stressful situations.

Another novel study examining the relationship of courage to health outcomes was conducted by Nili et al. (2010). This study utilized fMRI technology to test the neuro-correlates of courage, which were defined as the ability to act in the presence of fear. The study asked its participants who were hooked up to an fMRI machine to control the movement of a live snake (affixed to the top of a box) on a conveyer belt in close proximity to their head. Some participants were able to bring the snake close to their head despite reporting subjective fear, while other participants succumbed to their fear and

moved the snake away from their head. The researchers found that overcoming the fear was a function of the participants' ability to dissociate between the self-reported subjective fear levels and somatic arousal as measured by skin conductance response. Pertaining to brain activation, participants who were able to follow through with the snake task despite their fear, evidenced activation of the subgenual anterior cingulate cortex and the right temporal pole. Additionally, when participants acted courageously by bringing the snake close to their head despite a fear of snakes, bilateral amygdala activation was attenuated. The increase of subgenual anterior cingulate cortical activity with the decrease in amygdala activation was inverted for subjects that were unable to overcome their fear. The investigators in the study concluded that the subgenual anterior cingulate cortex was implicated in courageous activity, and was foundational for participants to have the mental effort to overcome their fear. This study supports the hypothesized direct effect of the current study, that is, individuals with courage may experience a reduction in somatic arousal despite the presence of risk or fear.

***Courage Predicts increased Psychological Well-being.*** Courage is a virtue that has been emphasized throughout history, across virtually all religious and philosophical traditions. Courage is one of many virtues associated with living a good life or flourishing. In a study of undergraduate college students, Keller et al. (2012) found that the presence of courage was associated with higher levels of PWB. PWB is a construct that emphasizes personal meaning and self-actualization. Ryff (1995) developed a measure of PWB that is comprised of six subscales that represent core components of PWB: self-acceptance, positive relationships, autonomy, environmental mastery, purpose in life, and personal growth. PWB has been linked to many positive health outcomes, including better neuroendocrine regulation, improved immune functioning, lower cardiovascular risk,



improved sleep, and enhanced neural circuitry (Ryff & Singer, 2008; Ryff, Singer, & Love, 2004; Urry et al., 2004). Additionally, individuals who report low levels of PWB are more likely to be depressed (Rafanelli et al., 2000; Fava & Mangelli, 2001) and exhibit a lower quality of life evidenced by the presence of anxiety and affective disorders (Rapaport, et al., 2005).

### **Psychological Well-being.**

*Eudemonic and Hedonic Views of Wellness.* Virtues, according to Fowers (2012), “are simply the character strengths that make it possible to pursue what is good” (p. 16). This begs the question, however, as to what is meant by the “good.” Elshtain (1986) points out that for the Greeks, virtues were developed in a society where war was the normal state of affairs. Hauerwas (1993) has posited that courage is problematic if in service to a corporate body or larger cause that belies one’s convictions about the “good.” For instance, a soldier may seemingly show courage in battle by risking life to fulfill a mission, but war may not be in service to an end consistent with that soldier’s religious or philosophical belief system. Therefore, this action that seems courageous on the battlefield would not meet the criteria for courage. While expounding on ethical issues concerning civic duty is beyond the scope of this study, it does highlight the intractable relationship between virtues and a worthy “good.” It is this question of what is good that is at the heart of the debate about wellness.

Psychological research often lacks overt articulation about what is good or what constitutes wellness. Fowers (2012) posits that psychologists are often too concerned with scientific legitimacy and being objective to overtly discuss virtues and wellness. Frank conversations within psychological research about what constitutes wellness is often avoided, while covert values such as “autonomy, efficacy, and positive affective

states” are often promoted (2012, p. 10). Fowers argues that these constructs “clearly represent an unreflective commitment to a particular vision of the human good” (2012, p. 10). These goods—autonomy, efficacy, and satisfaction—are qualities promoted within Western culture. These are goods that fit with individualism and instrumentalism, but within psychology all-too-often get packaged as objectivity (Fowers, 2012; Richardson et al., 1999). The vision of the self and of the good life conceptualized within modernity often capitulates to dominant systems within modernity such as capitalism and human rights.

There is, however, fruitful and reflective debate among wellness researchers within psychology who understand the importance of articulating a vision of the good. Two major constructs of psychological wellness, with competing visions of the good, have emerged with disparate views of flourishing—psychological well-being (PWB) and subjective well-being (SWB). PWB, a construct developed by Ryff, is a multidimensional construct of wellness comprised of six factors—autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance (Ruini et al., 2003; Ryff, 1989). Ryff’s PWB does not include subscales of positive affect but rather includes dimensions that focus on meaning, purpose, and authenticity. SWB is a construct developed by Diener and Zeaman (1984) that is comprised of 3 factors—life satisfaction, the presence of positive mood, and the absence of negative mood. SWB is also understood to be how an individual appraises his or her own life. “This evaluation can be in terms of cognitive states such as one’s marriage, work and life, and it can be in terms of ongoing affect” (Diener, Sapyta, & Suh, 1998, p.34). Ryan and Deci (2001) have pointed out that these two constructs have been the subject of much debate in

contemporary psychology, and both trace their conceptualizations to philosophical traditions in antiquity.

PWB is considered an eudemonic construct of wellness, but the translation of *eudaimonia* has been the source of much debate among psychologists studying wellness. While many have translated *eudaimonia* as happiness, much contemporary wellness research has preferred the notion of flourishing because happiness doesn't capture Aristotle's emphasis on living a meaningful life (Fowers, 2012). Ryff (1989) argues that the mistranslation of *eudaimonia* as happiness has created a body of research that reduces Aristotle's view of wellness to positive affective states. A closer reading of Aristotle's work, Ryff argues, is that *eudaimonia* is the ideal life rather than simply a life of pleasurable or positive affect (1989). In fact, Aristotle emphasizes the inadequacy of seeing flourishing as simply happiness, specifically "disabuse[ing] the reader of the idea that happiness consists of satisfying appetites, [...] or of money-making, or political power, or even amusement and relaxation [...]" (Ryff & Singer, 2008, p. 16). The goal of wellness for Aristotle was not to feel the best, but to strive toward being the best. Waterman (1993) underscores this point in stating that *eudaimonia* is the path toward fulfilling one's true or authentic self, known as one's *daimon*. "The *daimon* refers to those potentialities of each person, the realization of which represents the greatest fulfillment in living of which each is capable" (1993, p. 678). Waterman points out that the concept of *daimon* is a type of authenticity that cannot be bifurcated from *eudaimonia*. In fact, it is in striving "to live in accordance with the *daimon*, to realize those potentials (self-realization), [that] give rise to a condition termed *eudaimonia*" (1993, p.16). Eudaimonia, therefore, does not connote positive affect, per se, but rather a

type of life distinguished by goals that are honorable and pursued virtuously (Fowers, 2012).

SWB, contrary to psychological well-being, is a hedonic conceptualization of happiness; a person with SWB is one who experiences more pleasure and desirable affective states. This hedonistic approach to well-being also has philosophical roots in antiquity, specifically Aristippus, who argued for understanding happiness as maximizing pleasurable states (Ryan & Deci, 2001). Psychologists who have taken a hedonistic approach to wellness conceive of hedonism as not just pleasurable physical states but instead spanning all components of a person's life, whether it is an internal disposition or in external domains such as relationships and vocation. Diener, Sapyta, and Suh (1998) have argued in their critique of PWB that to remove subjective experience from well-being takes the individual away from his or her own understanding of self. They concede that many people, but not all, value the PWB dimensions of wellness. However, Diener, Sapyta, and Suh (1998) do view PWB to be a related construct of wellness to SWB. While there has been much debate in the literature between psychologists who take a eudaimonic versus hedonic view of wellness, the two views of wellness are essentially related. Ryff's PWB does not include positive affect states in its definition, but moderate correlations between PWB and SWB have been found; PWB is also often found to be correlated with positive affective states (Ryff & Singer, 1998). Additionally, Diener, Sapyta, and Suh (1998) state that "characteristics such as health and mastery listed by Ryff and Singer are some of the traits that may lead to this end. Thus, in the search for positive well-being, subjective well-being is essential" (p. 34).

The current study will examine wellness as understood within the construct of

PWB. While PWB is limited insofar as it does not include the presence of positive affective states, this construct has been shown to be associated with positive affective states. Furthermore, the design of the current study will measure somatization—a phenomenon related to negative affect.

***Ryff's Scale of Psychological Well-being-54.*** Ryff (1989) developed the construct of PWB within the Aristotelian tradition of *eudaimonia*, integrating numerous psychological and philosophical traditions. Six core dimensions of PWB were identified in developing this construct—self-acceptance, positive relationships with others, personal growth, purpose in life, environmental mastery, and autonomy. Each dimension of PWB is supported by numerous psychological and philosophical theories (Ryff & Singer, 2008). The *self-acceptance* dimension draws from seminal features of humanistic psychology such as Maslow's self-actualization (1968), Rogers' optimal functioning (1962), and Allport's notion of maturity (1961). Additionally, *self-acceptance* has a developmental component, and Ryff and Singer (2008) credit the work of Erikson (1959), Neugarten (1973), and Jung (1933) in understanding this component of wellness. *Positive relations with others* is a dimension that is emphasized in humanist and development psychology; Ryff and Singer (1998) have emphasized that nearly all cultures value positive relationships. The dimension of *personal growth* builds on traditions of humanistic and life-span or developmental theories. The *purpose in life* dimension draws on the philosophy and psychology of existential theories, namely the work of Frankl (1985), as well as the emphasis of existential beliefs, purposes and goals in the work of such individuals as Jahoda (1958) and Allport (1961). *Environmental mastery* is a dimension of psychological well-being that also borrows from Jahoda and

Allport, with their emphases on individual freedom and extending one's self into an external task, respectively. The final dimension of psychological well-being, *autonomy*, draws from humanist, Jungian, developmental psychologies, and existential philosophy in emphasizing living authentically even in spite of one's environment (Ryff & Singer, 2008).

***Psychological Well-being Predicts Positive Health Outcomes.*** PWB is a construct associated with holistic health and functioning, and is correlated with better mental and physical health. Ryff and Singer (2008) have argued that the presence of positive health outcomes legitimates the concept of psychological well-being.

“[I]f eudaimonic well-being truly is the right way to live, presumably it will benefit their health, both in terms of health behaviors (e.g., those experiencing self-realization may take better care of themselves), but also with regard to neurobiological processes that underlie their phenomenological experiences of growth and development.” (p.31).

Various dimensions within Ryff's psychological well-being scale have been shown to be correlated with positive health outcomes. For instance, higher life purpose was associated with lower musculoskeletal inflammation; higher environmental mastery, positive relations with others, and self-acceptance was associated with glycosylated hemoglobin (Ryff, Singer, & Love, 2004); and personal growth and purpose was associated with higher HDL cholesterol, reducing the risk of heart disease. PWB has also been found to be associated with better sleep, with numerous dimensions of psychological well-being associated with healthy sleep patterns (Ryff, Singer, & Love, 2004).

