MINDFULNESS AND PERFECTIONISM AS PREDICTORS OF PHYSICAL AND PSYCHOLOGICAL WELL-BEING IN COLLEGE STUDENTS

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DEDICATION

I dedicate this work to my husband, Joaquin, who selflessly provided more support than I could ever hope for at each and every step of this path. Your patience, encouragement, and love made all of this possible. I also want to thank my parents, Sonia and Pedro, for their commitment to my education, their unconditional support, and for doing everything in their power to make this journey somewhat easier.

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TABLE OF CONTENTS

www.manaraa.com

TABLE OF CONTENTS (continued)

www.manaraa.com

TABLE OF CONTENTS (continued)

www.manaraa.com

TABLE OF CONTENTS (continued)

www.manaraa.com

LIST OF TABLES

www.manaraa.com

LIST OF FIGURES

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CHAPTER I

THE PROBLEM

Statement of the Problem and Rationale for the Study

The purpose of this study was to examine the relationships among specific intrapersonal qualities and physical and psychological well-being in college students. Psychological well-being, according to Ryff and her colleagues (Keyes, Shmotkin, & Ryff, 2002; Ryff, 1989a, 1989b), involves the successful negotiation/ resolution of the main challenges of each of life's stages of development (Erikson, 1963; see Ryff 1985 for reviews). In this vein, psychological well-being involves one's engagement with the existential challenges of life.

A substantial body of research has separately supported the relationship between personality variables and well-being and between personality characteristics and physical health (Matarazzo, Weiss, Herd, Miller, & Weiss, 1984; Rodin & Salovey, 1989; Taylor, 1990). In addition, an established body of research has supported the relationship between overall well-being and physical health outcomes (see Dua, 1994; Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001; Roysamb, Tambs, Reichborn-Kjennerud, Neale, & Harris, 2003). However, few studies have focused on the relationship between psychological well-being in particular and perceived health, and in the ways both of these are impacted by personality variables (Miquelon & Vallerand, 2008; Ryan, Huta, & Deci, 2008; Ryff et al., 2006b). The scarce research that is available in this area does point to a link between psychological well-

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being and health outcomes and to meaningful differences in these variables as a result of personality characteristics.

The biopsychosocial perspective (Engle, 1977), which stresses the joint impact of psychosocial and biological factors on health and illness, has gained favor over the biomedical model, which focuses primarily on the biological contributors of disease (Wiedenfeld et al., 1990). Aligned with this more comprehensive conceptualization of the factors that influence health and illness, broader contextual influences/ variables such as perceived stress, social support, sense of control, and attribution processes have been shown to be linked with differential outcomes related to well-being (see Hemenover & Dienstbier, 1998; Lachman & Weaver, 1998). The existing literature in this area suggests that personality characteristics such as hardiness (Kobasa, 1979), optimism (Scheier & Carver, 1985), core self-evaluations (Judge, Locke, & Durham, 1997), mindfulness (Brown & Ryan, 2003; Langer, 1989), and perfectionism (Blatt, 1995; Flett & Hewitt, 2002) can potentially affect individuals' psychological and physical well-being.

This study investigated whether perfectionism and Eastern and Western views of mindfulness predicted psychological well-being and physical health in college students. In addition, it examined the relationship among Eastern and Western views of mindfulness and perfectionism. It is important to note that the existing literature discusses mindfulness based in the Eastern and Western traditions without necessarily using the terms *Eastern* and *Western* mindfulness. However, certain researchers have explicitly made this distinction (see Langer, 1989) while others have specifically addressed these different views on mindfulness without using the terms Eastern and

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Western (see Bishop et al., 2004). The terms Eastern and Western mindfulness will be used throughout this manuscript to distinguish these two views. Mindfulness has long been thought to have a positive impact on well-being and recent research has started to more systematically support this claim with a broad range of populations. However, fewer studies have looked at the relationship between different traditions of mindfulness and physical health.

Preliminary evidence suggests that psychological and physical well-being in college students is a considerable concern that warrants further study. Hence, this study has the potential to contribute to a relatively neglected but valuable area of research. In sum, the rationale for this study is twofold. First, although the literature supports relationships between each of these traits (i.e., mindfulness, perfectionism) and well-being in a variety of populations, there is nonetheless a paucity of research looking at the impact of this combination of variables on psychological and physical well-being. Second, researchers have not yet consistently identified relationships between mindfulness and perfectionism, despite data to support the existence of such a relationship. For example, perfectionism involves an emphasis on outcomes (Blatt, 1995), while mindfulness stresses engagement in the process (Bishop et al., 2004; Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007). Perfectionists have been characterized as individuals who strive to achieve very high goals (Blatt, 1995), which points to their future-oriented concern of meeting such goals and expectations. Conversely, mindful individuals encounter experience with an open, receptive, present-oriented stance (Kabat-Zinn, 1990, 1998; Shapiro & Schwartz, 1999; Teasdale, 1999).

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Physical Health and Well-Being in College Students

This study focused on perceived health and psychological well-being in college students. The rationale for selecting college students is based on the unique challenges they have to negotiate at this developmental stage as well as the fact that, despite their young age, a high proportion of students endure physical and mental health problems. The period from the late teens through the mid-twenties has been recently termed emerging adulthood (Arnett, 1998). Although Arnett has largely proposed that this developmental stage is not as bleak as other researchers have put forth (Arnett, 2000a, 2000b, 2007), he nonetheless posits that this period is characterized by challenges related to identity exploration that emerging adults are expected to negotiate. Arnett also notes that there is some validity to the "quarterlife crisis" concept (Arnett, 2007, p. 25; Robbins & Wilner, 2001), which refers to the anxiety and uneasiness that many emerging adults experience over the fact that several important areas of their lives are not yet settled (e.g., love, work, living arrangements), even though they also cherish the freedom, limited structure, and world of possibilities that are open to them (Arnett, 2004). Emerging adults do not feel like either adolescents or adults, but somewhere "in between" (Arnett, 2007, p. 27) and they tend to be ambivalent about their desire to reach adulthood, sometimes conceptualizing it as a "mixed blessing" (p. 27). For many emerging adults, reaching adulthood is associated with unappealing changes, such as the end of possibilities, of spontaneity, and the compromise of their dreams (Arnett, 1998, 2004). These distinctive developmental challenges faced by emerging adults in industrialized countries likely heighten the buffering or detrimental effects of personality traits on

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well-being, and thus support the rationale for conducting this study with this population.

A large number of emerging adults pursuing higher education have reported to experience physical and/ or psychological problems. In a recent survey of more than 25,000 college students, 58% reported being diagnosed with or treated by a professional in the previous 12 months for one or more physical health problems (American College Health Association; ACHA, 2009). Students were presented with 25 medical conditions and asked which ones, if any, they have been diagnosed with or treated for in the past year. Results indicated that allergies (22%), sinus infections (18%), back pain (13%), and strep throat (12%) were the most common ailments experienced by students (ACHA, 2009). Moreover, it is likely that many students suffer symptoms that may impair their functioning to some degree but which go undiagnosed because students do not always consult professionals; thus, 58% may even be an underestimation of the proportion of college students who experience physical problems. Stress, sleep difficulties, anxiety, cold/flu/sore throats, and depression also were reported by 27%, 19%, 18%, 15%, and 11% of students in this survey respectively, as factors that adversely affected their academic performance. Difficulty handling personal health issues and sleep problems were also reported by 18% and 24% of students, respectively (ACHA, 2009). Taken together, these statistics indicate that college students' health and well-being warrant closer examination despite common assumptions that they are a generally healthy group. Thus, investigating the relationship of personality characteristics to physical and

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psychological status may shed light about correlates of perceived health not yet sufficiently studied.

Research Questions and Hypotheses

This study investigated the relationships among Eastern and Western mindfulness, perfectionism, perceived physical health, and psychological well-being in college students. The following research questions and hypotheses were generated from the literature:

Research question 1: Do Eastern and Western conceptualizations of mindfulness and perfectionism predict psychological well-being and perceived health in college students?

Hypothesis 1: Eastern and Western mindfulness and perfectionism will account for a significant amount of variance in college students' physical health and psychological well-being.

Research question 2: Do adaptive and maladaptive perfectionism interact with Eastern and Western mindfulness in their effects on physical and psychological well-being?

Hypothesis 2: Adaptive and maladaptive perfectionism will significantly interact with Eastern and Western mindfulness in their effects on physical and psychological well-being.

Research question 3: Is there a relationship between Eastern mindfulness and perceived health?

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Hypothesis 3: There will be a significant positive relationship between Eastern mindfulness and perceived health. Students who report higher levels of Eastern mindfulness will report higher levels of perceived health.

Research question 4: Is there a relationship between Western mindfulness and perceived health?

Hypothesis 4: There will be a significant positive relationship between Western mindfulness and perceived health. Students who report higher levels of Western mindfulness will report higher levels of perceived health.

Research question 5: Is there a relationship between Eastern mindfulness and psychological well-being?

Hypothesis 5: There will be a significant positive relationship between Eastern mindfulness and psychological well-being. Students who report higher levels of Eastern mindfulness will report higher levels of psychological well-being.

Research question 6: Is there a relationship between Western mindfulness and psychological well-being?

Hypothesis 6: There will be a significant positive relationship between Western mindfulness and psychological well-being. Students who report higher levels of Western mindfulness will report higher levels of psychological well-being.

Research question 7: Is there a relationship between perfectionism and perceived health?

Hypothesis 7: There will be a significant negative relationship between perfectionism and perceived health. Students who report higher levels of perfectionism will report lower levels of perceived health.

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Research question 8: Is there a relationship between perfectionism and psychological well-being?

Hypothesis 8: There will be a significant negative relationship between perfectionism and psychological well-being. Students who report higher levels of perfectionism will report lower levels of perceived health.

Research question 9: Is there a relationship between Eastern mindfulness and maladaptive perfectionism?

Hypothesis 9: There will be a significant negative relationship between Eastern mindfulness and maladaptive perfectionism. Students who score higher on Eastern mindfulness measures will report lower levels of maladaptive perfectionism.

Research question 10: Is there a relationship between Western mindfulness and maladaptive perfectionism?

Hypothesis 10: There will be a significant negative relationship between Western mindfulness and maladaptive perfectionism. Students who score higher on Western mindfulness measures will report lower levels of maladaptive perfectionism.

Definition of Terms and Operationalization of Variables

Emerging Adults Attending College

For the purpose of this study, the terms emerging adults attending college and college students included any male or female student age 18 or over and under age 30 enrolled in either a 4-year or 2-year institution of tertiary education. Students were enrolled in undergraduate programs and were attending school at least part-time.