Lewis et al. (2013) conducted a study specifically linking PWB with structural brain functioning. In analyzing structural magnetic resonance images of 70 healthy young adults, they found a positive correlation between right insular cortical volume and three PWB dimensions—*personal growth*, *positive relations with others*, and *purpose in life*. This increased volume of gray matter is theorized to increase the capacity for individuals to engage with complex psychological tasks associated with PWB as they relate to emotional states. Indeed, the “insula cortex may facilitate eudaimonic well-being by generating a set of capacities which jointly act to integrate interoceptive states with external circumstances, and successfully manage this emotional milieu” (Lewis et al., 2013, p. 11).

Urry et al. (2004) found that all dimensions of psychological well-being except *autonomy* were associated with neuropsychological correlates that indicate wellness. For instance, left superior frontal activation was found in individuals with higher levels of PWB. This neural pattern has shown to be protective from depression. Other studies (Fava & Mangelli, 2001; Rafanelli et al., 2000) have supported the finding that the presence of PWB is protective against depression.

PWB has also been shown to reduce somatic arousal. PWB was found to be associated with better neuroendocrine regulation in older women, using cortisol as a biomarker (Ryff, Singer, & Love, 2004). In women with higher PWB, lower cortisol levels were found at the beginning of the day and remained low throughout the day, indicating that these subjects experienced less stress and health outcomes associated with stress (Ryff, Singer, & Love, 2004).

### **Somatic Symptoms**

Biological health is bidirectionally related to psychological health or wellness. One

critical interface between biological and psychological health is the presence of medically unexplained symptoms. Kirmayer et al. (2004) found that the most common medically unexplained symptoms for men and women include: musculoskeletal pain; abdominal pain or other GI symptoms; ear, nose, and throat symptoms; fatigue; and dizziness. In addition to these symptoms, men also report urogenital symptoms. Somatic symptoms appear to be relatively common in the population. In Kirmayer et al.'s (2004) sample, 10.5% of the total number of respondents reported somatic symptoms over the previous year.

A common cause of medically unexplained symptoms is the somatization phenomenon, where an individual's emotional pain and stress is transferred to physical symptoms and thus manifested in medically unexplained symptoms. Somatization has been found to be a transcultural phenomena, with significant individual and social implications (Gureje, Simon & Ustun, 1997). On an individual level, somatic symptoms are often the byproduct of anxiety and mood symptoms. Medical treatment is typically sought out because somatic symptoms are causing discomfort; pain typically leads individuals to seek medical treatment. However, many individuals with medically unexplainable symptoms often leave the doctor's office without ascertaining a better understanding of their condition, whether it is biological or psychological (Jackson & Kroeke, 2006). Kroenke and Harris (2001) found that 70% of patients seeking medical treatment at primary care settings did not receive a diagnosis and therefore also did not receive a treatment plan.

***The financial burden of somatic symptoms.*** Individuals reporting somatic symptoms create a significant burden on healthcare systems throughout the world because they are more likely to miss work or be at risk for disability (Gureje et al., 1997). While estimates vary as to the financial impact of unexplained medical symptoms, Barsky et al. (2001) found individuals reporting high levels of somatization and hypochondriacal health anxiety were a



significantly greater financial burden as compared to individuals who did not report these symptoms, even after controlling for sociodemographic and medical comorbidity.

Furthermore, they found that individuals identified as having somatization and health-related anxiety were a greater burden on the health care system the year before and after they were identified in a primary care setting. The year prior to being identified by this study, these individuals were more likely to visit the doctor (i.e., 9.21 times versus 6.33 times) and were more likely to have higher medical costs (i.e., \$1,312 versus \$954). Somatization patients were also found one year later to more likely to visit the doctor (i.e., 9.8 versus 7.2 doctor visits), more likely to be hospitalized (i.e., 24% to 17% chance), and on average reported higher medical costs (i.e., \$1,395 versus \$1,195).

***Psychosocial factors contribute to somatic symptoms.*** Unexplained somatic symptoms have often been understood as physical manifestations of psychological conditions, but the complex somatization phenomenon has been understood differently through various biomedical and psychosocial theories (Gureje et al., 1997). Barsky and Borus (1999) have described diseases with no tissue abnormality associated with the condition as functional somatic syndromes. These syndromes may include chronic illnesses such as fibromyalgia, chronic fatigue syndrome, and food allergies. Employing a psychosocial approach, they describe these syndromes as “exacerbated by a self-perpetuating, self-validating cycle in which common, endemic, somatic symptoms are incorrectly attributed to serious abnormality, reinforcing the patient’s belief that he or she has a serious disease” (Barsky & Boris, 1999, p. 910). This cognitive and behavioral understanding of chronic illness contains an emphasis on attributions, specifically catastrophic interpretations of physical symptoms. Catastrophic interpretations (such as attributing chest pain to having a heart attack) exacerbate anxiety and anxiety-related

somatic symptoms, which then reinforce the cognition that one is seriously ill. This cycle is also reinforced by *illness behavior*, or how individuals behave based on their evaluations of their symptoms (Mechanic & Volkart, 1960).

Barsky and Boris (1999) noted four main psychosocial factors that amplify somatic symptoms: the belief that one is sick; future expectations and the role of suggestion; the sick role; and stress and distress. The belief that one is sick trains the patient to interpret his or her symptoms with more severity, and report symptomology and a decrease functioning. As Barsky and Boris (1999) state, “the more convinced patients with functional somatic syndromes are that their symptoms are serious and pathologic, the more intense, prolonged, and disabling the symptoms become” (pp. 914-5). Future expectations and the role of suggestion amplifies symptoms because a patient’s expectancies are skewed toward belief that the future will involve sickness. The sick role is a concept that involves the possibility of secondary gain by a patient for being sick, such as disability or unemployment compensation. This psychosocial factor also includes attributions by others toward the patient, that is, family and health professionals treating them like someone who is, and who will be, ill. The final psychosocial factor, stress and distress, includes stress common to daily living as well as stress due to major life events. Barsky and Boris (1999) summarize the impact of stress on somatic symptoms as follows:

“Stress amplifies symptoms in two ways. First, because stress is widely known to be pathogenic, persons under stress are quicker to ascribe ambiguous bodily symptoms to disease rather than to attribute them to normal physiology, as they might otherwise do. Second, external stressors induce anxiety and depression,

which have their own somatic and autonomic concomitants” (p. 916).

Relevant to the trajectory of this study, adaptive coping related to internal and external experiences will reduce the prevalence of getting sick and increase immune functioning (Kirmayer et al., 2004). Understanding how to reduce amplification of symptoms leads to less burden on the health care system. Additionally, more effective coping reduces suffering for patients, increasing self-efficacy and preventing symptoms from compounding.

***Measuring somatic symptoms.*** In the present study, somatic symptoms will be identified with the Modified Somatic Perception Questionnaire (MSPQ; Main, 1983). The MSPQ is a measure of *perceived* somatic symptoms and includes common physiological symptoms associated with somatic disorders. In total, there are 13 somatic symptoms included in this measure: feeling hot all over, sweating all over, dizziness, blurring of vision, feeling faint, nausea, pain or ache in the stomach, stomach churning, mouth becoming dry, muscles in neck aching, legs feeling weak, muscles twitching and jumping, and tense feeling across forehead (Main, 1983). These symptoms include many of somatic complaints that Kirmayer et al. (2004) identified as most common to primary care settings—musculoskeletal pain, abdominal pain, gastrointestinal pain, fatigue, and dizziness. The MSPQ has been shown to be correlated with depression and anxiety, and thus the lower the perceived somatic symptoms, the more likely an individual is to be both psychologically and physically healthy (Main, 1983). The presence of somatic symptoms in this study is the dependent variable. This study will explore whether the independent variables of courage (i.e., predictor variable) and PWB (i.e., mediator variable) lead to positive health outcomes in the form of lower perceived somatic

symptoms.

**Measuring somatic symptoms at three time points.** Somatic symptoms may arise from beliefs, expectations, social roles, and stress (Barksy & Boris, 1999). The source of somatic symptoms differs with each person. An individual may report subjective somatic complaints because of persistent and trait-level somatization or temporal or state-level somatization. When an individual is somaticizing, he or she is amplifying physical symptoms. This amplification may stem from trait or state types of somatization (Barksy et al., 1988). Trait somatization can be caused by a genetic predisposition interacting with early attachment figures and significant developmental experiences to create a personality prone to somaticizing; state type somatization is influenced by the temporal emotions and physiological arousal within any given context (Barksy et al., 1988).

The purpose of this study is to understand how courage predicts somatic symptoms. Somaticizing involves the amplification of physical symptoms that may be due to a transient state (i.e., due to mood or physiological arousal) or a persistent trait (i.e. due to temperament and developmental experiences). This study measures subjective somatic complaints at three time points—baseline, two weeks after baseline, and six weeks after baseline. Collecting data at three time points may differentiate whether courage can predict lower somatic complaints in a stable manner at different time points.

***Courage predicts somatic symptoms through PWB.*** Courage is the ability to behaviorally actualize one's core values, despite the presence of risk or threat. A behavior that is not yoked to purpose or meaning, therefore, is not courage (Rate, 2010). PWB is a wellness construct that involves meaning, purpose, and authenticity (Ryff, 1989).

Courage and PWB—predictor variables in this study—are indelibly linked. PWB is the hypothesized mediator variable in the indirect effects models in this study. Courage has been shown to predict PWB (Keller et al., 2012), and PWB has been associated with a reduction in somatic symptoms such as physiological arousal (Ryff et al., 2004). PWB is hypothesized to partially explain why increased courage would reduce somatic symptoms because it is a construct of meaning and purpose, key ingredients to courageous action. While individuals may be able to take action in scenarios that might be seen as courageous, if they don't have PWB (e.g., authenticity, sense of purpose, connection with others), they will not be able to fully actualize courage (which requires connection to sense of purpose). In this study, participants with high levels of PWB are hypothesized to benefit more from courageous action because their ability to act in the face of risk or fear is grounded through a larger purpose or sense of meaning. Therefore, PWB is hypothesized to be a key mechanism through which an increase in courage would reduce somatic symptoms.

**Summary of literature review.** The study of wellness in psychology has been an enduring, although sometimes tertiary, focus of research throughout the history of psychology. Over the past 15 years the field of PP has renewed an interest in wellbeing, with emphases on positive traits and constructs of wellness. PWB is a wellness construct particularly consonant with the emphases of the Adler, Maslow, and Rogers, as it is comprised of a holistic approach to wellness that emphasizes meaning and actualization.

The history of psychology and the philosophical and religious traditions from which it draws emphasize virtues, or positive traits, as central to living a good and meaningful life. Courage, a virtue emphasized throughout the history of Western thought,

has been the topic of growing interest in contemporary psychological research. It is a virtue that emphasizes the ability to overcome fear or threats, internally and externally, toward virtuous ends. The presence of courage has been shown to be predictive of psychological well-being, though assessing related health outcomes as manifested by somatic symptoms has yet to be explored.

Somatization disorders, or medically unexplained symptoms, are phenomena related to mental health issues that create significant personal distress and financial burden. Typical somatic symptoms—such as stomach pain, dry mouth, and headaches—compound physical symptoms and leave individuals with neither a clear understanding of their condition, nor a clear treatment plan to reduce their symptoms. Due to the social, psychological, and financial toll of somatic symptoms, understanding protective factors to reduce these symptoms may decrease both suffering and the financial toll caused by somatization disorders. Somatic symptoms, however, are often temporal. Therefore, measuring somatic complaints at numerous time points is needed to establish a meaningful relationship between courage, PWB and somatic symptoms.

### **Hypotheses**

Understanding the relationship between virtues, wellness, and somatic symptoms has important implications for individuals, relationships, and society. The present study examined two hypotheses in indirect model analyses. The first hypothesis was that higher courage scores would be associated with lower somatic symptom scores. The second hypothesis was that an indirect effect between courage and somatic symptoms would exist through PWB. Courage was hypothesized to predict higher PWB, and higher PWB was hypothesized to predict lower somatic symptoms. In other words, PWB would

partially explain the relationship between how an increase in courage may decrease somatic symptoms.

Five indirect effects models were conducted; three models were cross-sectional while two models measured prospective change. In all models, somatic symptoms were included as a dependent variable. The three cross-sectional indirect effect analyses were conducted using somatic symptoms as a dependent variable at baseline, two week, and six week time points. Two additional indirect effects analyses were conducted to measure residual change in somatic symptoms, using somatic symptoms at two week and six week time points as the dependent variables. In the residual change models, somatic symptoms at baseline was included in the model as a control variable. In total, five indirect effects models were conducted. All models are illustrated in figures 1.1 and 1.2.

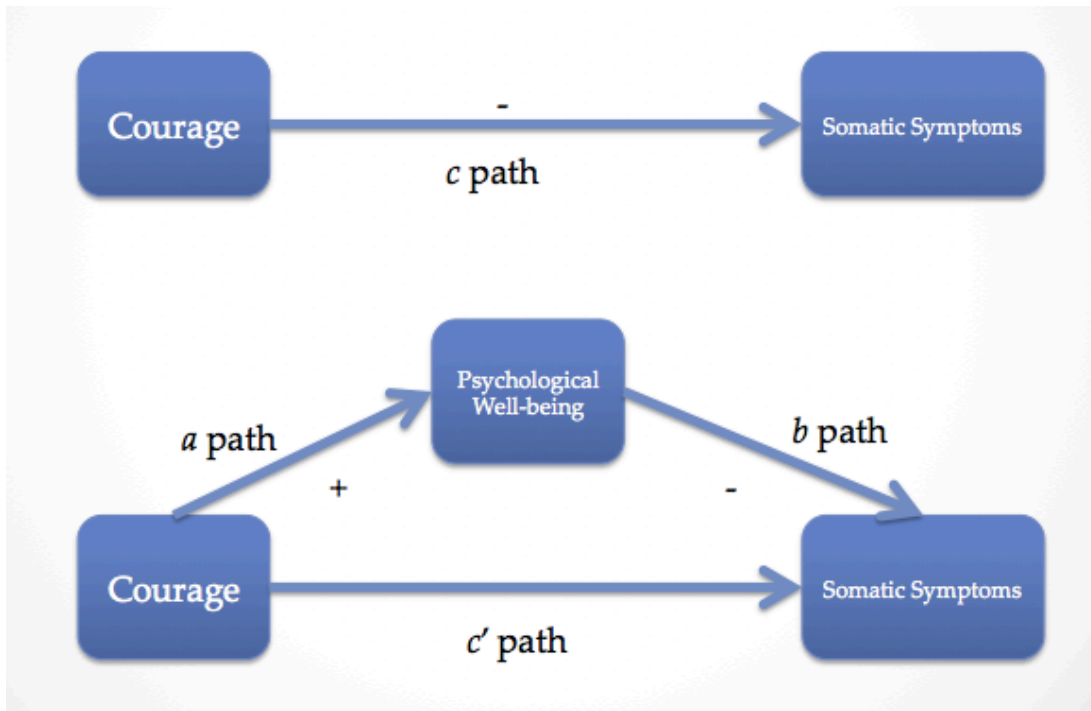


Figure 1.1 Proposed indirect effects model.

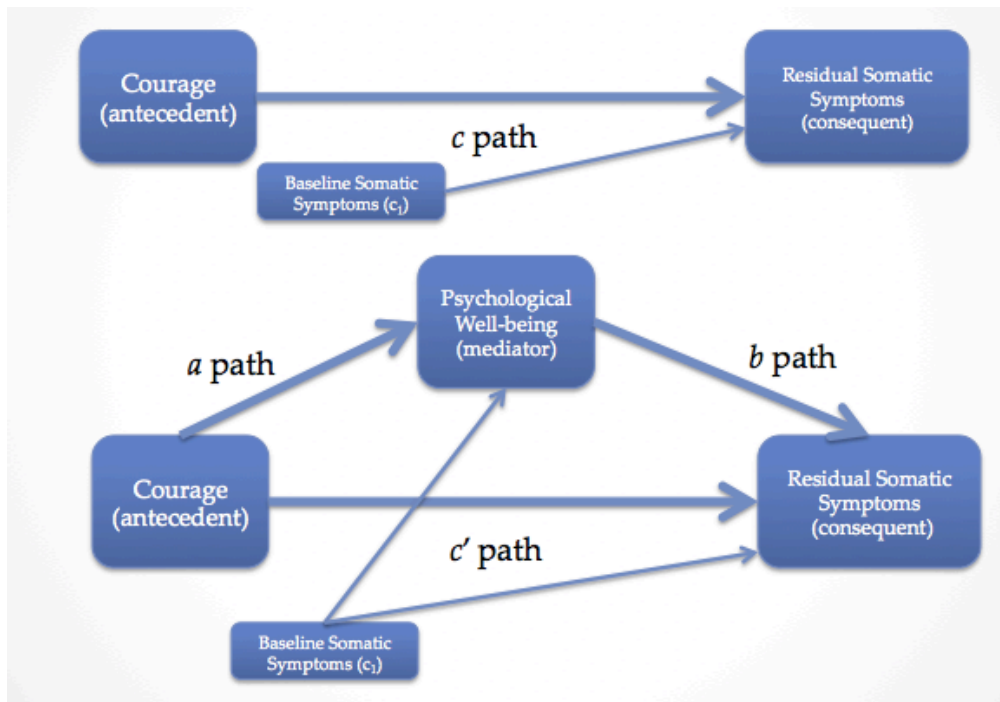


Figure 1.2 Proposed residual change indirect effects model.



## **CHAPTER II: Method**

### **Participants**

This study examined the relationship between courage, PWB, and somatic symptoms in a broad population. Adult participants were recruited online drawing from a diverse participant pool available through an online program called Mechanical Turk. Mechanical Turk enables businesses and individuals to utilize humans to complete tasks that computers cannot provide; a task of this nature is known as a Human Intelligence Task (HIT). These HITs are conducted by individuals who have signed up to participate in online tasks, in this case serving as participants for a survey, and who are then compensated monetarily. In the current study, participants were paid \$1.00 through Mechanical Turk's compensation program to complete this initial baseline test, with remuneration at each subsequent time-point being offered at \$.75. The Mechanical Turk parameters were offered to all adults of at least age 18.

### **Measures**

Participants recruited through Mechanical Turk completed an online survey comprised of self-report measures through the online software program, Qualtrics. After being given informed consent, participants filled out three measures specific to this study—the Modified Somatic Perceptions Questionnaire (MSPQ), the Ryff Scale of Psychological Well-Being Scale-54 (RSPWB-54), and the Woodard Pury Courage Scale-23 (WPCS-23). There was also a demographic questionnaire that included age, gender identification, race/ethnicity, state, religious beliefs, education level, employment status, household income, and sexual orientation. The descriptions and summary of the psychometric properties of each measure is provided later in this section. Permission to

use each test by the author or publisher is provided in the appendix section.

### **Somatic Symptoms**

The Modified Somatic Perceptions Questionnaire (MSPQ) is a 13-item symptom checklist that measures the construct of somatic awareness (Main, 1983). The participants were asked to rate the frequency of occurrence in the past seven days for each symptom. Items are scored on a four-point Likert-type scale ranging from (0) *not at all* to (3) *extremely/could not have been worse*. The directions instruct respondents to evaluate their experience of somatic symptoms such as “feeling faint,” “nausea,” and “stomach churning” during the past week. A composite score was calculated by summing the values from the 13 scored items; values can range from 0 to 39 with higher scores reflecting greater awareness of somatic symptoms. Main (1983) suggested that scores greater than or equal to four may be used to classify individuals above the normal range, who experience heightened somatic and autonomic perception.

Higher total scores reflect greater levels of somatization. Main (1983) stated that a score of four or above indicates a participant is experiencing a level of somatic symptoms beyond the normal range of autonomic and somatic symptomatology. The MSPQ has been shown to have both sufficient construct and discriminative validity, as well as sufficient internal consistency (Jansson-Frojmark & MacDonald, 2009; Main, 1983). The MSPQ was developed for use with chronic back pain populations (Main, 1983). However, since the development of the MSPQ in 1983, the measure has been used extensively in both clinical and research settings with patients experiencing various health and psychological conditions (Jansson-Frojmark & MacDonald, 2009).

Main’s psychometric evaluation yielded an internal consistency that was slightly

lower for males than females. Using theta to measure internal consistency on a scale of 0-1 (closer to 1 indicating higher internal consistency), Main found theta scores of .78 for males and .83 for females, both considered adequate indicators of internal consistency. In support of Main's finding, Deyo et al. (1989) conducted a psychometric analysis of the MSPQ and found a Cronbach's Alpha score of .78, confirming acceptable internal consistency. In this study the MSPQ was used at three time points. The Cronbach's Alpha at baseline was .84, at two weeks after baseline it was .87, and at six weeks after baseline it was .83. The MSPQ used in this study at three time points, therefore, exhibited adequate internal consistency.

Convergent and discriminant validity has been established using numerous measures (Main, 1983). Using the Minnesota Multiphasic Personality Inventory (MMPI; Graham, 1977), the MSPQ was shown to have large correlations with numerous scales: scale 1 or the hypochondriasis scale ( $r = .61$ ) and scale 2 or the depression scale ( $r = .36$ ) both indicate large correlations. Scale 3, the hysteria scale, indicated a small correlation with the MSPQ ( $r = .03$ ). In using the Zung Depression Inventory, a large correlation was found with the MSPW ( $r = .54$ ). According to Main (1983), these correlations suggest that subjective somatic symptoms indicate the presence of some emotional distress.