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Mindfulness: Eastern and Western Approaches

Eastern mindfulness has been broadly defined as a state of being aware and attentive to one's immediate experience (Brown & Ryan, 2003). In this nonelaborative, nonjudgmental approach to experience, every thought, feeling, or sensation is accepted as is, without reacting to it in one's automatic patterns of responding (Bishop et al., 2004). In this study, the Eastern approach to mindfulness was measured using the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), which assesses these two central aspects of consciousness, attention and awareness. Another conceptualization of mindfulness, sometimes labeled as Western approach to mindfulness, was put forth by Ellen Langer (1989, 2005, 2009), who proposed a more cognitive and creative approach to mindfulness. She defined mindfulness as an active process of making distinctions involving creation of new categories, openness to new information, and awareness of multiple perspectives, where new information is encountered with an open mindset predisposed to attribute new meanings (Langer, 1989, 1997). In this study, this Western approach to mindfulness was measured with the Langer Mindfulness Scale (LMS; Bodner & Langer, 2001).

Perfectionism

Perfectionism can be defined as unrealistic performance demands combined with stringent standards and unrelenting self-criticism (Blatt, 1995). Adaptive perfectionism describes individuals who have high personal standards with little discrepancy between performance expectations and performance evaluation, whereas maladaptive perfectionism is defined as holding high personal standards and

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experiencing a high discrepancy between expectations and performance (Rice, Leever, Christopher, & Porter, 2006). In this study, perfectionism was measured with the Almost Perfect Scale- Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). This measure contains subscales that represent adaptive and maladaptive aspects of perfectionism.

Physical Health

Physical health refers to the number and severity of somatic symptoms, either objectively or subjectively assessed. For the purposes of this study, physical health will be defined as individuals' subjective perception of minor somatic symptoms. Perceived physical health in this study was measured with the Physical Health Questionnaire (PHQ; Schat, Kelloway, & Desmarais, 2005), which assesses somatic symptoms in the following areas: Gastrointestinal Problems, Headaches, Sleep Disturbances, and Respiratory Infections. In this study, the total PHQ score was used as a measure of perceived health.

Psychological Well-Being

The construct of psychological well-being refers to perceived thriving in comparison with the existential challenges of life, such as the pursuit of meaning, the development as a human being, and the quality of one's connection to others (Keyes et al., 2002). In this study psychological well-being was assessed with Ryff's Scales of Psychological Well-Being (SPWB), which portray a multidimensional model of psychological well-being that includes six dimensions, each of which is thought to articulate a challenge faced by human beings in our efforts to function optimally (Keyes et al., 2002; Ryff, 1989a; Ryff & Keyes, 1995). These dimensions include

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Self-Acceptance, Positive Relations With Others, Environmental Mastery, Autonomy, Purpose in Life, and Personal Growth. In this study, the total score of SPWB was used as a measure of psychological well-being.

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CHAPTER II

REVIEW OF LITERATURE

The following review of literature will present an overview of the relationship between psychological factors and physical health. Current literature on Eastern mindfulness, Western mindfulness, and perfectionism will then be examined, and potential links between these variables and physical and psychological well-being will be explored. Finally, a summary of previous research findings will be presented.

Theoretical Perspective: Psychological Factors and Physical Health

Interest continues to grow in better understanding the processes or mechanisms by which psychological factors relate to physical health. There is evidence that social and psychological factors such as stress, hostility, and social isolation influence vulnerability to certain diseases (see Cohen, Janicki-Deverts, & Miller, 2007; Glaser, Rabin, Chesney, Cohen, & Natelson, 1999, Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Miller, Chen, & Cole, 2009). In a thorough review on this topic, Miller et al. took a disease-centered approach that "reverse-engineer[ed]" (p. 502) negative health outcomes onto their biological determinants and then identified the mechanisms or pathways through which these two are likely to be connected. Much of their discussion focused on the sympathetic nervous system, the hypothalamic-pituitary-adrenocortical axis, and the immune system. These

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researchers suggested that these are the most extensively studied mediators, albeit not the only ones, linking mind and body.

Miller et al. (2009) suggested that a starting point for mechanistic health psychology research is to identify well-established connections between psychosocial characteristics and the incidence or progression of a disease. Studies linking symptoms of depression with morbidity and mortality from heart disease (see Rugulies, 2002), as well as research linking psychosocial risk factors to HIV disease progression (e.g., Cole, 2006; Cole, Kemeny, & Taylor, 1997) constitute examples of this association. Other examples are the link between chronic stress and increased morbidity and mortality in various conditions, such as respiratory infections, heart disease, and HIV/AIDS (Miller et al., 2009, see reviews by Cohen et al., 2007). Identifying these links provided researchers with a rationale for examining the pathways that underlie the development or progression of these diseases. Individual psychological characteristics have also been found to be risk factors for adverse health outcomes; for example, both depression and hostility have been associated with increased risk for cardiovascular disease (see Miller, Smith, Turner, Guijarro, & Hallet, 1996; Smith, 1992). At a broader level, factors such as low socioeconomic status and social isolation have been linked to respiratory, cardiovascular, and infectious diseases, as well as certain cancers (Miller et al., 2009).

Much research has supported the endocrine and immune changes that result from stress (Miller et al., 2009). Neuroendocrine responses constitute one pathway in which psychological antecedents exert their influence. For example, experimental research suggests that cortisol levels are most pronounced in individuals exposed to

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social threats. When facing a chronic stressor, there is a robust activation of the hypothalamic-pituitary-adrenocortical axis, which results in increased levels of adrenocorticotrophic hormone and cortisol (Miller et al., 2009). However, as time goes by, this response usually diminishes and cortisol levels return to normal. Theoretical research suggests that individuals' appraisal of a situation (e.g., as a threat) may trigger the activation of the hypothalamic-pituitary-adrenocortical axis, which in turn affects the autonomic nervous system rendering a certain profile of activation (Miller et al., 2009; National Institutes of Health, 2002). Similar to the hypothalamic-pituitary-adrenocortical axis, research suggests that social threats and uncertainty can have a strong impact on sympathetic nervous system activity (see Cole, Kemeny, Fahey, Zack, & Naliboff, 2003; Kagan, 1994; Miller et al., 2009).

Another pathway through which psychological or social factors impact health has been clarified by research on psychoneuroimmunology. This research has identified immunobiological correlates of different psychological states (Miller et al., 2009). Severity and chronicity of stressors have been shown to impact the nature and intensity of immunologic alterations (Segerstrom & Miller, 2004). Studies have supported the notion that some aspects of the immune response can be enhanced by stress, while other functions are suppressed. Severe stressors that persist over time tend to impair multiple aspects of the immune response (Miller et al., 2009). In addition, chronic stress tends to induce a mild state of inflammation (Kiecolt-Glaser et al., 2003), which is a pathogenic mechanism in many infectious and cardiovascular diseases (Miller et al., 2009). Because individuals' experience of stress is related to their appraisal of situations (which, in turn, is significantly impacted by their

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personality traits), it is possible that adverse health outcomes that have been linked to stress are in fact related to psychological factors.

Langer (1989) discussed a slightly different, but equally persuasive illustration of the mind-body connection that was put forth by Totman (1979), a British clinical psychologist. Totman posited that psychological states, through their impact on the brain and the limbic-hypothalamic-pituitary-adrenal pathway, may impact the way in which the body responds to a wide variety of potential diseases in which the immune system is involved, ranging from infections and allergies to autoimmune diseases and cancer. In Totman's view, there is no lack of mechanisms through which psychological factors impact the development or progression of adverse health conditions. Taken together, this complex and multifaceted link between mind and body both provide support and point to the value of research aimed at continuing to elucidate the relationships between psychological factors and physical health.

In this study the relationships among psychological and physical well-being, mindfulness, and perfectionism were examined. Eastern mindfulness, Western mindfulness, and perfectionism are all related to the way individuals perceive and appraise reality, and consequently could be associated to the experience of different levels of physical and psychological well-being. Each of these variables and their relationship to well-being will be discussed, in turn.

Eastern Mindfulness

This conception of mindfulness is rooted in Buddhist and other contemplative traditions, and shares concepts with certain philosophical and psychological traditions, such as phenomenology, existentialism, transcendentalism, and humanism

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(Brown & Ryan, 2003; Brown et al., 2007). Mindfulness has been broadly described as a quality of consciousness, and, in particular, one that has its roots in the fundamental activities of consciousness: attention and awareness (Brown et al., 2007). Awareness refers to the act of registering internal or external stimuli; it is our most immediate contact with reality (Brown et al., 2007). We often become aware of stimuli, however without necessarily attending to it. Attention has been described as the active process of focusing our awareness on certain stimuli for varying amounts of time (Brown & Ryan, 2003; Westen, 1998).

These features of consciousness play an important role in the quality of human experience (Brown et al., 2007). Usually, not much time passes between the time something becomes the focus of our attention and when our cognitive and emotional responses to it are elicited. This process is often one of discrimination and appraisal that is usually based on past experiences or previously held associations. Eventually, these reactions are assimilated into existing schemata (Brown et al., 2007) to varying degrees. Schemata are cognitive structures that shape information processing by influencing the way stimuli are perceived and evaluated (Beck, 1967) and in that way provide a framework for future understanding (Freeman & Freeman, 2006). This process of assimilation tends to be effortless when a new experience fits existing schemata, or it may require further operation upon the object before it can be assimilated (Brown et al., 2007). This processing of information has distinct advantages, such as optimizing the mental resources needed to make sense of or interpret stimuli, in addition to allowing us to maintain a certain structure and order in the midst of the overwhelming number of stimuli that we are exposed to, thus

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facilitating goal pursuit and attainment (Brown et al., 2007). On the other hand, this process likely constrains the way we experience reality and leaves us locked into a certain way of perceiving and reacting. Mindfulness presents an alternative to this cognitive way of processing (Brown et al., 2007). Because mindfulness requires an open or receptive state of mind (Deikman, 1982; Martin, 1997), it is incompatible with reacting to stimuli with fixed or previously held categorizations, elaborations, or judgments. Thus, one's ability to be in contact with reality 'as is' is increased, allowing for a fresher, novel, and more spontaneous relationship to the object of one's experience (Brown et al., 2007). This, in turn, fosters qualities such as flexibility (Brown et al., 2007).

Theoretical and empirical research in mindfulness has flourished in recent years, hence the emergence of different approaches to its definition. Brown and colleagues (Brown & Ryan, 2003; Brown et al., 2007) defined mindfulness as receptive attention to and awareness of experience or present reality. More specifically, Bishop and his colleagues (e.g., Bishop et al., 2004) conceptualized mindfulness as present-centered awareness that is nonelaborative and nonjudgmental, and one in which any stimulus that is the focus of attention is accepted as is (Kabat-Zinn, 1990, 1998; Segal, Williams, & Teasdale, 2002; Shapiro & Schwartz, 1999, 2000; Teasdale, 1999). This state of observation creates a space between one's perceptions and one's reactions thought to foster more freedom and flexibility in one's responses (Bishop et al., 2004; Brown et al., 2007).

Bishop et al. (2004) posited a two-component model of mindfulness. The first component involves self-regulated attention directed at current experience. The

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second component refers to a certain orientation/ approach toward one's immediate experience, one characterized by curiosity and openness. The first component, self-regulated attention, requires skills in sustained attention, which refers to the ability to be vigilant for prolonged periods (Parasuraman, 1998; Posner & Rothbart, 1992). Skills in switching allow individuals to bring back the attention when it wanders off from the stimulus being attended to once the emerging thoughts or feelings have been acknowledged (Posner, 1980). These skills should theoretically increase one's ability to shift mind-set (Rogers & Monsell, 1995).

Self-regulation of attention also promotes a nonelaborative approach to experience; mindfulness involves immediacy of experience of events (Teasdale, Segal, Williams, & Mark, 1995) rather than elaborative thought about one's experiences (e.g., origins, consequences, implications, and valence; Bishop et al., 2004). Moreover, since attention is a limited resource, once it is not allocated to elaborative thinking, additional resources can be devoted to fully being in the present and taking in one's current experience. This opens up the possibility of broader perspectives on experience. Instead of reacting to experience based entirely on previously held schemata, this state of consciousness allows for a novel approach in our relation with experience. We need not react, think, or behave automatically as we always have done, dictated by thoughts, beliefs, and assumptions learned in the past. A mindful approach to experience is thus aligned with approaching experience with "a beginner's mind" (Bishop et al., 2004, p. 233), which in turn fosters alternatives and creativity.

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The second component entails a certain orientation to experience that has been characterized as one of acceptance (i.e., openness to the reality of the present moment; Roemer & Orsillo, 2002) and curiosity. This approach may foster intensive self-observation (Bishop et al., 2004). Bishop and colleagues also conceptualized mindfulness as a process of "investigative awareness" (p. 234) in the sense that intentional effort is devoted to observe and further one's understanding of the nature of thoughts and feelings. Bishop and his colleagues posited that mindfulness would likely be related to an increased capacity to regard one's thoughts as "contextual, relativistic, transient, and subjective" (p. 234) and point to some evidence in this area (Teasdale et al., 2002).

Eastern Mindfulness, Physical Health, and Well-Being

Research indicates that Eastern mindfulness is correlated with several dispositional and state measures of psychological well-being. Brown and Ryan (2003) administered the MAAS to five samples of college students totaling 1,179 students, a sample of 74 adults living in the community, and a sample comprised of adults drawn from the northeastern U.S community. They also administered several well-being measures to some or all of these samples, such as the Neuroticism scale of the NEO-Personality Inventory, the NEO-Five Factor Inventory, the Multidimensional Self-Esteem Inventory, the Rosenberg Self-Esteem Scale, and the Life Orientation Test. These researchers found inverse relationships between mindfulness and neuroticism, a personality trait consistently related to lower levels of psychological well-being. In particular, the MAAS was inversely related to Depression, Anxiety, Self-Consciousness, Angry Hostility, and to a lesser extent, to

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the Impulsiveness subscales of the NEO-Personality Inventory Neuroticism dimension. In contrast, positive relationships were found in this study between MAAS and self-esteem and MAAS and optimism.

These researchers also administered measures of emotional disturbance, including depression and anxiety. Depression was measured using the Center for Epidemiological Studies- Depression scale and the Beck Depression Inventory, while anxiety was measured using the State-Trait Anxiety Inventory and the Profile of Mood States Anxiety subscale. As expected, results showed that depression and anxiety were inversely correlated to MAAS. Brown and Ryan (2003) also examined the relationship between mindfulness and measures of eudaimonic (psychological) well-being using a measure of vitality, a measure called Actualization of Potential and the Competence, Relatedness, and Autonomy subscales of the Ryff's Personal Well-Being Scales. Researchers used measures of physical well-being such as the Hopkins Symptom Checklist Somatization scale, and a self-report of medical health visits over the past 21 days. Results showed that, as predicted, the MAAS was significantly correlated to higher levels of subjective vitality, greater self-actualization, autonomy, competence, and relatedness fulfillment. Finally, MAAS was associated with subjective and objective indicators of physical health. This study also looked at the relationship between MAAS and a measure of Western mindfulness, the LMS, and found a moderate correlation (in the low .30s) between the two approaches to mindfulness. Overall, the results of this study suggest that Eastern mindfulness is positively correlated to multiple measures of psychological and physical well-being.

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Another study, conducted by Schreiner and Malcolm (2008), suggested similar relationships between mindfulness and well-being. This study was conducted with 50 volunteers selected from the general public who were attending structured 10-week meditation courses at two meditation centers in Australia. Participants were asked to complete questionnaires before and after the completion of the meditation course and a total of 43 participants completed all questionnaires. These researchers administered the Depression, Anxiety, and Stress Scale at Time 1 and Time 2 of this study. Results of repeated measures ANOVAs for each affective state (depression, anxiety, stress) showed significant differences between Time 1 and Time 2 (before and after the mindfulness meditation program) in the expected direction for all three measures. This study thus focused on individuals who had some experience and a particular interest in mindfulness training; in addition, this research specifically looked at the impact of mindfulness training on well-being, and not necessarily at mindfulness as a naturally occurring trait. Moreover, this research did not focus on mindfulness in emerging adults (the average age of participants was 46 years old).

In a third relevant study, Zvolensky et al. (2006) investigated the relationship between mindfulness-based attention in predicting anxiety and depressive symptoms and perceived health in a predominantly Caucasian community sample of 170 young adults living in Vermont. These researchers administered the MAAS, the Mood and Anxiety Symptom Questionnaire, the Positive Affect Negative Affect Schedule, and the Short Form General Health Survey. As expected, the MAAS negatively correlated with unhedonic depressive symptoms, anxious arousal, and negative affect, and positively correlated with positive affect and physical health. This provides

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evidence of the relationship between Eastern mindfulness and indicators of psychological, subjective, and physical well-being.

Several researchers have examined the relationship between mindfulness and physical health. One such study conducted by Cioffi and Holloway (1993) investigated three strategies to manage cold pressor pain in 63 healthy undergraduate students (mean age 22.8 years old). Participants were asked to keep their nondominant hand in ice-cold water and to remove it when the pain became intolerable. Participants were divided in three groups and given (through headphones) different attentional instructions before they placed their hand in the water. Participants on the *distraction* condition were instructed to form a mental image of their room at home and to concentrate on all the details of this image. Participants in the *monitoring* condition were instructed to pay close attention to the sensation on their hand and to closely monitor the location, intensity, and quality of this sensation. Participants in the *suppression* condition were instructed to not think about their hand sensations, to remove awareness of this sensation from their mind. After removing their hands from the water, all participants completed measures of pain every 20 seconds until 2 minutes had elapsed. Pain ratings provided 2 minutes after participants removed their hands from the cold water showed that the monitoring condition produced the most rapid recovery from the pain and that the suppression condition produced the slowest recovery. The notion of monitoring sensations has similarities with the attention and awareness features of Eastern mindfulness described above (Brown et al., 2007). Thus, this study supports the beneficial effects of attention and awareness in the subjective experience of pain.

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Another relevant study, conducted by Davidson et al. (2003), supports the positive impact of mindfulness-based training in certain markers of immune system functioning in healthy biotechnology workers. In this randomized controlled study, 25 participants were assigned to an 8-week training program in mindfulness meditation and 16 to a wait-list group. At the end of the 8-week period both groups were vaccinated with the influenza vaccine. Results showed increased left-sided anterior activation in the meditation condition, a pattern previously shown to be associated with positive affect. Results also suggest that participants in the mindfulness-based training group had greater antibody titer responses to the influenza vaccine than the nonmeditators, which suggest enhanced immune reaction. Lastly, the magnitude of the increase of the left-sided anterior activation was correlated with the increase of antibody titer response to the vaccine. These results point to the impact of Eastern mindfulness training in physical health and well-being. It is important to note that mindfulness in this study is being induced by training and thus is not measured as a naturally occurring trait.

Summary of Research on Eastern Mindfulness, Physical Health, and Well-Being

An extensive body of literature supports the relationship between Eastern mindfulness and measures of emotional and physical well-being. Eastern mindfulness has been associated with higher levels of self-esteem, optimism, vitality, self-actualization, and autonomy (Brown & Ryan, 2003), among other positive outcomes. Eastern mindfulness has also been inversely correlated with neuroticism, hostility (Brown & Ryan, 2003), anxiety, depression (Zvolensky et al., 2006), stress (Schreiner & Malcolm, 2008), and subjective reports of pain (Cioffi & Holloway,

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1993). However, it is important to be aware of the limitations associated with these studies. Several studies on mindfulness have focused on the effects of mindfulness-based training on general well-being and/ or physical health. A substantial body of this research has focused on mindfulness based training and its effect on pain, symptomatology, or markers of health. More research is needed to understand the relationship of mindfulness, especially as it occurs naturally, to psychological well-being and multiple somatic symptoms in healthy, high functioning populations to gain a better understanding of how Eastern mindfulness may be connected with individuals' experience of well-being in the absence of particular interventions. Finally, few studies investigated the relationship between Eastern and Western mindfulness and there is a paucity of research jointly examining Eastern mindfulness and perfectionism.

Western Mindfulness

The conceptualization presented above is based on the construct of mindfulness as described in the Eastern traditions. However, some researchers have described constructs that may fall in the same domain as mindfulness as described by Bishop and colleagues and Brown and colleagues. One remarkable example is Ellen Langer's work on mindfulness as a cognitive creative process. Langer's work has been conducted within the Western perspective (Langer, 1989) and thus her views on mindfulness will be referred to in this dissertation as Western mindfulness. According to Langer (e.g., 1989, 2005, 2009) mindfulness can be defined as a process of actively making distinctions in which new emerging meanings are given to new stimuli, instead of relying on old patterns of perceiving and understanding reality.

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Langer's view of mindfulness stresses the creation of new categories, the openness to new data and different perspectives, the increased control over context through the reappraisal that mindfulness makes possible (e.g., the same stimulus with a different context constitutes a different stimulus), and the importance of attending to the process versus the outcome. Similar to mindfulness as conceptualized from the Eastern traditions, Langer would also argue that continuing to perceive and experience reality in the same way that we have always done (e.g., rigidly based on existing schemata) likely promotes the status quo and interferes with the entertainment of new possibilities in our lives (Langer, 1989, 2009). In addition, cultivating an open and curious stance toward stimuli and information fosters qualities such as flexibility, engagement, and creativity (Langer, 1989, 2005, 2009; Langer & Moldoveanu, 2000). Research from Eastern and Western perspectives has suggested that mindfulness is associated with increased well-being.