### **Courage**

The WPCS-23 (2007) is a 23 item questionnaire that measures two domains associated with courage: willingness to act in challenging situations and anticipated fear experienced to act in those situations. Given the aforementioned evolution of how fear is conceptualized in relationship to courage, the authors of the WPCS-23 now do not factor

in fear scores to measure courage; only willingness to act is used in the scoring of this scale. Willingness to act is scored on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In examining the courage scores, there is no cut-off for having (or not having) courage, but higher scale scores are considered to reflect greater levels of courage. Scale internal reliability in previous studies has been found to range from .68 (Woodard & Pury, 2007) to .78 (Hammer & Good, 2010). In this study, the WPCS-23 had a Cronbach's Alpha of .89, exhibiting adequate internal consistency. The previous version of this scale—Personal Perspectives Survey-31 (Woodard, 2004)—demonstrated robust construct validity and was significantly correlated with another courage scale by Schmidt and Koselka (2000).

### **Psychological Well-Being**

The Ryff Scale of Psychological Well-Being-54 (RSPWB-54; Ryff, 1989) measures the construct of PWB and is comprised of six subscales: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The 54-item scale consists of nine items per each of the six dimensional scales. Each item is rated on a 6-point scale ranging from (1) *Strongly disagree* to (6) *Strongly agree*. Sample items include: “My decisions are not usually influenced by what everyone else is doing” (autonomy), “Most people see me as loving and affectionate” (positive relations with others), and “I enjoy making plans for the future and working to make them a reality” (purpose in life). The scale contains 28 reverse-scored items. Once the appropriate items are reversed scored, all items are summed together to create a total score. Higher scores reflect higher levels of psychological well-being. The RSPWB-54 has been widely used, and demonstrates robust reliability and

validity (Ryff & Singer, 2003). In this study RSPWB-54 was administered once at baseline; the RSPWB-54 had a Cronbach's Alpha score of .97, indicating excellent internal consistency.

### **Procedures**

Participants were recruited through Mechanical Turk. Interested individuals signed up for this study through Mechanical Turk and then were directed to an online survey site, Qualtrics, via a website link. Once the participants had been directed to Qualtrics, they were presented with an informed consent screen. To continue beyond the informed consent page, participants were instructed to click "I agree," confirming that they are at least 18 years old and that they consented to the terms of the study. The informed consent specifically informed participants that: (a) the individual must be at least 18 years old, (b) if the individual does not wish to answer an item it can be left blank, and (c) an individual may quit participation at any time.

Participants who agreed to these terms were presented a demographic questionnaire, as well as items from the WPCS-23, RSPWB-54 (Ryff, 1989), and the MSPQ (Main, 1983). Additionally, participants were given Zung's Self-rated Depression Scale (ZSDS; 1997) and Zung's Self-rated Anxiety Scale (ZSAS; 1971) at all three time points for purposes of establishing convergent and discriminant validity. Once individuals completed these items, they were given a code to enter on the Mechanical Turk website that signaled they had completed the survey. At the end of the survey, participants were informed they would be compensated within 24 hours of completing the survey. Participants are also asked their email addresses to be sent the two follow-up

surveys, two weeks and six weeks after baseline scores are collected. The links to the follow-up surveys were included in follow-up emails to participants.

The investigators collected all data for this study. Data collected from the *Qualtrics* website included participant names and demographic information. The informed consent page asked interested participants to provide an email address to send them future surveys and match survey responses at different time points. Data from *Qualtrics* was transmitted to a password-protected computer, and once all three time points were collected through *Qualtrics*, the data was matched through participants' email addresses and then de-identified (i.e., email addresses deleted) and each participant was assigned a participant ID number.

Demographic data was analyzed for all three data sets. For time point one there were 202 participants, for time point two there remained 142 participants, and for time point three there remained 125 participants. Demographic analysis was conducted from the baseline data. The average age was 38 years old. Of these participants, 57.4% self-identified as male, and 41.6% self-identified as female. The race and ethnicities breakdown of participants included 77% Caucasian, 11% Asian, 7% Hispanic/Latino, 4% Black/African American, .5% American Indian, and .5% Other. In regards to sexual orientation, 93.5% of participants self-identified as Heterosexual, 4% as Homosexual, and 2.5% as Bisexual. Participants also reported their religion, with 28.9% identifying as Agnostic, 21.4% Atheist, 2.5% Buddhist, 16.4% Catholic Christian, 2% Orthodox Christian, 16.4% Mainline Protestant Christian, 2.5% Evangelical Christian, 3% Hindu, 2% Jewish, .5% Muslim, 4.5% Other. Most of the participants reported they had earned a Bachelor's degree (40.6%), with .5% having less than a High School education, 10.9%

obtaining a High School Diploma or equivalent, 25% having completed some college, 1.5% receiving a post-secondary non-degree award, 12% earning an Associates degree, 7.5% having a Master’s degree, and 1.5% reporting having completed a Doctorate degree. Finally, participants were asked their annual household income, with 26.9% reporting \$50,000-\$74,999, 21.9% reported \$25,000 or less, 20.4 reported \$25,000-\$34,999, 15.9% reported \$35,000-\$49,999, 8% reported \$75,000-\$99,999, 6.5% reported \$100,000 to \$149,999, and .5% reported \$150,000-\$199,999. This data is presented in

Table 3.1.

Table 3.1  
Sample Demographic Characteristics

		<i>n</i>	% of sample	<i>M</i>	<i>SD</i>
Age				38	10.47
Gender					
	Female	84	41.6		
	Male	116	57.4		
Race/Ethnicity					
	American Indian/Native American	1	.5		
	Asian	22	10.9		
	Black/African American	9	4.5		
	Hispanic/Latino	14	6.9		
	White/Caucasian	155	76.7		
	Other	1	.5		
Sexual Orientation					
	Heterosexual	186	92.1		
	Homosexual	8	4		
	Bisexual	5	2.5		
Religion					
	Agnostic	58	28.7		
	Atheist	43	21.3		
	Buddhist	5	2.5		
	Christian-Catholic	33	16.3		
	Christian-Orthodox	4	2		
	Christian-Mainline Protestant	33	16.3		
	Christian-Evangelical	5	2.5		
	Hindu	6	3		
	Jewish	4	2		
	Muslim	1	.5		
	Other	9	4.5		
Education					
	Less than High School	1	.5		
	High school diploma or equivalent	22	10.9		
	Some college, no degree	50	24.8		
	Post-secondary non-degree award	3	1.5		
	Associate’s degree	24	11.9		
	Bachelor’s degree	82	40.6		
	Master’s degree	15	7.4		
	Doctoral or professional degree	2	1		
	Other	1	.5		
Annual Income					
	\$25,000 or less	44	21.8		
	\$25,000 to \$34,999	41	20.3		
	\$35,000 to \$49,999	32	15.8		
	\$50,000 to \$74,999	54	26.7		
	\$75,000 to \$99,999	16	7.9		
	\$100,000 to \$149,999	13	6.4		
	\$150,000 to \$199,999	1	.5		

All participants were asked their country and state of residence. A total of 191 participants reported living in the United States. Of the remaining participants, two reported that they lived in Canada, six in India, one in Macedonia, and one in the United Kingdom. Of the participants who reported living in the United States, the top three states where participants reported their place of residence were California (26 participants), Florida (18 participants), and Michigan (13 participants).

### **Power Analysis**

The minimum sample size for this study was determined through an *a priori* power analysis, using G\*Power, a statistical power software program (Faul, Erdfelder, Buchner, & Lang, 2009). In determining the number of participants needed to run the current study, the power analysis included a multiple regression design with a total of two independent variables—one predictor variable and one mediator variable. To determine the required number of participants for a medium effect size, Cohen's  $f^2$  effect size was set at .15,  $\alpha$  (to test for Type I error) was set at the traditional .05 level, and  $\beta$  (to test for Type II error) was set at the traditional .80 level. These levels are suggested by Cohen (1992) for medium effect sizes. According to the G\*Power power analysis, a minimum of 68 participants are needed to adequately power for the current design (hypotheses and analyses) for each of the three indirect effects models. This estimate is almost identical to Cohen's (1992) estimate listed in his article "A Power Primer," where he states that 67 subjects are needed to properly power a regression analysis with two independent variables. Thus, a minimum of 67 or 68 participants were recruited for each time-point in this study.

### **Data Analytic Plan**



The data analysis was conducted with the data analysis software, Statistical Package for the Social Sciences (SPSS), version 19.0. An initial demographic analysis was conducted to distinguish sample characteristics, which indicated a need to control for variables that may confound the findings. Additionally, the data was analyzed for any missing the data, and either removed from the data set or if appropriate, replaced with multiple imputation. To compute an indirect effects analysis, Hayes' PROCESS method was used. This analysis provided a 95% CI for the total indirect effect; a significant indirect effect exists if the 95% CI doesn't include a 0.

While the statistical analysis used in PROCESS is an unmoderated mediation model, the model in this study will not be referred to as a mediation model because the study is not designed to establish mediation, strictly speaking. Mediation involves identifying a causal mechanism, whereas this study involves correlational analyses. Hayes (2013) notes there are three criteria required to establish causation—covariation, temporal ordering, and the controlling for alternative causal explanations. Although this study ascertained somatic symptoms at three time points, it is an observational study, and only establishes covariation. Therefore, the statistical models in this study will be referred to as *indirect effects models*.

### **CHAPTER III: Results**

#### **Data Preparation**

The time point one sample—comprised of 204 participants in total ( $N = 204$ )—was examined for missingness, utilizing an 80% cut-off criteria for completed items (Hair, Anderson, Tatham, & Blac, 1998). Of the 204 initial participants in the time point one dataset who completed the surveys, 2 participants did not complete 80% of the items

and thus were eliminated from the data set. The remaining missing data was addressed through a single imputation (Enders, 2010). Because pooled regression analysis cannot be conducted through PROCESS, just one imputation was used for all regression analyses. Time point two and time point three were also analyzed for missingness and no missing data was found.

Cases were then analyzed for the presence of outliers and case leverage. Outliers were analyzed visually and case leverage was analyzed through Cook's distance, a statistic that measures if the influence of each case on an outsized model. According to Field (2009), a case with a score of over 1 is cause for concern. Cases ranged from .00 to .78, suggesting that all cases could be retained. Through this analysis, it was also concluded that all the cases did not exert an undue influence on the model, and thus were acceptable to retain.