At the same time, researchers in both paradigms recognize the differences between these two approaches to mindfulness. Langer put forth that her Western perspective on mindfulness bears important similarities to, as well as differences with, Eastern mindfulness perspectives and thus is wary of "making comparisons that are too tidy" (Langer, 1989, p. 78). For example, she posited that the creation of new categories in response to encountering new information would be considered as one activity very much aligned with her Western approach to mindfulness, while it would be in opposition to the nonelaborative nature of mindfulness as conceptualized by the Eastern traditions. Brown and Ryan (2003) also pointed out the differences between these two approaches, bringing attention to the fact that mindfulness in the Eastern

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traditions emphasizes attention to internal stimuli (thoughts, feelings, and sensations) as well as to external stimuli whereas Langer's approach stresses an active stance in the processing of information/ stimuli from the external environment. Based on the research that supports the relationship between these two distinct perspectives on mindfulness and enhanced psychological and physical health, coupled with the scant literature comparing these two approaches (e.g., Yeganeh, 2007; Yeganeh & Kolb, 2009), this study assessed the impact of both mindfulness perspectives on well-being.

Western Mindfulness, Physical Health, and Well-Being

Research also supports the relationship between Western mindfulness and physical health. Langer and her colleagues conducted a series of studies to test their hypothesis that one's state of mind would influence one's biological markers of health. She described this experiment as an attempt in "context control" (Langer, 1989, p. 100). In one of these studies, a group of elderly men were invited to a 5-day retreat and assigned to one of two groups. Researchers encouraged the members of one group to *be* (italics in original) the person they were 20 years ago, and another group to merely focus on their experiences of 20 years ago. The major difference between these groups was the context in which their experiences took place. The context of the first group was the way things were 20 years ago (e.g., movies, topics of discussion, games, as well as the request that participants speak—and write—about the past in the present tense), while the context for the second group was the present. Measures of physical strength (e.g., perception, cognition, taste, hearing and visual thresholds, among others) were taken before the experiment started and at the end of the retreat.

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The results of this study indicated that both groups showed significant improvement compared to their at-home baseline level. Differences were also found between the two groups; joint flexibility, sitting height, finger length, dexterity, and vision without glasses increased to a greater degree in the experimental group, whereas in the control group the performance on these measures either increased less markedly or decreased. Improvements in psychological tests (e.g., intelligence tests) were also observed in the experimental group. In contrast, friendliness and emotional expressiveness changed for the better in the control group but not in the experimental group (see Langer, 1989 for a review of this study). Langer hypothesized that it took a certain degree of (Western) mindfulness for these men to take part in this study since it entailed a novel experience, but posited that a greater degree of mindfulness was needed from the participants in the experimental group since they were given a set of guidelines that were more elaborate and demanding than to the control group. Thus, this work lends support to the potential positive effects of mindfulness on physical and psychological well-being.

Other studies have also looked at the relationship between mindfulness and physical health. Langer and her colleagues (e.g., Langer, Djikic, Pirson, Madenci, & Donohue, 2010) conducted a series of studies in which certain mindsets were primed in an experimental and various control groups. For example, in one study all participants were members of the Reserve Officers Training Corps. Participants in the experimental group were asked to *be* Air Force Pilots and were brought into a working flight simulator and positioned in the pilot's seat. After participants performed simple flight maneuvers looking at the screen, they were asked to read a

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line from an eye chart placed on the plane wings. Participants in the "broken simulator group" were treated in the same way as the experimental group, with the exception that they were informed that the flight simulator was broken, but that the experiment will continue nonetheless. Participants in this group manipulated the steering wheel as if they were flying even though the simulator was off. Participants were then asked to read the same eye chart as the experimental group.

Results of this study showed that vision improved for 40% of the participants in the experimental group, while there was no improvement in vision in the control group. In subsequent studies that were part of the same series of experiments other groups were introduced, such as an "eye exercise group" and a "motivation control group." Even when these additional groups were included, the experimental group improved their visual performance the most. Langer and her colleagues discussed their promising results in the context of their understanding that Western mindfulness creates novelty and triggers individuals to assign continually emerging meaning to stimuli. Thus, the mindful process of actively making distinctions minimizes habituation, fosters engagement, and creates more sustained levels of arousal, all of which inhibit mindless blindness (Langer et al., 2010).

Langer and her colleagues have conducted several other studies that lent support to the positive effects of Western mindfulness in diverse areas of physical and psychological well-being. Alexander, Langer, Newman, Chandler, and Davis (1989) investigated the relationship between transcendental meditation, mindfulness, and longevity in 73 residents of eight homes for the elderly. Participants were randomly assigned to a 12-week treatment period in a transcendental meditation program,

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mindfulness training program in active distinction making, a relaxation (low mindfulness) program, or to a no-treatment group. Researchers administered and collected several health measures, such as blood pressure (pre- and posttest), nurses' ratings of participants' mental health improvement after a mean period of 18 months (posttest only), longevity (survival rate)—measured as the percentage of each group who were still alive after a mean period of 36 months. Personality measures, including measures of depression, anxiety, and internal locus of control were administered pre- and post-treatment. Results from this study support the prediction that longevity may be benefited by psychological intervention (Alexander et al., 1989). Members of the transcendental meditation group in particular, but also members of the mindfulness training group appeared to have benefited from the corresponding interventions as shown by their changes in the expected direction on psychological and physiological functioning. This pattern of improvement was seen for blood pressure, nurses' ratings of mental health, and longevity. Participants in the transcendental meditation and mindfulness training groups also reported an enhanced capacity to cope with problems and to feel less old. Positive outcomes of transcendental meditation appeared to be more marked than of mindfulness training. However, mindfulness training appeared to have more impact than transcendental meditation on a measure of perceived control. Lastly, no significant differences were found on the anxiety and depression measures. This study lends partial support to the notion that changes in state of consciousness through certain kinds of training can mediate improvements in the health and subjective experience of the elderly (Alexander et al., 1989).

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Another relevant study that investigated mindfulness and well-being was conducted by Burpee and Langer (2005). In this study, marital satisfaction was investigated in relation to mindfulness. Ninety-five married participants responded to the LMS and to measures of marital satisfaction and perceived degree of similarity between participants and their spouses. Results showed a strong relationship between mindfulness and marital satisfaction. In fact, demographic factors of participants and/or their perceived similarity with their spouses were not as important as mindfulness. This suggests that spouses who are open to new experiences, mentally engaged, and flexible enjoy more satisfying and fulfilling marital relationships (Burpee & Langer, 2005). Mindful individuals are thus thought to enjoy higher levels of general well-being, as they are better equipped to handle conflict in more adaptive ways and be more flexible in relation to their beliefs and attitudes, all of which positively impact relationships (Burpee & Langer, 2005).

Summary of Research on Western Mindfulness, Physical Health, and Well-Being

The existing literature suggests positive associations between Western mindfulness and measures of physical health. There is also a smaller body of research that suggests a link between Western mindfulness and emotional well-being. Western mindfulness has been linked to marital satisfaction (Burpee & Langer, 2005), longevity (Alexander et al., 1989), improved vision (Langer et al., 2010), dexterity, and hearing capabilities (Langer, 1989), among other markers of physical and emotional health. Even though several studies have empirically examined Western mindfulness in older populations, additional research is needed to more fully understand the relationship between baseline levels of Western mindfulness and well-

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being in populations of all ages. Lastly, there is a paucity of research examining the relationship between Western mindfulness and perfectionism.

Perfectionism

Perfectionism has been defined as high, unrealistic performance demands and stringent standards combined with unrelenting self-criticism (Blatt, 1995). Traditionally, perfectionism has been considered to be a dysfunctional trait that needs to be adjusted or eliminated (see Schuler, 2000; Siegle & Schuler, 2000). Recently, a multidimensional conceptualization of perfectionism emerged that includes adaptive and maladaptive aspects (Chan, 2007; Rice & Ashby, 2007; Rice et al., 2006). Maladaptive perfectionism involves holding high personal standards with high discrepancy between performance expectations and performance evaluation, while adaptive perfectionism is characterized by high personal standards with little discrepancy between expectations and performance evaluation (Rice & Ashby, 2007; Rice et al., 2006). However, other researchers in the area of perfectionism (e.g., Flett & Hewitt, 2006) claimed that the term perfectionist should be reserved for individuals who strive for impossibly high standards in several aspects of life, thus emphasizing the inherently maladaptive aspects of this construct. In addition, the diathesis-stress model suggests that when individuals are severely stressed, the adaptive aspects of perfectionism may also have negative effects (Flett & Hewitt, 2002).

Perfectionism, Physical Health, and Well-Being

Wei et al. (2007) conducted a study investigating the relationship between perfectionism, acculturative stress, and depression in 189 Chinese international students (81% graduate students) attending a university in the midwestern United

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States. In this study, maladaptive perfectionism was assessed with the Discrepancy subscale of the APS-R, acculturative stress was assessed with the Acculturative Stress Scale for International Students, and depression was assessed with the Center for Epidemiological Studies- Depression Scale. As expected, these researchers found moderately high correlations between maladaptive perfectionism and acculturative stress and between maladaptive perfectionism and depression. The latter was still significant after controlling for acculturative stress and length of time in the United States. Also as expected, low levels of maladaptive perfectionism buffered the negative impact of acculturative stress on depression (Wei et al., 2007). Hierarchical regressions showed that acculturative stress, maladaptive perfectionism, and years in the United States accounted for 49% of the variance in depression, and acculturative stress and maladaptive perfectionism were both found to significantly predict depression.

In another relevant study, Chan (2007) examined positive and negative perfectionism, self-efficacy, and subjective well-being in a group of 317 Chinese gifted students (ages 7 to 18) in Hong Kong. This study used a 12-item Positive and Negative Perfectionism Scale (constructed for the purpose of this study) and the Schwarzer-Jerusalem Generalized Self-Efficacy Scale as predictor variables. Subjective well-being was measured using the Satisfaction With Life Scale and the Positive and Negative Affect Schedule. As expected, results showed that positive perfectionism was moderately positively correlated with life satisfaction, positive affect, and generalized self-efficacy, and inversely correlated with negative affect. Negative perfectionism, on the other hand, was most clearly correlated with negative

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affect, although it also had a small but significant positive correlation with positive affect and generalized self-efficacy. Self-efficacy also mediated the relationship between positive perfectionism and well-being. In addition, MANOVA indicated that gender had a significant main effect on perfectionism. Sequential regressions showed that when perfectionism was added to demographic variables as predictors of subjective well-being (in step 2 of the regression), these sets of predictors together accounted for significantly more variance than demographic predictors alone. This study provides further support for the distinction between the adaptive and maladaptive aspects of perfectionism, as well as for the positive relationship between adaptive perfectionism and subjective well-being.