The two week follow-up MSPQ was completed by 142 participants ( $N = 142$ ). All 142 participants completed all of the items on the survey, no missing values were present, and thus this data set did not require using imputed values. The six week follow-up MSPQ survey was completed by 125 participants ( $N = 125$ ). The six week follow-up survey was also examined for missingness, and all participants completed all items on the MSPQ. In the participant responses at this time point there were no missing values, therefore data set did not require imputed values.

According to Field (2009), the primary assumptions of multiple regression that must not be violated include linearity, homoscedasticity, independence, normality, and no perfect multicollinearity. Data was analyzed to discern that these assumptions were not violated at all three time-points.

Linearity simply means that the relationships being examined between predictor and outcome variables are linear ones. This assumption was examined visually, utilizing a scatter plot and best-fit line to verify the relationship is linear. At all three time points, a best-fit line was imposed and indicated that the relationship between predictors and the outcome variable were linear. Additionally, I plotted a graph for all time points with the standardized residuals (y-axis) and standardized predicted value (x-axis) to further examine the assumption of linearity. At all three time points, I concluded that the linearity assumption had been met, as the data points appeared to be evenly dispersed around zero.

Homoscedasticity refers to homogenous variances of the predictor variables. Field (2009) notes that homoscedasticity can be evaluated through creating graphic partial plots, with the regression standardized predicted value on the x-axis and the regression standardized residual on the y-axis. Graphic partial plots were created for all three time points. Upon visual inspection, the data appeared both random and evenly dispersed around zero. Thus, the assumption of homoscedasticity appears to have been met.

Independence refers to the autonomy of the residuals, or errors, between observations (Field, 2009). The Durbin-Watson test is used to assess the data for independence, and the value should lie within 1 and 3 as to not violate independence assumption. For time point one, the Durbin-Watson test produced a statistic of 1.974, which suggests that the data is residually independent. For time point two, the Durbin-Watson test produced a statistic of 2.092, suggesting that the independence assumption was again met. For time point three, the Durbin-Watson test produced a statistic of 1.979, supporting the assumption of independence.

Normality is the assumption that the data sampled will generally follow a normal distribution. This assumption was examined through histograms, Q-Q plots, and tests of normality. At time point one, upon visual inspection of WPCS-23, the histogram showed the data appeared slightly leptokurtic. The Q-Q plot was also inspected visually, and the data appeared to be equally distributed across values close to the diagonal line. The Kolmogorov-Smirnov test of normality was conducted, and produced a significant result ( $p < .05$ ), suggesting the courage data at time point one was non-normal. However, the Kolmogorov-Smirnov test has been shown to be overly sensitive to large sample size, and thus normalcy was examined again through skewness and kurtosis analyses. To be considered a normal distribution, a skewness statistic must fall between -3 and 3, and a kurtosis statistic must fall between -10 and 10. The skewness analysis was -.461 and the kurtosis analysis was .929, thus, both results fell within the acceptable ranges of a normal distribution. The same criteria was used to assess normality for RSPWB-54 and MSPQ. RSPWB-54 was shown to be normally distributed and MSPQ was shown to be non-normally distributed. At time point two and time point three the same processes were conducted to assess for normality. At time point two, both WPCS-23 and RSPWB-54 were normally distributed, and the MSPQ was non-normally distributed. At time point three, both WPCS-23 and RSPWB-54 was normally distributed, and the MSPQ was not normally distributed.

Multicollinearity refers to the relationship between the predictor variables, specifically that the predictor variables should not be too highly correlated. According to Field (2009), VIF and tolerance statistics are both tests that provide necessary analyses to detect multicollinearity. In the current study, all VIF and tolerance analyses indicated

multicollinearity was within expected value ranges. In other words, both the WPCS-23 and the RSPWB-54 at all three time points can be included in the model without risk of multicollinearity.

**Descriptive Analysis**

Descriptive statistics were analyzed for the range, means, and bivariate correlations among study and demographic control variables in the models. Descriptive statistical analyses for all three time points is shown in tables 3.2, 3.3, and 3.4.

**Table 3.2** Time Point One—Means, Standard Deviations, and Bivariate Correlations among Study and Control Variables

	M	SD	MSPQ	RSPWB-54	WPCS-23	Age	Gender	Education	Income
MSPQ	17.59	4.42	1	-.464**	-.175*	-.024	.146*	.003	-.225**
RSPWB-54	223.22	43.26	-.464**	1	.545**	.082	-.065	-.039	.310**
WPCS-23	77.88	14.75	-.175*	.545**	1	.091	-.105	-.099	.145*
Age	35.10	10.47	-.024	.082	.091	1	.128*	.119	.094
Gender			.146*	-.065	-.105	.128*	1	-.028	.038
Education			.003	-.039	-.099	.119	-.028	1	.208**
Income			-.225**	.31**	.145*	.094	.038	.208**	1

Note. SD = Standard Deviation. MSPQ = Modified Somatic Perception Questionnaire. RSPWB-54 = Psychological Well-being. WPCS-23 = Woodard Pury Courage Scale. Gender: 0 = Male, 1 = Female.

\* =  $p < .05$ , \*\* =  $p < .01$

**Table 3.3** Time Point Two—Means, Standard Deviations, and Bivariate Correlations Among Study and Control Variables

	M	SD	MSPQ	RSPWB-54	WPCS-23	Age	Gender	Education	Income
MSPQ	17.58	4.42	1	-.518**	-.201*	-.045	.064	.033	-.225**
RSPWB-54	223.22	43.26	-.518**	1	.545**	.082	-.065	-.039	.310**
WPCS-23	77.88	14.75	-.201*	.545**	1	.091	-.105	-.099	.145*
Age	35.10	10.47	-.045	.082	.091	1	.128*	.119	.094
Gender			.064	-.065	-.105	.128*	1	-.028	.038
Education			.033	-.039	-.099	.119	-.028	1	.208**
Income			-.179*	.31**	.145*	.094	.038	.208**	1

Note. SD = Standard Deviation. MSPQ = Modified Somatic Perception Questionnaire. RSPWB-54 = Psychological Well-being. WPCS-23 = Woodard Pury Courage Scale. Gender: 0 = Male, 1 = Female.

$p < .05$ , \*\* =  $p < .01$

**Table 3.4** Time Point Three—Means, Standard Deviations, and Bivariate Correlations among Study and Control Variables

Variables	M	SD	MSPQ	RSPWB-54	WPCS-23	Age	Gender	Education	Income
MSPQ	17.59	4.42	1	-.547**	-.232**	-.041	.167*	.054	-.118*
RSPWB-54	223.22	43.26	-.547**	1	.545**	.082	-.065	-.039	.310**
WPCS-23	77.88	14.75	-.232*	.545**	1	.091	-.105	-.099	.145*
Age	35.10	10.47	-.041	.082	.091	1	.128*	.119	.094
Gender			.167*	-.065	-.105	.128*	1	-.028	.038
Education			.054	-.039	-.099	.119	-.028	1	.208**
Income			-.118*	.31**	.145*	.094	.038	.208**	1

Note. SD = Standard Deviation. MSPQ = Modified Somatic Perception Questionnaire. RSPWB-54 = Psychological Well-being. WPCS-23 = Woodard Pury Courage Scale. Gender: 0 = Male, 1 = Female. \* =  $p < .05$ , \*\* =  $p < .01$

The analyses indicated that, as expected, MSPQ, RSPWB-54, and WPCS-23 were all significantly correlated with one another at all three time points. In addition to the expected correlations between study variables, there were demographic control variables that were significantly correlated with study variables. For time point one, gender (i.e., self-reported *male* or *female* status) was significantly correlated with somatic symptoms ( $r = .156, p < .05$ ). Also in time point one, income was significantly correlated with somatic symptoms ( $r = -.225, p < .01$ ), PWB ( $r = .31, p < .01$ ), and WPCS-23 ( $r = .145, p < .05$ ). For time point two, there was not a significant correlation between somatic symptoms and gender, but significant correlations remained between income and the MSPQ ( $r = -.225, p < .01$ ), RSPWB-54 ( $r = .31, p < .01$ ), and WPCS-23 ( $r = .145, p < .05$ ). The time point three bivariate analysis yielded similar results to time point two insofar as income was found to be significantly correlated with all three study variables: somatic symptoms ( $r = -.118, p < .05$ ), PWB ( $r = .31, p < .01$ ), and courage ( $r = .145, p < .05$ ). Given the influence of gender and income on study variables, gender and income were included as covariates in all three indirect effects models.

### Indirect Effects Analyses

The relationship between courage, PWB, and somatic symptoms was analyzed at three different time points—baseline (time point one), two weeks after baseline (time point two), and six weeks after baseline (time point three). The regression analyses for the indirect effect models were conducted through the Hayes PROCESS plug-in in SPSS (version 19.0). Model number 4 in PROCESS was used, which is an unmoderated mediation analysis for predictor, outcome, and mediation variables (Hayes, 2012). PROCESS provides bootstrapping confidence intervals to measure indirect effects. Bootstrapping samples were used, and in this case the bootstrapping samples were set at 5,000. A bias corrected confidence interval (CI) was also used and was set at 95%.

In the first indirect effects model, MSPQ (somatic symptoms) was regressed on WPCS-23 (courage), the predictor variable, and RSPWB-54 (PWB), the mediator variable. Gender and income were included in the model as covariates. The results from this analysis are shown in tables 3.5 and 3.6. Neither the total ( $B = -.039, p = .063$ ) nor the direct effect ( $B = .035, p = .112$ ) of courage on somatic symptoms was significant. The *a* path (PWB regressed on courage;  $B = 1.485, p < .001$ ) and *b* path (somatic symptoms regressed upon PWB;  $B = -.050, p < .001$ ) were both statistically significant. Overall, the hypothesized indirect effect was also significant ( $B = -.074, CI: -.100$  to  $-.050$ ). That is, PWB accounted for a significant portion variance between courage and somatic symptoms.

**Table 3.5**  
Model Coefficients for Indirect Effects Model with Two Covariates at Time Point One

Antecedent	Consequent							
	M (RSPWB-54)			Y (MSPQ)				
		Coeff.	SE	p		Coeff.	SE	p
X (WPCS-23)	a	1.485	.170	< .001	c'	.035	.022	.112
M (RSPWB-54)		---	---	---	b	-.050	.008	< .001
c <sub>1</sub> (gender)	f <sub>1</sub>	-3.508	5.043	.488	g <sub>1</sub>	1.181	.558	.035
c <sub>2</sub> (income)	f <sub>2</sub>	6.746	1.641	.001	g <sub>2</sub>	-.279	.189	.141
Constant	i <sub>1</sub>	92.333	15.989	.001	i <sub>2</sub>	25.112	1.909	< .001
			R <sup>2</sup> = .353				R <sup>2</sup> = .248	
				F(3, 198) = 35.982, p < .001				
					F(4, 197) = 16.213, p < .001			

Note. N = 202; WPCS-23 = Woodard Pury Courage Scale-23; RSPWB-54 = Ryff Scale of Psychological Well-being-54; MSPQ = Modified Somatic Perception Questionnaire.