In another study, Rice et al. (2006) administered the APS-R, selected items of the Perceived Stress Scale assessing self-appraised stress, the Social Connectedness Scale, the Center for Epidemiologic Studies-Depression Scale, the Beck Hopelessness Scale, and the Academic Integration Scale to two successive cohorts of honors students attending a southern public university. At two points in time (Time 1 and Time 2) in two different semesters, two cohorts of honors students were invited to participate in this study. A total of 403 students provided data at Time 1 and 277 at Time 2. Longitudinal data were collected from 181 students. These researchers found that both early and late in the semester APS-R scores accounted for significant variance in concurrent depression, hopelessness, perceived stress, social connectedness, and academic integration scores. When researchers controlled for the effect of high standards (used as a measure of adaptive perfectionism), discrepancy (a measure of maladaptive perfectionism) predicted stress, depression, hopelessness,

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academic integration, and social connectedness. On the other hand, when discrepancy was controlled for, high standards predicted three of the five outcome variables (hopelessness, academic integration, and social connectedness). The direction of all the predictions supported the hypotheses that the Discrepancy subscale indicates maladaptive aspects of perfectionism and the High Standards subscale suggests adaptive aspects of perfectionism. Overall, results of this study show that perfectionism is a robust predictor of concurrent and prospective adjustment, stress, and social connection. Discrepancy (maladaptive perfectionism) was consistently related to psychological problems, whereas High Standards (adaptive perfectionism) was related to healthy functioning (Rice et al., 2006). Moderator models suggest that stress worsens the effects of maladaptive perfectionism and is detrimental for students who are low in adaptive perfectionism. This study suggests that high standards should be considered adaptive, regardless of stress level, unless the maladaptive scores are also high (Rice et al., 2006). As a whole, this research supports the two distinct aspects of perfectionism and the differential impact they have on well-being.

Wu and Wei (2008) conducted another relevant study with a sample of undergraduates. They administered the Discrepancy subscale of the APS-R, in addition to the Concern Over Mistakes and the Doubts About Actions subscales from the Frost Multidimensional Perfectionism Scale to assess the latent variable they called Evaluative Concerns perfectionism. These researchers also administered the High Standards subscale from the APS-R and the Personal Standards subscale from the Frost Multidimensional Perfectionism Scale to assess the latent variable they

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called Personal Standards perfectionism. In addition, they administered scales from different instruments to measure the need for reassurance from others and the capacity for self-reinforcement. This study also looked at anxiety and depression as outcome variables. These researchers followed a two-step method of structural equation modeling in analyzing the data, in addition to performing correlations among the latent variables. As expected, Evaluative Concerns perfectionism was positively correlated with the need for reassurance from others and inversely related to the capacity for self-reinforcement. These vulnerabilities appear to increase the likelihood of experiencing psychological problems, such as anxiety and depression. In contrast, Personal Standards perfectionism was inversely correlated to the need for reassurance and positively correlated to the capacity for self-reinforcement, which in turn acts as a buffer against anxiety and depression.

In regard to some of the physical correlates of perfectionism, Brewerton and George (1993) administered the Eating Disorders Inventory to 34 female patients treated for migraine at a university medical center. Compared to a group of 577 female controls, migraine patients had significantly elevated scores on several subscales of the Eating Disorders Inventory, including Perfectionism. It is important to note that this study has several limitations, such as a small sample of participants diagnosed with migraine in comparison with the control group and the fact that Brewerton and George did not have their own control group, but used data from a sample used in a previous published study.

In another study, Lundh, Broman, Hetta, and Saboonchi (1994) examined the relationship between perfectionism and insomnia in a sample composed of randomly

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selected individuals from a county in Sweden ($N = 383$) and in a clinical sample of patients diagnosed with insomnia ($N = 70$) who had been referred to a sleep disorders clinic at a university hospital. Lundh et al. administered a shortened version of the Multidimensional Perfectionism Scale and a number of sleep-related questions to the county sample and found that perfectionism was correlated with the extent of sleep problems and with increased concerns over the negative consequences of inadequate sleep. Results from the clinical sample showed that this group had higher scores than the county sample on perfectionism, in particular on the Concerns Over Mistakes and Personal Standards subscales (two hallmarks of perfectionism). Even though this study does not demonstrate a causal relationship between perfectionism and insomnia, it does suggest that individuals with higher perfectionistic tendencies appear to have more sleep-related problems.

Summary of Research on Perfectionism, Physical Health, and Well-Being

Individuals engaged in activities in which performance demands are expected to be high are believed to be particularly aware of and invested in meeting such expectations (Rice et al., 2006). It has been argued, therefore, that perfectionism could constitute a risk factor for those pursing higher education (e.g., Chang, 1998; Frost, Marten, Lahart, & Rosenblate, 1990). Research findings suggest that perfectionism (either as a composite score and/ or specifically maladaptive perfectionism) is correlated with a broad range of emotional and physical problems, including perceived stress (Wei et al., 2007), depression (e.g., Blatt, 1995; Rice et al., 2006; Wu & Wei, 2008), difficulty sleeping (e.g., Lundh et al., 1994), migraines (e.g., Brewerton & George, 1993), psychosomatic disorders (e.g., Forman, Tsoi, & Rudy,

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1987), eating disorders (e.g., Peck & Lightsey, 2008), and suicide (e.g., Flamenbaum & Holden, 2007). Conversely, adaptive perfectionism has been linked to positive affect, life satisfaction, and self-efficacy (e.g., Chan, 2007), high self-esteem, academic achievement, social adjustment (Stoeber & Otto, 2006), and social connectedness (Rice et al., 2006), among other adaptive outcomes. Even though numerous studies examined perfectionism in college students, this study aims to contribute to the recently emerging body of literature that aims to empirically clarify whether adaptive and maladaptive aspects of perfectionism have a differential impact on well-being. In addition, this author could not find any published studies that examined jointly a range of physical symptoms as well as psychological well-being and perfectionism.

Mindfulness and Perfectionism

Bishop and colleagues (e.g., Bishop et al., 2004) broadened the conceptual model of mindfulness by including self-regulation models of cognition and mood (Carver & Scheier, 1981, 1990), as well as models of psychopathology. Self-regulation models posit that to a great extent, cognition functions in the service of goals. For perfectionists (i.e., individuals who hold unrealistically high performance demands coupled with strict standards and uncompromising self-criticism) the implication of this is twofold. First, it is likely that in individuals who pay much attention to goal attainment cognition is constrained to the stimuli that they perceive as being aligned with the accomplishment of their goals, possibly foreclosing the opportunity to encounter experience with a receptive, open, nonjudgmental, flexible approach. Second, individuals who are overly focused on their goals are particularly

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future- and outcome-oriented since it is in the future when these goals will hopefully be accomplished. This future-focus is likely to impair their openness to and engagement with their immediate experience. In addition, it is likely that perfectionistic individuals will have a bias towards action and thus may try to modify the object of experience more readily than those who do not strive for perfection. Therefore, it appears reasonable to expect that individuals who score high on measures of perfectionism would tend to be less mindful as described by both Eastern and Western approaches to mindfulness.

Self-regulation models also posit that individuals engage in a process of comparison between actual and desired states of affairs and that our responses are generally aimed at closing this gap or reducing this discrepancy (Carver & Scheier, 1981; Miller, Galanter, & Pribram, 1960; Powers, 1973). The perception of discrepancies tends to bring about negative affect (e.g., frustration), which entails judgment, evaluation, and elaboration instead of an approach of acceptance and openness toward one's present experience (Bishop et al., 2004). Perfectionists, who tend to be particularly aware of this gap, may thus be overly focused on trying to reduce this difference, which seems unlikely to coexist with a stance of acceptance and curiosity. Affective responses (e.g., fear, frustration) trigger cognitive and behavioral responses in an attempt to reduce the discrepancy between their perception of their performance and their performance goals. By definition, perfectionists are conceptualized to tolerate only a small gap between actual and desired states of affairs, given their unrealistically high standards accompanied with strict self-evaluation (Blatt, 1995). When a goal cannot be met and the gap seems too big,

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perfectionistic individuals tend to continue to focus on the discrepancy in an effort to find ways to reduce it, which may give rise to rumination (Martin & Tesser, 1996). Thus, according to Bishop et al., disengaging from one's goals and somewhat shifting the focus outside of one's goals should decrease the tendency to ruminate, and thus facilitate a mindful approach to reality. Diminished rumination is also thought to reduce cognitive vulnerability to developing certain types of psychopathology (Bishop et al., 2004).

Although conceptually it seems likely that higher levels of perfectionism would be negatively related to mindfulness, there is a paucity of research in this area. This author found only a few published studies that jointly examined these two constructs. Williams's (2008) theoretical article discussed four empirical studies that, taken together, suggest an association between mindfulness and lower levels of rumination, avoidance, and perfectionism. Of these four, only two studies included the construct of perfectionism, one indirectly (Crane et al., 2008) through assessing participants' self-discrepancy between their actual, "ought to," and "ideal" selves (Crane et al., p. 780), and one directly (Argus & Thompson, 2008). An experimental study by Crane et al. compared the effect of an 8-week Mindfulness-Based Cognitive Therapy program versus treatment as usual on the sense of self in patients who were recovering from major depression and had a history of suicidal ideation, planning, or behavior. These researchers also administered the Beck Depression Inventory-II and a self-discrepancy questionnaire (called Self-Description Questionnaire), which assessed the extent to which these previously depressed patients perceived a discrepancy between their actual and ideal self (Crane et al., 2008). In addition,

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Crane and her colleagues were interested to see whether mindfulness training protected these patients from re-activating maladaptive cognitive structures. This research question appears aligned with the characterization of perfectionists as described earlier in this section—as able to withstand only a small discrepancy between their ideal and actual states of affairs. Results showed that, as predicted in both the experimental and control conditions, baseline level of depression was correlated to larger discrepancy between actual and ideal sense of self. Both groups started with overall similar baseline levels of depression; however, at the end of treatment, those in the Mindfulness-Based Cognitive Therapy group exhibited significantly lower discrepancies between actual and desired selves. Additionally, the extent to which participants in the Mindfulness-Based Cognitive Therapy group let go of unhelpful, rigid goals or standards (e.g., "be physically attractive," "not to be so easily hurt," "to be always in control;" Crane et al., pp. 780–81) was positively correlated with the shift toward a smaller discrepancy between actual and ideal selves. This study supports that inflexible/ rigid notions about how one should be, or an excessively critical appraisal of oneself or one's performance, magnifies the perceived gap between one's current and desired state of affairs (e.g., selves, goals) and in turn tends to have a detrimental effect on one's well-being.