**Table 3.6**  
Results of Indirect Effects Model for Time Point One

Total effect of courage on somatic symptoms				
Predictor	B	SE	t	p
Constant	20.513	1.933	10.610	< .001
Courage	-.039	.021	-3.099	0.063
Direct effect of courage on somatic symptoms				
Predictor	B	SE	t	p
Constant	25.112	1.909	13.154	< .001
Courage	.035	.022	1.598	0.112
Indirect effect				
Mediator	B	Boot SE	Boot LLCI	Boot ULCI
RSPWB-54	-.074	.013	-.100	-.050

Note. N = 202; RSPWB-54 = Ryff Scale of Psychological Well-being-54.

For time point two, an identical indirect effects analysis was run (including income and gender as control variables) with the exception of using MSPQ scores (i.e., somatic symptoms) two weeks after baseline as the dependent variable. The results are shown in tables 3.7 and 3.8. In this analysis, the total effect was significant ( $B = -.054$ ;  $p = .048$ ), while the direct effect was not significant ( $B = .047$ ;  $p = .101$ ). The *a* path (i.e., courage predicting PWB;  $B = 1.570$ ;  $p < .001$ ) and *b* path (i.e., PWB predicting somatic symptoms;  $B = -.064$ ;  $p < .001$ ) were both significant. An indirect effects model again



was supported, with PWB accounting for significant variance between courage and somatic symptoms ( $B = -.101$ ; CI:  $-.156$  to  $-.065$ ).

**Table 3.7**  
Model Coefficients for Indirect Effects Model with Two Covariates at Time Point Two

Antecedent	Consequent							
	M (RSPWB-54)			Y (MSPQ-2week)				
	Coeff.	SE	p	Coeff.	SE	p		
X (WPCS-23)	a	1.570	.204	< .001	c'	.047	.028	.101
M (RSPWB-54)	---	---	---	b	-.064	.010	< .001	
c <sub>1</sub> (gender)	f <sub>1</sub>	-1.471	6.038	.808	g <sub>1</sub>	.519	.704	.462
c <sub>2</sub> (income)	f <sub>2</sub>	7.777	1.956	< .001	g <sub>2</sub>	.034	.241	.888
Constant	i <sub>1</sub>	78.016	19.161	< .001	i <sub>2</sub>	27.371	2.364	< .001
		$R^2 = .396$				$R^2 = .284$		
		F(3, 138) = 30.156, p < .001				F(4, 137) = 13.608, p < .001		

Note. N = 142; WPCS-23 = Woodard Pury Courage Scale-23; RSPWB-54 = Ryff Scale of Psychological Well-being-54; MSPQ = Modified Somatic Perception Questionnaire.

**Table 3.8**  
Results of Indirect Effects Model for Time Point Two

Predictor	Total effect of courage to somatic symptoms			
	B	SE	t	p
Constant	22.357	2.544	8.789	< .001
Courage	-.054	.027	-1.993	0.048
Predictor	Direct effect of courage on somatic symptoms			
	B	SE	t	p
Constant	27.371	2.364	11.576	< .001
Courage	.047	.028	1.650	0.101
Mediator	Indirect effect			
	B	Boot SE	Boot LLCI	Boot ULCI
RSPWB-54	-.101	.022	-.156	-.065

Note. N = 142; RSPWB-54 = Ryff Scale of Psychological Well-being-54.

For the third model, again an indirect effects analysis was run with the exception of somatic symptoms six weeks after baseline used as the dependent variable. The total effect for this model was significant ( $B = -.052$ ;  $p = .031$ ), and the direct effect was not significant ( $B = -.033$ ;  $p = .180$ ). Also consistent with the two previous models, the *a* path (i.e., courage predicts PWB ( $B = 1.533$ ;  $p < .001$ ) and *b* path (i.e., PWB predicting somatic symptoms;  $B = -.055$ ;  $p < .001$ ) were both significant. The indirect effects model

was also supported, as PWB accounted for significant variance in the relationship between courage and somatic symptoms ( $B = -.085$ ; CI:  $-.122$  to  $-.056$ ).

**Table 3.9**  
*Model Coefficients for Indirect Effects Model with Two Covariates at Time Point Three*

<i>Antecedent</i>	<i>Consequent</i>							
	<i>M (RSPWB-54)</i>			<i>Y (MSPQ-6week)</i>				
	<i>Coeff.</i>	<i>SE</i>	<i>p</i>	<i>Coeff.</i>	<i>SE</i>	<i>p</i>		
<i>X (WPCS-23)</i>	<i>a</i>	1.533	.217	< .001	<i>c'</i>	.033	.025	.080
<i>M (RSPWB-54)</i>	---	---	---	<i>b</i>	-.055	.009	< .001	
<i>c</i> <sub>1</sub> (gender)	<i>f</i> <sub>1</sub>	-5.343	6.590	.419	<i>g</i> <sub>1</sub>	1.149	.682	.094
<i>c</i> <sub>2</sub> (income)	<i>f</i> <sub>2</sub>	7.319	2.225	.001	<i>g</i> <sub>2</sub>	-.047	.189	.802
Constant	<i>i</i> <sub>1</sub>	78.016	19.150	< .001	<i>i</i> <sub>2</sub>	25.187	2.585	< .001
		$R^2 = .392$				$R^2 = .327$		
		$F(3, 121) = 29.027, p < .001$				$F(4, 120) = 11.058, p < .001$		

Note.  $N = 125$ ; WPCS-23 = Woodard Pury Courage Scale-23; RSPWB-54 = Ryff Scale of Psychological Well-being-54; MSPQ = Modified Somatic Perception Questionnaire.

**Table 3.10**  
*Results of Indirect Effects Model for Time Point Three*

<i>Predictor</i>	<i>Total effect of courage on somatic symptoms</i>			
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	20.259	2.342	8.651	< .001
Courage	-.052	.024	-2.182	0.031
<i>Predictor</i>	<i>Direct effect of courage on somatic symptoms</i>			
Constant	25.187	2.585	9.743	< .001
Courage	.033	.025	1.347	0.180
<i>Mediator</i>	<i>Indirect effect</i>			
	<i>B</i>	<i>Boot SE</i>	<i>Boot LLCI</i>	<i>Boot ULCI</i>
RSPWB-54	-.085	.017	-.122	-.056

Note.  $N = 125$ ; RSPWB-54 = Ryff Scale of Psychological Well-being-54.

Two additional indirect effects models were conducted to examine residual change in somatic symptoms over time. In the first residual change model, MSPQ measured two weeks after baseline (somatic symptoms) was regressed on WPCS-23 (courage), the predictor variable, and RSPWB-54 (PWB), the mediator variable. To measure residual change, MSPQ at baseline was included in the model as a covariate. Gender and income were also included in the model as covariates. The results from this

analysis are shown in tables 3.11 and 3.12. Neither the total ( $B = -.015, p = .405$ ) nor the direct effect ( $B = .016, p = .451$ ) of courage on somatic symptoms was significant. The  $a$  path (PWB regressed on courage;  $B = 1.397, p < .001$ ) and  $b$  path (somatic symptoms regressed upon PWB;  $B = -.022, p = .008$ ) were both significant. Additionally, the hypothesized indirect effect was also significant ( $B = -.031, CI: -.065$  to  $-.007$ ). That is, PWB accounted for a significant portion of the variance between courage and residual somatic symptom decrease (i.e., change in somatic symptoms from baseline to two weeks after baseline) over time.

**Table 3.11**  
*Model Coefficients for Indirect Effects Model with Three Covariates at Time Point Two*

<i>Antecedent</i>		<i>Consequent</i>						
		<i>M (RSPWB-54)</i>			<i>Y (MSPQ-2week)</i>			
		<i>Coeff.</i>	<i>SE</i>	<i>p</i>	<i>Coeff.</i>	<i>SE</i>	<i>p</i>	
$X$ (WPCS-23)	$a$	1.397	.183	< .001	$c'$	.016	.021	.451
$M$ (RSPWB-54)		---	---	---	$b$	-.022	.008	.008
$c_1$ (gender)	$f_1$	4.160	5.151	.421	$g_1$	-.148	.489	.762
$c_2$ (income)	$f_2$	5.548	1.771	.002	$g_2$	.133	.174	.446
$c_3$ (MSPQ-baseline)	$f_3$	-4.029	.651	<.001	$g_3$	.787	.070	< .001
Constant	$i_1$	165.794	22.911	< .001	$i_2$	6.931	2.393	.004
		$R^2 = .528$				$R^2 = .630$		
		$F(4, 137) = 38.277, p < .001$				$F(5, 136) = 46.396, p < .001$		

Note.  $N = 142$ ; WPCS-23 = Woodard Pury Courage Scale-23; RSPWB-54 = Ryff Scale of Psychological Well-being-54; MSPQ = Modified Somatic Perception Questionnaire.

**Table 3.12**  
*Results of Indirect Effects Model with Three Covariates at Time Point Two*

<i>Total effect of courage on somatic symptoms</i>				
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	3.308	2.027	1.632	.105
Courage	-.015	.018	-.835	.405
<i>Direct effect of courage on somatic symptoms</i>				
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	6.931	2.393	2.896	.004
Courage	.016	.021	.755	.451
<i>Indirect effect</i>				
Mediator	<i>B</i>	Boot <i>SE</i>	Boot LLCI	Boot ULCI
RSPWB-54	-.031	.014	-.065	-.007

*Note.*  $N = 142$ ; RSPWB-54 = Ryff Scale of Psychological Well-being-54.

In the final residual change model, MSPQ at six weeks after baseline (somatic symptoms) was regressed on WPCS-23 (courage), the predictor variable, and RSPWB-54 (PWB), the mediator variable. To measure residual change, MSPQ at baseline was again included in the indirect effects model as a covariate. Gender and income were also included in the model as covariates. The results from this analysis are shown in tables 3.13 and 3.14. Neither the total ( $B = -.009, p = .553$ ) nor the direct effect ( $B = .017, p = .331$ ) of courage on somatic symptoms was significant. The *a* path (PWB regressed on courage;  $B = 1.309, p < .001$ ) and *b* path (somatic symptoms regressed upon PWB;  $B = -.020, p = .006$ ) were both statistically significant. The hypothesized indirect effect was also significant ( $B = -.026, CI: -.050$  to  $-.006$ ). Again, PWB accounted for a significant portion of the variance between courage and residual somatic symptom decrease (i.e., changes in somatic symptoms from baseline to six weeks after baseline) over time.