Argus and Thompson (2008), on the other hand, explored problem solving, perfectionism, and mindfulness in a group of 141 inpatients experiencing a clinical depressive episode. Researchers administered the APS-R, the MAAS, and the Depression scale of the Depression Anxiety Stress Scales-21 item. In this study, two subscales of perfectionism, High Standards (which illustrates adaptive perfectionism)

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and Discrepancy (which represents the maladaptive aspects of perfectionism), were negatively correlated with mindfulness; however, only the latter was above the generally accepted criterion (i.e., 0.30) for a meaningful correlation (Argus & Thompson, 2008). In addition, the Discrepancy subscale of the APS-R was positively related with depression severity, while the High Standards subscale was not. Regression analysis indicated that the combined independent variables (i.e., discrepancy, high standards, problem-solving, and mindfulness) accounted for 49% of the variance in depression symptom severity. In particular, mindful awareness made a substantial contribution to the variance in depression (21%). Results also indicate that mindfulness mediated the positive association between maladaptive perfectionism and depression severity. Taken together, this study provides some support for the existence of a negative relationship between mindfulness and perfectionism (in particular the maladaptive aspects of perfectionism), and between maladaptive perfectionism and symptom severity (Argus & Thompson, 2008).

Summary of Research on Mindfulness and Perfectionism

The limited research published in this area suggests a negative relationship between mindfulness and perfectionism (in particular the maladaptive aspects of perfectionistic strivings; Argus & Thompson, 2008; Crane et al., 2008). This research also points to the potential of mindfulness to buffer the adverse effects of perfectionistic traits on measures of psychopathology (Argus & Thompson, 2008; Crane et al., 2008). The paucity of research jointly examining these two constructs indicates the need for a greater understanding of the ways in which mindfulness and perfectionism relate to each other in a broad range of populations, as well as in

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relationship to a wider scope of outcome variables, in particular to measures of well-being.

Summary of Literature Review

Research has been conducted to elucidate the relationships among Eastern and Western traditions of mindfulness, perfectionism, physical health, and well-being. The literature indicates that college students have increasingly reported higher incidence of minor physical symptoms and other psychological problems that adversely impact their experience in college, in particular their academic performance. Both Eastern and Western traditions of mindfulness have been shown to positively correlate with physical health and several aspects of well-being. These studies have used a range of physical health measures as well as instruments assessing psychological functioning (Alexander et al., 1989; Brown & Ryan, 2003; Burpee & Langer, 2005; Davidson et al., 2003; Langer, 1989; Langer et al., 2010; Schreiner & Malcolm, 2008; Zvolensky et al., 2006). However, few studies have examined the relationship between Eastern and Western mindfulness, as they unfold naturally, to both physical health and psychological well-being in healthy, high functioning adults. The same limitation applies to the existing literature on the Western tradition of mindfulness, which has focused more on elderly populations, with fewer studies looking at Western mindfulness in young healthy adults in relation to their somatic health and psychological well-being.

Adaptive perfectionism has been linked to positive outcomes in relation to psychological functioning and health whereas maladaptive perfectionism has been found to predict both somatic problems and to adversely impact well-being. For

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instance, adaptive perfectionism has been found to be related to self-esteem, social adjustment, life satisfaction, positive affect, self-efficacy, and capacity for self-reinforcement, among other positive outcomes (e.g., Chan, 2007; Rice et al., 2006; Stoeber & Otto, 2006; Wei et al., 2007; Wu & Wei, 2008). Maladaptive aspects of perfectionism, on the other hand, have been linked to perceived stress, anxiety, depression, insomnia, migraines, and negative affect (see Brewerton & George, 1993; Lundh et al., 1994; Rice et al., 2006; Wei et al., 2007; Wu & Wei, 2008). Research on both aspects of perfectionism in relation to a wider range of minor somatic symptoms and psychological well-being appears to be limited.

Finally, the literature that jointly investigates the relationship of mindfulness and perfectionism to health and psychological outcomes is scarce. Only a few studies have directly or indirectly (i.e., through constructs that approximate perfectionistic tendencies) examined the relationship between perfectionism and mindfulness, as well as their joint impact on broad measures of somatic health and psychological well-being. These studies (e.g., Argus & Thompson, 2008; Crane et al., 2008) point to the existence of a negative relationship between perfectionism, in particular the maladaptive aspects of perfectionism, and Eastern mindfulness. This author did not find published research that looked specifically at the Western tradition of mindfulness in relation to perfectionism. Thus, the current study will contribute to the existing literature by clarifying the relationships among Eastern and Western traditions of mindfulness, and adaptive and maladaptive perfectionism in relation to somatic health and psychological well-being in college students.

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CHAPTER III

RESEARCH METHODS

Participants

Participants included 358 undergraduate students from four universities and colleges located in the northeastern United States. Since this study focused on the experience of emerging adults attending college, data from 21 participants who were 30 years of age or older were not considered for the analysis. One participant was excluded given that more than half of his/her data were missing and another one because his/her age was missing. As a result, data for 335 participants were analyzed. Approval to collect data was obtained from the Institutional Review Boards of each institution as well as from the professors who were teaching the classes in which the data were collected. The sample is diverse in regards to gender, race/ethnicity, year in college, and socioeconomic status (complete demographic information is provided in Chapter IV). A power analysis was conducted to determine the adequate sample size when performing multiple regressions with three independent variables (Eastern and Western mindfulness, and perfectionism). Based on Cohen's (1992) recommendations, approximately 80 participants should be included to detect a medium effect size at an alpha level of .05. Hence, the current sample size exceeded the recommended sample size.

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Instruments

Background questionnaire

The demographic questionnaire asked participants to report their age, gender, race/ethnicity, family income, year in college, cumulative grade point average, and number of credits being taken during the current semester. It also asked students to report the approximate number of visits to the health center or psychology service during the prior semester and whether students were working in addition to attending college.

Mindful Attention Awareness Scale (MAAS)

The Eastern approach to mindfulness was measured with the MAAS (Brown & Ryan, 2003). This measure assesses dispositional mindfulness using 15 items distributed in cognitive, emotional, physical, interpersonal, and general domains (Brown & Ryan, 2003). Respondents rate themselves using a 6-point Likert scale (1 = *almost always*, 6 = *almost never*), where high scores reflect more mindfulness. Sample items include "I find it difficult to stay focused on what's happening in the present" and "It seems that I am 'running on automatic' without much awareness of what I'm doing." All items are worded such that they reflect mindlessness, or absence of mindfulness. This is related to the feedback that item raters provided Brown and Ryan during scale construction. These raters posited that it is easier (if incorrect) to endorse high levels of attention and awareness if items reflect mindfulness rather than mindlessness. Items denoting less mindlessness seem to be more accessible to most individuals, given that mindless states are more common than mindful states (McIntosh, 1997; Varela, Thompson, & Rosch, 1991). The

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authors of the scale demonstrated that this indirect approach has the same meaning as a direct approach to mindfulness and provided empirical support for this notion (Brown & Ryan, 2003). Cronbach's alphas were .80 or higher in seven samples of students and adults living in the community (Brown & Ryan, 2003). In this study, the Cronbach's alpha coefficient was .88, indicating robust reliability. Confirmatory factor analyses were conducted in student samples and general adult samples. These analyses both confirmed the presence of a single-factor model and the fit with the single factor model was satisfactory in both cases (Brown & Ryan, 2003). Test-retest reliability was examined in college students over a 4-week period. A variance components analysis was performed and results indicated that the intraclass correlation (equivalent to a Pearson *r* with two measures) was .81 ($p < .001$). Another index of stability examined was the test-retest score agreement, which refers to whether individuals receive the same scale scores over repeated assessment (Dawis, 2000). Brown and Ryan's results showed that the mean scale scores were not significantly different. Convergent validity was established using measures of emotional intelligence, such as clarity of emotional states. Modest correlations were also found with openness to experience measures, specifically related to the Feelings, Actions, Ideas, and Values subscales on the NEO-Personality Inventory which reflect attentiveness and receptivity to experience and behavior. In terms of discriminant validity, the MAAS was uncorrelated with Private Self-Consciousness (e.g., the use of cognitive processes employed in the service of self-examination and reflection of the self) and negatively correlated to Public Self-Consciousness and Social Anxiety (Brown & Ryan, 2003).

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Langer Mindfulness Scale (LMS)

The Western perspective on mindfulness was assessed with the LMS (Bodner & Langer, 2001). This measure assesses respondents' trait mindfulness. It asks participants to rate the degree to which they agree or disagree with 21 statements related to four areas associated with mindful thinking: Novelty Seeking, Engagement, Novelty Producing, and Flexibility. Examples of items are "I try to think of new ways of doing things," "I have an open-mind about everything, even things that challenge my core beliefs," and "I find it easy to create new and effective ideas." Respondents rate themselves using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Some items are reverse coded so that higher scores reflect higher mindfulness. Initial construct validation of this measure was conducted on a sample of 200 individuals from ages 18 to 73 (Bodner & Langer, 2001). The Cronbach's alpha of the LMS in Bodner and Langer's study was .83. The LMS correlated with the other measures in the expected direction; for example, initial support for convergent validity is based on the fact that the LMS correlated positively with the tendency to entertain multiple perspectives (r = .57), the need for cognition (r = .41), the liberal thinking style (r = .44), openness to experience (r = .50), and general cognitive ability (r = .32). Discriminant validity was suggested by the expected negative correlations with the need for cognitive closure and the need for structure. Single-factor confirmatory factor analysis showed that the items are sufficiently homogenous in content to suggest the presence of one primary dimension underling the LMS. Second-order confirmatory factor analysis provided additional evidence of the existence of a single dominant factor and evidence of four indicator domains.

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These four factors are Flexibility, Novelty Producing, Engagement, and Novelty Seeking. Their Cronbach's alpha coefficients were .54, .83, .63, and .74, respectively. Overall, results suggest initial evidence that the LMS (full scale) is a reliable and valid measure of mindfulness. In this study, the Cronbach's alpha coefficient was .84, suggesting strong internal consistency. Cronbach's alphas for Flexibility, Novelty Producing, Engagement, and Novelty Seeking were .63, .70, .59, and .70 respectively. This suggests that only the Novelty Producing and Novelty Seeking factors had adequate reliability, similar to the results obtained in the validation study of Bodner and Langer.

A few studies support the expected moderately low positive correlations between the LMS and the MAAS. For example, Brown and Ryan's study (2003) reported significant correlations of .31 and .33 in samples of college students. As expected by Brown and Ryan, the MAAS was most strongly correlated to the Engagement subscale of the LMS, was correlated to a lesser degree with both Novelty Seeking and Novelty Producing subscales, and was unrelated to Flexibility. Further evidence comes from Yeganeh's (2007) dissertation work on mindful learning. Yeganeh's study included an exploratory factor analysis of the MAAS and the LMS, and results showed that, while they did not load together, they were significantly correlated (r = .25). Yeganeh concluded that the measures may be assessing different subcomponents of the mindfulness construct or different (but related) concepts which are both referred to as mindfulness.

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Almost Perfect Scale—Revised (APS-R)

Perfectionism was assessed using the APS-R (Slaney et al., 2001). This 23-item instrument measures three dimensions of perfectionism: High Standards, Discrepancy, and Order. Items are rated on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The High Standards subscale assesses performance expectations. Sample items include "I have high expectations for myself" and "I have a strong need to strive for excellence." The Discrepancy subscale targets the perceived gap between one's expectations of performance and evaluation of performance. Sample items include "I often worry about not measuring up to my own expectations" and "I rarely live up to my high standards." The Order subscale assesses one's preference for neatness and structure. Sample items include "I think things should be put away in their place." Higher scores in each subscale denote higher levels of perfectionism. In addition to the total score, the High Standards and Discrepancy subscale scores can be examined separately given that previous research suggests these two subscales tap distinctive dimensions of perfectionism, namely adaptive and maladaptive perfectionism, and have been found to be differentially linked to several psychological outcomes (e.g., depression, hopelessness, social connectedness; LoCicero & Ashby, 2000; Rice et al., 2006). Exploratory and confirmatory factor analyses were conducted and results showed the presence of three factors, providing support for a three-factor measure of perfectionism (Slaney et al., 2001). Cronbach's alpha coefficients for the subscales of Discrepancy, High Standards, and Order in initial reliability studies were .91, .85, and .82, indicating acceptable levels of internal consistency. The Cronbach's alpha coefficients in this

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study were .86 for the full scale and .93, 85, and .86 for the Discrepancy, High Standards, and Order subscales respectively, suggesting high internal consistency for both the full scale and the three subscales.

To support the validity of the APS-R several measures were correlated with each of the subscales. For example, a measure of depression was not significantly correlated with the High Standards subscale but was moderately correlated (r = .49) with the Discrepancy subscale. In addition, self-esteem was modestly correlated with the High Standards subscale (r = .19) but more strongly negatively correlated to the Discrepancy subscale (r = −.44). Similarly, grade point average correlated positively with the High Standards subscale (r = .34) but negatively with the Discrepancy subscale (r = −.23) (Slaney et al., 2001). Taken together, these results point to the validity and reliability of the APS-R.

Physical Health Questionnaire (PHQ)

Perceived health was assessed using the PHQ (Schat et al., 2005). An earlier measure of this scale was developed by Spence, Helmreich, and Pred (1987) and has since been modified and used by different researchers (e.g., Rogers & Kelloway, 1997; Schat & Kelloway, 2000, 2003). Fourteen statements representing four dimensions of somatic symptoms (i.e., Headaches, Sleep Disturbances, Gastrointestinal Problems, and Respiratory Infections) are rated on a 7-point Likert scale (1 = *not at all*, 7 = *all the time*). Exploratory factor analysis performed on the 14 items resulted in the extraction of four factors that cumulatively explained 68.9% of the variance (Schat et al., 2005) and which represented the four subscales mentioned above. The PHQ has been shown to have strong internal consistency, with

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a reported Cronbach alpha coefficient of .86 (Schat & Kelloway, 2000, 2003). The Cronbach's alpha coefficients for the four subscales were .79 or greater (Schat et al., 2005). The Cronbach's alpha coefficient for this study was .81. Sample items include "How often did you get a headache when there was a lot of pressure on you to get things done?" and "How often did you have to watch that you ate carefully to avoid stomach upsets?" Items are recoded so that higher scores reflect better somatic health.

This scale has been validated in the literature (Schat et al., 2005). Initial convergent validity was established based on the significant positive correlations with measures of psychological health (correlation coefficients ranging from .23 to .62), which are high enough to suggest a meaningful association but low enough to indicate that the PHQ is not redundant with the psychological health measure used. Discriminant validity was also supported by the nonsignificant correlations between measures of job performance and PHQ dimensions. Analysis of the relationships between negative affect and the PHQ dimensions suggested that they are significantly associated but empirically distinct. The establishment of the factor structure of the PQH using exploratory factor analysis on a sample of health care staff and its cross-validation with other samples (i.e., social service employees, health care staff, and undergraduate students) support the robustness and generalizability of the PHQ factor structure and provide evidence of its construct validity (Schat et al., 2005). Additional construct validation of the PHQ is provided in Schat et al.

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Scales of Psychological Well-Being (SPWB)

Ryff's SPWB, based on Ryff's (1989a) self-report inventory designed to measure six dimensions of psychological well-being, was used in this study. These dimensions include Self-Acceptance, Environmental Mastery, Purpose in Life, Positive Relations With Others, Personal Growth, and Autonomy. Each well-being dimension was operationalized with a 7-item scale of positively and negatively phrased items, which were mixed to produce a single inventory. Items are rated on a 7-point scale (1 = *strongly agree*, 7 = *strongly disagree*). Items are recoded so that higher scores reflect higher levels of psychological well-being. Sample items representing the Self-Acceptance, Purpose in Life, and Positive Relations With Others subscales include: "When I look at the story of my life, I am pleased with how things have turned out," "My daily activities often seem trivial and unimportant to me," and "People would describe me as a giving person, willing to share my time with others."

The original measure consisted of 20 items per subscale, but other shorter forms of the scale have been developed and successfully used. For example, 7-item scales were used in a national investigation called the Midlife Development in the United States II (2004-2006) study, which was conducted by Ryff et al. (2006a). Ryff's scale has been used to assess the psychological well-being of college students in a variety of studies (e.g., Arkoff et al., 2006; Chang, 2006; Wong, Chan, Tai, & Tao, 2008). The 7-item SPWB measure has good internal consistency, with reported Cronbach alpha coefficients of .71, .78, .75, .78, .70, and .84 for Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in

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Life, and Self-Acceptance (Carol Ryff, personal communication, October 2009). In this study, Cronbach's alpha coefficients were .92 for the full scale and .75, .80, .73, .74, .70, .and .86 for Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-acceptance respectively.

Initial validity and reliability for the 20-item subscales was provided by Ryff (1989a). Test-retest reliability coefficients for the 20-item scales over a period of 6 weeks on a subsample of respondents ($N = 117$) indicated high reliability for the six subscales: Self-Acceptance ($r = .85$), Positive Relations With Others ($r = .83$), Autonomy ($r = .88$), Environmental Mastery ($r = .81$), Purpose in Life ($r = .82$), and Personal Growth ($r = .81$) (Ryff, 1989a). Construct validity was initially established by correlating the psychological well-being measure with prior measures of positive functioning (i.e., life satisfaction, affect balance, self-esteem, internal control, and morale), and correlations ranged from .25 to .73. In a similar vein, significant negative correlations were found with prior measures of negative functioning (i.e., powerful others, chance, control, depression) with coefficients ranging from −.30 to −.60 (Ryff, 1989a). The correlations between the subscales ranged from .32 to .76. Even though certain dimensions, such as Self-Acceptance and Environmental Mastery (which correlated at $r = .76$) or Self-Acceptance and Purpose in Life (which correlated at $r = .72$) may suggest they are measuring the same underlying construct, other sources of evidence point to their being distinct enough to warrant their inclusion. For example, they exhibit differential correlations with other measures (e.g., Purpose in Life is highly correlated to Self-Acceptance, but has generally low correlations with life satisfaction, affect balance and self-esteem, whereas Self-

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Acceptance yielded higher correlations with the latter four measures). Convergent validity was initially established by the significant correlation of some of the psychological well-being scales and prior indices of well-being. Self-Acceptance and Environmental Mastery strongly correlated with measures of life satisfaction, affect balance, self-esteem and morale, whereas the other subscales (i.e., Positive Relations With Others, Autonomy, Purpose in Life and Personal Growth) were not as highly correlated with other measures of well-being.

Procedure

Institutional Review Board approval was obtained from four different universities and colleges in the northeastern United States. In one of the universities the study was posted online in the university's psychology research participation system. Thus, students who entered into this university's website were given the option to participate in this study (among many others) in exchange for research course credit. In an effort to increase participation, this researcher went into several undergraduate classes comprised of students who were eligible to participate in exchange for course-credit and invited them to participate in this study. In the rest of the colleges and universities, professors were contacted by phone and email to request their assistance in the administration of the survey. Participants from these schools completed the survey in person.

All participants completed an informed consent form (see Appendix A) and six questionnaires: the Mindful Attention Awareness Scale (MAAS), the Langer Mindfulness Scale (LMS), the Almost Perfect Scale—Revised (APS-R), the Physical Health Questionnaire (PHQ), the Scales of Psychological Well-Being (SPWB), and a

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background questionnaire (see Appendix B). Permission to use these instruments was sought and obtained from the respective authors (see Appendix C). Participants completed the measures online or in person. Completion of the questionnaires required no more than 25 minutes. To avoid order effects, two versions of the survey were used, each presenting the scales in a different, random order. As an incentive, all students whose participation in this study was not in exchange for course credit were entered into a random drawing to win one of two $100 American Express gift certificates. The informed consent of these participants included an extra paragraph alluding to this incentive.

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CHAPTER IV

RESULTS

This study aimed to examine Eastern mindfulness, Western mindfulness, and perfectionism as predictors of physical health and psychological well being in emerging adults attending college. The findings of this study, including descriptive statistics for each of the research and demographic variables, correlations for each of the research variables, and multiple regression statistics are presented in this chapter.

Data Analysis

Before analyses were conducted, the data were screened for skewness, kurtosis, and outliers. The results of these preliminary analyses indicated that the data met the requirements for the proposed analyses. Reliability coefficients were calculated to determine the reliability in this sample of the instruments used.

Descriptive statistics were calculated for the research variables MAAS, LMS, APS-R, PHQ, and SPWB as well as for the demographic data. Pearson product-moment correlation coefficients were calculated to determine whether the research variables, including some of their subscales, were significantly correlated (Research Questions 3, 4, 5, 6, 7, 8, 9, and 10). In addition, two standard multiple regression analyses were conducted. The first one examined whether Eastern mindfulness, Western mindfulness, and perfectionism (predictor variables) accounted for significant variance in physical health and the second multiple regression was conducted to determine if the same set of predictor variables accounted for significant

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variance in psychological well-being (Research Question 1). Finally, several multiple regression analyses were conducted to determine whether adaptive and maladaptive perfectionism interacted with mindfulness (Eastern and Western) in their effects on physical and psychological well-being (Research Question 2).

Descriptive Statistics

Demographics

The sample consisted of 335 college students aged 29 or younger (range = 18–29). The vast majority ranged in age from 18 to 24 years old with a mean age of 20.85 (*SD* = 2.13). In terms of gender, over two-thirds of participants were female. The majority of the participants identified themselves as Caucasian, followed by Hispanic. A complete listing of the frequency distributions for gender and race is displayed in Table 1.