**Table 3.13**  
*Model Coefficients for Indirect Effects Model with Three Covariates at Time Point Three*

<i>Antecedent</i>	<i>Consequent</i>							
	<i>M (RSPWB-54)</i>			<i>Y (MSPQ-2week)</i>				
	<i>Coeff.</i>	<i>SE</i>	<i>p</i>	<i>Coeff.</i>	<i>SE</i>	<i>p</i>		
<i>X (WPCS-23)</i>	<i>a</i>	1.309	.190	< .001	<i>c'</i>	.017	.017	.331
<i>M (RSPWB-54)</i>		---	---	---	<i>b</i>	-.020	.007	.006
<i>c<sub>1</sub> (gender)</i>	<i>f<sub>1</sub></i>	-.596	5.722	.912	<i>g<sub>1</sub></i>	.790	.443	.077
<i>c<sub>2</sub> (income)</i>	<i>f<sub>2</sub></i>	5.096	1.859	.007	<i>g<sub>2</sub></i>	.051	.148	.729
<i>c<sub>3</sub> (MSPQ-baseline)</i>	<i>f<sub>3</sub></i>	-4.246	.738	< .001	<i>g<sub>3</sub></i>	.705	.064	< .001
Constant	<i>i<sub>1</sub></i>	179.771	22.852	< .001	<i>i<sub>2</sub></i>	7.253	2.176	< .001
		<i>R<sup>2</sup> = .522</i>				<i>R<sup>2</sup> = .665</i>		
		<i>F(4, 120) = 32.809, p &lt; .001</i>				<i>F(5, 119) = 47.253, p &lt; .001</i>		

Note. *N* = 125; WPCS-23 = Woodard Pury Courage Scale-23; RSPWB-54 = Ryff Scale of Psychological Well-being-54; MSPQ = Modified Somatic Perception Questionnaire.

**Table 3.14**  
*Results of Indirect Effects Model with Three Covariates at Time Point Three*

<i>Predictor</i>	<i>Total effect of courage on somatic symptoms</i>			
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	3.691	1.817	2.031	.044
Courage	-.009	.015	-.595	.553
<i>Predictor</i>	<i>Direct effect of courage on somatic symptoms</i>			
Constant	7.253	2.176	3.333	.001
Courage	.017	.017	.935	.331
<i>Mediator</i>	<i>Indirect effect</i>			
	<i>B</i>	<i>Boot SE</i>	<i>Boot LLCI</i>	<i>Boot ULCI</i>
RSPWB-54	-.026	.011	-.050	-.006

Note. *N* = 125; RSPWB-54 = Ryff Scale of Psychological Well-being-54.

**Post-hoc Analysis**

A post-hoc analysis was conducted to elucidate aspects of RSPWB-54 that account for the variance in the relationship between courage and somatic symptoms at all time-points. Bivariate correlations were conducted between MSPQ scores at time point one, MSPQ scores at time point two, MSPQ scores at time point three, WPCS-23, Positive Relations with Others, Autonomy, Environmental Mastery, Personal Growth,

Self-Acceptance and Purpose in Life. The results of these bivariate correlations are shown in table 3.15. All subscales of PWB were significantly correlated with each other ( $p < .01$ ), suggesting coherence in the overall PWB measure. The bivariate correlations between all RSPWB-54 subscales, WPCS-23, and MSPQ were also all significant at  $p < .05$  or  $p < .01$  levels with one exception; the bivariate correlation between the Personal Growth subscale and Somatic Symptoms at time point one was insignificant ( $r = -.106$ ). However, it was significant at both time point two ( $r = -.248, p < .01$ ) and time point three ( $r = -.225, p < .01$ ). The results of these bivariate correlations suggest that the current indirect effects model—PWB mediating the relationship between courage and somatic—would not become more robust by pairing down PWB to circumscribed subscales, particularly at time point two and time point three.

**Table 3.15**  
Means, Standard Deviations, and Bivariate Correlations among Study Variables and PWB Subscales

	M	SD	MSPQ	MSPQ	MSPQ	WPCS	PRO	AU	EM	PG	SA	PIL
			TP1	TP2	TP3							
MSPQ TP1	17.59	4.42	1	-.78**	.795**	-.175*	-.441**	-.253**	-.53**	-.106	-.479**	-.341**
MSPQ TP2	17.58	4.8	-.78**	1	.775**	-.201*	-.485**	-.346**	-.538**	-.248**	-.494**	-.389**
MSPQ TP3	16.89	4.193	-.795**	.775**	1	-.232**	-.546**	-.301**	.564**	-.225*	-.55**	-.427**
WPCS	77.88	14.75	-.175*	-.201*	-.232**	1	.389**	.516**	.459**	.52**	.438**	.45**
PRO	37.09	9.62	-.441**	-.485**	-.546**	.389**	1	-.418**	.804**	.469**	.841**	.698**
AU	39.43	7.24	-.253**	-.346**	-.301**	.516**	-.418**	1	.536**	.473**	.467**	-.453**
EM	37.26	9.39	-.53*	-.538**	.564**	.459**	.804**	.536**	1	.466**	.874**	-.765**
PG	37.35	6.05	-.106	-.248**	-.225**	.52**	.469**	.473**	.466**	1	.461**	.558**
SA	34.12	11.14	-.497**	-.494**	-.55**	.438**	.841**	.467**	.874**	.461**	1	.758**
PIL	37.97	8.31	-.341**	-.389**	-.427**	.45**	.698**	-.453**	.765**	-.558**	.758**	1

Note.  $N = 125$ . SD = Standard Deviation. MSPQ = Modified Somatic Perception Questionnaire. TP1 = Time Point 1. TP2 = Time Point 2. TP3 = Time Point 3. WPCS = Woodard Pury Courage Scale. PRO = Positive Relations with Others. AU = Autonomy. EM = Environmental Mastery. PG = Personal Growth. SA = Self-acceptance. PIL = Purpose in Life.  
\* =  $p < .05$ , \*\* =  $p < .01$

#### CHAPTER IV: Discussion

The purpose of the current study was to investigate the relationships between courage, PWB, and somatic symptoms. I first hypothesized that courage would predict somatic symptoms, specifically that higher levels of courage would predict lower experiences of somatic symptoms. Secondly, I hypothesized that PWB would partially account for the variance in the relationship between courage and PWB, such that the higher levels of PWB would partially explain how higher levels of courage reduces the presence of somatic symptoms. Given that somatic symptoms may be state-dependent or temporal, and courage and PWB are fixed traits, three time points for somatic symptoms were ascertained (i.e., baseline, two weeks, and six weeks) to better understand the reliability of the current model. A mediation regression analysis was run three times, with somatic symptoms (at all three time points) serving as the dependent variable in each indirect effects model. Two additional indirect effects models were run to assess residual change over time. In each of these models, somatic symptoms at baseline was included as a covariate, with somatic symptoms at two weeks and then at six weeks included as dependent variables. In total, five indirect effects models were conducted. In what follows, I will discuss the findings from this study. First I will discuss the effect of courage on somatic symptoms at all times points. Additionally, I will discuss each indirect effects model, with PWB as a mediator variable in the relationship between courage and somatic symptoms. The first hypothesis was shown to be significant—higher courage scores were found to predict lower somatic symptom scores—at both two weeks and six weeks. At the first time point, the direct effect was not significant. The hypothesized indirect effect model was supported at all three cross-sectional time points.

Additionally, the two indirect effects models that measured residual change were also supported. This study contributes to the current literature on courage insofar as courage and PWB were implicated as possible mechanisms of reducing somatization. The clinical implications, strengths and limitations of the study, and future directions for research will be discussed below.

### **Interpretation of Results**

**Study control variables.** Gender and income were found to be significantly correlated with somatic symptoms at time point one. At time points two and three, income was significantly correlated with somatic symptoms. For all the indirect effects models in this study, gender and income were used as control variables. The findings from the demographic control variables are supported by previous research. For instance, in a study done within a primary care setting in Qatar, lower socio-economic status was found to be associated with higher levels of somaticizing (Bener et al., 2013). Creed and Barsky (2004) also found that lower socio-economic status was associated with increased levels of somaticizing. In regards to gender and higher somaticizing, men typically are more likely to report somatic symptoms as medical patients compared with women (Creed & Barsky, 2004; Khan et al., 2000). However, Bener et al. (2013) notes that although typically more men are somatic patients in medical settings, symptoms associated with somaticizing typically are more present in women.

**Direct effect of courage on somatic symptoms.** The first hypothesis of this study is whether courage predicts a reduction in somatic symptoms. The construct of courage was assessed through the WPCS-23. While both levels of action and fear are assessed in this measure, per Woodard and Pury (2007) only the domain of taking action



was used for scoring, which is consistent with how fear is understood vis-à-vis courage in the current literature (i.e., often present but not necessary; Pury, Lopez & Key-Roberts, 2010; Woodard & Pury, 2007). Previous literature has shown the positive effects of courage on health outcomes, particularly in regard to reduced somatic arousal in the presence of risk or subjective fear (Cox et al., 1983; Nili et al., 2010). In this study, courage was shown to predict a decrease in somatic symptoms at two time points. At time point one (controlling for both income and gender), the total effect approached, but did not reach, significance ( $B = -.039, p = .063$ ). However, the total effect was significant at time point two ( $B = .054, p = .048$ ), and time point three ( $B = -.052, p = .031$ ). In the indirect effects models, neither the two week nor six week somatic symptoms models yielded a significant total effect. Therefore, the first hypothesis was supported at time points two and three.

**Courage predicts PWB.** Within the indirect effects model, PWB was regressed on courage to compute the *a* path. Consistent with Keller et al. (2012), courage was shown to significantly predict PWB in all models. Courage is associated with a connection to meaning, purpose, and values—all of which have affinity with PWB's eudaimonic account of wellness. While the results of this *a* path wasn't novel, per se, it contributed to previous literature that the presence of courage predicts increased well-being. The ability to act courageously in the context of threat or risk—which requires self-efficacy and clarity of one's values—allows for an individual to meaningfully engage their convictions. A lack of courageous action due to low self-efficacy or perseverance might increase demoralization and hopelessness at a perceived unjust circumstance unable to be reconciled. Furthermore, this low efficacy likely would lead to

increased avoidance as a coping strategy in the face of challenging circumstances, perpetuating low self-efficacy and negative affect. A lack of courageous action may also be due to confusion about one's values. According to Hayes, Strosahl, and Wilson (2012), a lack of values often is the product of complying by the societal norms or the expectations of others at the expense of staying connected to what is really valued by an individual. A lack of values can lead to the loss of meaning and connection with behaviors that increase vitality. Conversely, having a connection with values, and the ability to engage in values-congruent behavior, broadens a person's sense of purpose and fulfillment in an ongoing, dynamic manner.

**PWB Predicts Somatic Symptoms.** Previous literature has shown that PWB subscales are correlated with positive health outcomes (Fava & Mangelli, 2001; Lewis et al., 2013; Rafanelli et al., 2000; Ryff et al., 2004; Urry et al., 2004). The current study examined subjective experiences of somatic complaints. These complaints are common symptoms associated with anxiety and medically unexplained symptoms. At all time points the *b* path was found to be significant; the higher the rates of PWB scores reported by participants, the lower their complaints of somatic symptoms. Upon post hoc analysis of the PWB subscales—Positive Relations with Others, Autonomy, Environmental Mastery, Personal Growth, Self-acceptance, and Purpose in Life—all subscales were significantly correlated with somatic symptoms. These results suggest that subjective health experiences and complaints may be influenced by all components of PWB.

Perhaps high levels of PWB equips individuals with a world view that is less fear-based, thus less susceptible to maladaptive cognitive styles that tend to compound anxiety such as *catastrophizing*, black-and-white thinking, and or all-or-nothing thinking, which have

been linked to somatic symptoms (e.g. increased heart rate, muscle tension, headaches; Bourne, 2015).

The finding that PWB predicted lower somatic symptoms also supports previous literature that has identified a relationship between PWB and SWB. That is, although PWB is a eudaimonic type of wellness, it nevertheless has been shown to be associated with a hedonic wellness (i.e., a subjective sense of increased positive emotion and low negative emotion) and positive health outcomes (Ryff, Singer & Love, 2004). In this study, the participants with higher reported levels of PWB also reported significantly lower somatic complaints.

**Courage predicts somatic symptoms through PWB.** The second hypothesis was that PWB would mediate the relationship between courage and somatic symptoms. This means that the relationship between courage and somatic symptoms was partially explained by the presence of PWB. Theoretically this result would be consistent with an account of courage that is comprised of having a sense of meaning, values, or purpose. Courageous action requires individuals to have an understanding of who they are and what matters in life. In other words, courageous action cannot really be courageous unless it is yoked to an individual's deep sense of purpose, responsibility, and meaning. This may be a limitation of the WPCS-23, insofar as the scale provides scenarios that would require action amidst risk or danger to one's health, social status, or vocation. It doesn't, however, assess if that action is consistent with the values of the participants completing the scale. Nevertheless, the WPCS-23 includes pro-social forms of courage that likely are connected enough with shared societal values such as empathy and justice. Thus, those individuals who scored higher on PWB likely found affinity with the values

implicit in the WPCS-23. In the current model, the presence of courage yields significant positive health outcomes in the form of lower somatic complaints; the relationship is strengthened with the presence of PWB.

### **Clinical Implications**

As outlined in the introduction, courage has been considered a virtuous trait since antiquity (Dahlsgaard, Peterson, & Seligman, 2005; Peterson & Seligman, 2004; Snyder, Lopez, & Predrotti, 2010). The ability to act in a congruent way with one's values despite opposition, risk, and fear has been hailed throughout millennia as a human ideal.

Although this virtue was classically associated with male heroism on the battlefield, over time courage came to include taking a moral stance in the face of internal and external opposition. Courage is a value that has been increasingly studied over the past two decades within the movement of positive psychology, and has been shown to be associated with numerous positive psychological and health outcomes (Cox et al., 1983; Nili et al., 2010). This study further supports the importance of courage as a construct to cultivate in clinical settings.

Courage is a trait that can be prominently located—albeit somewhat covertly—in Acceptance and Commitment Therapy (ACT; Hayes, Strosahl & Wilson, 2012). According to ACT, psychological inflexibility—characterized most prominently by experiential avoidance and cognitive fusion—leads to psychological suffering. Once an individual can reduce avoidance and increase his or her mindful acceptance of experiences, emotions, and current situations, he or she can engage the world with values-consistent behaviors (i.e., commitment), and often improve quality of life. ACT has been shown to be an effective treatment for many clinical conditions, ranging from

anxiety disorders to chronic pain (Kashdan & McKnight, 2013; McCracken, Gutiérrez-Martínez & Smyth, 2013). Paradoxically, ACT stresses that choosing acceptance over avoidance does not mean feeling better, *per se*, particularly in the short term. In fact, acceptance is learning to be present with one's negative experiences. Being present means to be reflective, observant, and mindful regardless of the discomfort or suffering one is experiencing. The emphasis of reducing avoidance is based on the assumption that avoidance distally compounds negative experiences; avoidance is not adaptive long-term because it adds a sequelae of additional problems to the current problem (Harris, 2006).

Courage can be located within the ACT framework in two ways. First, individuals who practice acceptance—staying present to internal or external discomfort—promote courageous action by not avoiding threat or fear. Courageous action requires the presence of opposition, threat, or fear. Secondly, an ACT framework identifies values-consistent behavior, taking meaningful action, as vital to psychological flexibility. These two components, presence and behavioral engagement, are both key ingredients of ACT and courage. The current study provides additional support for the importance of reducing avoidance and learning to live into one's values, which may promote the distal reduction of somatic symptoms.

This study also illuminates the necessity of PWB, another construct that can be located within the ACT model. As this study has shown, one way for courage to yield positive health outcomes is for an individual to have a sense of meaning in his/her relationships with self, others, and one's environment. Values infiltrate the construct of PWB on numerous levels. Harris (2007, 2008) defined values as what people desire the most—what kind of person to be, what issues to fight for, and how to be in relationship

with our environments. The subscales of PWB—particularly personal growth, purpose in life, and environmental mastery—are infused with values insofar as they require an individual to know the potentiality to which they aspire. No action is intelligible, particularly when an individual has to face fear, without the presence of values. “It is only within the context of values that action, acceptance, and defusion come together into a sensible whole. In the language of rule of governance, values are formative and motivative augmentals” (Hayes, Strosahl, & Wilson, 2012, p. 92). Therefore, the emphasis of values within ACT has a parallel in the current study; PWB provides the conceptual framework for courage to be meaningful and to promote growth.

While ACT is an evidence-based modality that captures the essential components of courage somewhat covertly, clinicians should consider utilizing the construct of courage in overt, didactic interventions. Courage can also serve as a colloquial term marshaled to target change in working with clients to develop therapeutic goals and treatment strategies. It is a construct that can be introduced in therapy to capture therapeutic growth. Clinicians should consider leveraging the familiarity and clinical utility of courage to help their clients to understand what courage would mean in their current context. Although courage is a common value in North American culture, it likely is understood more abstractly and untethered from a client’s presenting problem. Helping a client understand how courage applies to their presenting problem may serve as a way to reframe psychological growth and foment behavioral activation. Finally, courage is something that can be practiced in psychotherapy sessions. Discussing emotionally painful topics, learning to tolerate distress, and exposing oneself to traumatic content all

require courage. Therapeutic change may be promoted through building the virtue of courage in treatment settings.

### **Strengths and Limitations**

There were numerous strengths and limitations in this study. One strength of the current study is that it moved beyond the limitations of a one time-point, cross-sectional study. It included the dependent variable at three time points, thus increasing the reliability of the findings. Due to the design of the study, a causal relationship could not be inferred, as the study did not include randomly assigned control and experimental groups, nor did it include using courage as an intervention that would have supported clear causation between courage and somatic symptoms. Nevertheless, the inclusion of three time points increased the reliability of the findings via replication across assessments. The findings indicated that participants experienced consistent somatic complaints at baseline, two weeks after baseline, and six weeks after baseline. Another strength of the study was that all three time-points were adequately powered (i.e.,  $N = 202$ ,  $N = 142$ ,  $N = 125$ ); there were enough participants to reduce the likelihood of Type II error or find an effect in the population if one exists.

There were both strengths and limitations in regards to the diversity of participants, which influenced the external validity and generalizability of the study. The demographics of the population were fairly homogenous in terms of race/ethnicity, sexual orientation, and education. Among the participants, 77% of subjects that were Caucasian, 11% Asian, 7% Hispanic/Latino, and 4% Black. Additionally, the majority of the participants had at least some college education—25% with some college, 40% with a Bachelors, 12% with an Associates degree, 7.5% with a Masters, and 1.5% with a

Doctorate degree. There also was limited diversity in regards to sexual orientation, with 93.5% self-identifying as heterosexual, 4% as homosexual, and 1.5% as bisexual.

Therefore, most of the participants were Caucasian, heterosexual, and college educated, limiting the generalizability of the study to individuals with privilege. On the other hand, demographic variables such as age, gender, religious beliefs, and income were more diverse and thus more generalizable to populations of similar demographic variables.

There were several outright limitations to the study. The first limitation was that it measured the constructs with self-report measures, which is a threat to the study's internal validity. Participants' responded to items subjectively, and there was no data used in this study based on objective, observable behaviors or biomarkers. Another limitation was self-selection bias, with all participants being recruited through Mechanical Turk. While there is support for the feasibility of conducting psychological research through recruitment of participants through Mechanical Turk (Buhrmester, Kwang & Gosling, 2011), the participants still are required to be technologically savvy and may be invested in the tasks of the survey for financial reasons rather than to contribute to psychological research, thus limiting the thoughtfulness and accuracy of their responses.

### **Conclusion and Future Research Directions**

The purpose of this study was to understand the relationship between courage, PWB, and somatic symptoms. The findings, reviewed above, contribute to the current literature on courage. Namely, it further illuminated how courage may be an adaptive trait in relationship to somatoform disorders in the presence of PWB. Given the findings of this study, future research should focus on utilizing courage as an intervention for



individuals with complaints of somatic symptoms. Such interventions should include a clarification of values, psychoeducation on courage, and clear behaviors that exhibit courageous action. This research could clarify the causal relationship between courage, PWB, and somatic symptoms. It could also expand understanding courage as a therapeutic intervention, broadening the clinical utility of courage in psychotherapy settings. It is also suggested that future research include a more diverse participant pool, specifically in regards to race/ethnicity, education, and sexual orientation.

In this study, PWB was shown to reduce somatic symptoms. In all indirect effects models, higher levels of PWB was also shown to be associated with lower levels of reported somatic symptoms. While numerous studies have shown evidence for a relationship between higher PWB and increased positive health outcomes (Fava & Mangelli, 2001; Lewis et al., 2013; Rafanelli et al., 2000; Ryff et al., 2004; Urry et al., 2004), little is known about *how* PWB may decrease somatic symptoms. Because this study showed that PWB accounted for a significant portion of the variance between courage and somatic symptoms (including residual change over time), future studies should focus on identifying the mechanism by which PWB predicts lower somatic symptoms. Perhaps a mediating variable could be identified that would explain how PWB functionally reduces somatic symptoms.

Finally, future research would benefit from incorporation of behavioral observation and biomarkers. In regards to behavioral observation, courage is a construct that involves the ability to act courageously amidst risk or threat. While many individuals may report hypothetical courageous action in a hypothetical scenario, there is no way to truly measure this construct without observing the actions of the participants in a setting

that requires courage. Measuring somatic arousal, to identify experienced risk or fear, could be measured through biomarkers such as cardiac activity and skin conductance. Overall, understanding the multifaceted nature of courage, and its many benefits, will involve studying courage socially and psychologically, as well as behaviorally and biologically.

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