Participants were relatively evenly distributed across the year they were in college. Most participants were taking 15 credits or less and were employed at the time of the study. Of those working, approximately half worked 20 hours per week or less. In addition, almost a third reported having visited the university health center once or more during the previous semester and a small percentage stated they visited the counseling center once or more during the previous semester. The complete frequency distributions for year in college, cumulative grade point average, number of credits students were enrolled in, employment, and family income are presented in Table 2.

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Table 1

*Frequency Distribution of Participants' Gender and Race (*N = *335)*

Variable	*N*	%
Gender		
Female	229	68.4
Male	106	31.6
Race		
Caucasian	221	66.0
Hispanic	49	14.6
African American	19	5.7
Asian	18	5.4
Biracial	18	5.4
Other	10	3.0

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Table 2

*Frequency Distribution of Participants' Year in College, Cumulative Grade Point Average, Number of Credits, Family Income, and Employment Status (*N = *335)*

Variable	*N*	%
Year in College		
Freshman	67	20.0
Sophomore	71	21.2
Junior	91	27.2
Senior	103	30.7
Cumulative Grade Point Average		
1.01 to 2.00	4	1.2
2.01 to 3.00	132	39.0
3.01 to 4.00	193	58.0
Number of Credits taken Current Semester		
6 or fewer	9	3.0
7 through 15	195	58.0
16 or more	123	36.4
Family Income		
Less than $20,000	46	13.7
$20,000–50,000	59	17.6
$50,000–80,000	63	18.8
$80,000–100,000	56	16.7
More than $100,000	102	30.4
Employment Status		
Employed	195	58.0
Not Employed	140	41.8

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Mindful Attention Awareness Scale (MAAS)

Means, standard errors of the mean, standard deviations, and range of scores for the MAAS are presented in Table 3 for all participants. Scores on this measure were found to be normally distributed and values ranged from 21 to 86. When compared to those in a normative sample of undergraduate students (M = 57.75), participants in this study reported similar levels of Eastern mindfulness (Brown & Ryan, 2003).

Langer Mindfulness Scale (LMS)

Means, standard errors of the mean, standard deviations, and range of scores for the LMS are presented in Table 3 for all participants. Scores on this measure were found to be normally distributed and values ranged from 77 to 144. When compared to those in a normative sample of adults (M = 102.8, SD = 15.5), participants in this study reported slightly higher levels of Western mindfulness (Bodner & Langer, 2001).

Almost Perfect Scale—Revised (APS-R)

Means, standard errors of the mean, standard deviations, and range of scores for the APS-R are presented in Table 3 for all participants. Scores on this measure were found to be positively skewed (z scores exceeded +2.5). A square root transformation was performed and the new variable was normally distributed. Values in the original measure ranged from 60 to 161. When compared to those in a normative sample of undergraduate students (M = 103.52), participants in this study reported similar levels of perfectionism (Rice & Ashby, 2007).

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Physical Health Questionnaire (PHQ)

Means, standard errors of the mean, standard deviations, and range of scores for the PHQ are presented in Table 3 for all participants. Scores on this measure were found to be negatively skewed (*z* scores exceeded −2.5). A square root transformation was performed and the new variable was found to be normally distributed. Values in the original measure ranged from 18 to 94. When compared to those in a normative sample of social service agency's employees (*M* = 69.42), participants in this study reported similar levels of physical health (Schat et al., 2005).

Scales of Psychological Well-Being (SPWB)

Means, standard errors of the mean, standard deviations, and range of scores for the SPWB are presented in Table 3 for all participants. Scores on this measure were found to be negatively skewed (z scores exceeded −2.5). A square root transformation was performed and the new variable was found to be normally distributed. Values in the original measure ranged from 120 to 288. When compared to those in a normative sample of adults (*M* = 230.78), participants in this study reported lower levels of psychological well-being (Carol Ryff, personal communication, October 2009).

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Table 3

*Descriptive Statistics: Mindfulness, Perfectionism, Physical Health, and Well-Being (*N *= 335)*

Scale	Mean	Alpha	Std. Error	Std. Deviation	Min	Max
MAAS	57.93	.88	.68	12.39	21	86
LMS	110.49	.84	.72	13.19	77	144
APS-R	103.80	.86	.99	18.19	60	161
APS-R-HS	40.13	.85	.36	6.66	16	49
APS-R-Disc	43.79	.93	.86	15.81	12	84
PHQ	67.07	.81	.75	13.71	18	94
SPWB	221.57	.92	1.75	32.00	120	288

Note. MAAS = Mindful Attention Awareness Scale; LMS = Langer Mindfulness Scale; APS-R = Almost Perfect Scale—Revised; APS-R-HS = Almost Perfect Scale—Revised-High Standards subscale; APS-R-Disc = Almost Perfect Scale—Revised-Discrepancy subscale; PHQ = Physical Health Questionnaire; SPWB = Scales of Psychological Well-Being

Correlational Analyses

Pearson product-moment correlation coefficients were calculated to determine the relationship among the following variables: Eastern mindfulness, Western mindfulness, perfectionism, physical health, and psychological well-being. These correlation coefficients are presented in Table 4 and are discussed below.

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Table 4

*Correlations between Eastern Mindfulness, Western Mindfulness, Perfectionism, Physical Health, and Psychological Well-Being (*N = *335)*

	MAAS	LMS	APS-R	APS-R-HS	APS-R-Disc	PHQ	SPWB
MAAS	—	.25*	−.32*	.16*	−.50*	.42*	.50*
LMS		—	−.13*	.32*	−.31*	.15*	.50*
APS-R			—	.44*	.84*	−.34*	−.37*
APS-R-HS				—	−.04	.08	.38*
APS-R-Disc					—	−.42*	−.66*
PHQ						—	.36*
SPWB							—

Note. MAAS = Mindful Attention Awareness Scale; LMS = Langer Mindfulness Scale; APS-R = Almost Perfect Scale—Revised; APS-R-HS = Almost Perfect Scale—Revised-High Standards subscale; APS-R-Disc = Almost Perfect Scale—Revised-Discrepancy subscale; PHQ = Physical Health Questionnaire; SPWB = Scales of Psychological Well-Being

*$p < .01$, one-tailed.

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Eastern mindfulness was positively correlated with perceived health (r = .42, p <.01). This result supports hypothesis 3 which posited that there would be a significant, positive relationship between Eastern mindfulness and physical health. Therefore, students who reported higher levels of Eastern mindfulness also reported better physical health.

Western mindfulness was also significantly and positively correlated with physical health (r = .15, p <.01). This result supports hypothesis 4 which stated that there would also be a significant positive relationship between Western mindfulness and physical health. Students who reported higher levels of Western mindfulness also reported better physical health.

There was also a significant and moderately high correlation between Eastern mindfulness and psychological well-being (r = .50, p <.01). This result supports hypothesis 5 which posited that there would also be a significant positive relationship between Eastern mindfulness and psychological well-being. Students who reported higher levels of Eastern mindfulness also reported higher levels of psychological well-being.

Western mindfulness was also significantly and positively correlated with psychological well-being (r = .50, p <.01). This result supports hypothesis 6 which stated that there would be a significant positive relationship between Western mindfulness and psychological well-being. Students who reported higher levels of Western mindfulness also reported higher levels of psychological well-being.

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Perfectionism was negatively correlated with perceived health ($r = -.34$, $p < .01$) and psychological well-being ($r = -.37$, $p < .01$). These findings support hypotheses 7 and 8 which stated that perfectionism would be negatively correlated with physical health and psychological well-being. Students who reported higher levels of perfectionism also reported lower levels of physical health and psychological well-being. It is important to note that the two dimensions of perfectionism, namely adaptive and maladaptive, correlated differently with both physical health and psychological well-being. Adaptive perfectionism was uncorrelated with physical health and positively correlated with psychological well-being ($r = .39$, $p < .01$). Maladaptive perfectionism was negatively correlated with both physical health and psychological well-being ($r = -.42$, $p < .01$; $r = -.66$, $p < .01$), respectively.

The maladaptive aspects of perfectionism were negatively correlated with Eastern mindfulness ($r = -.50$, $p < .01$) and Western mindfulness ($r = -.31$, $p < .01$). These findings support hypotheses 9 and 10 which stated that maladaptive perfectionism would be negatively correlated with both Eastern and Western mindfulness. Students who reported higher levels of maladaptive perfectionism also reported lower levels of Eastern and Western mindfulness. However, the adaptive aspects of perfectionism were positively correlated with both Eastern and Western mindfulness ($r = .16$, $p < .01$; $r = .32$, $p < .01$) respectively. Participants who reported higher levels of adaptive perfectionism also reported higher levels of Eastern and Western mindfulness.

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Multiple Regression Analyses

Standard multiple regression analyses were performed between physical health and psychological well-being as the dependent variables and Eastern mindfulness, Western mindfulness, and perfectionism as the predictor variables. The descriptive data were screened to have the certainty that the necessary assumptions for multiple regression analysis were met. First, it was determined that the sample size ($N = 335$) was sufficient for this type of analysis. Then, statistical tests were conducted to evaluate the normality, linearity, and homoscedasticity of the data. The data for Eastern and Western mindfulness (two of the predictor variables) were found to be normally distributed. However, the data for perfectionism (a predictor variable), and physical health and psychological well-being (two criterion variables) were skewed and thus were transformed using square root transformations. The transformed variables were normally distributed. The Mahalanobis distance was calculated. The Chi Square critical value for df = 5 equaled 20.52. Mahalanobis distances in this sample did not exceed this critical value; therefore, it was determined that there were no multivariate outliers. Collinearity statistics were also examined. For example, Variance inflation factor over 2.5 and Tolerance under .4 have been indicated to be a sign of multicollinearity. In this sample, the Variance inflation factor = 1.17 or below and Tolerance = .85 or above. This indicated that multicollinearity was not an issue among the predictor variables. There was one case of missing data in the psychological well-being measure (14 out of the 42 items were blank). When occasional items were left blank, average scores were entered.

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The standardized and unstandardized regression coefficients are depicted on Table 5 and Table 6. The multiple regression that included Eastern mindfulness, Western mindfulness, and perfectionism as predictors and physical health as the criterion variable was statistically significant, R^2 =.219, $F(3, 331) = 31.02$, $p < .001$. Eastern mindfulness, Western mindfulness, and perfectionism accounted for 21.9% of the variance in perceived health (*Intercept* = 58.07, R^2 = .219, adjusted R^2 = .212, $R = .468$, $p < .001$). This is considered to be a small effect as the three independent variables explained a fifth of the variance in perceived health, the dependent variable. Of the three independent variables, only Eastern mindfulness and perfectionism significantly predicted perceived somatic health, $t(331) = 6.35$, $p < .001$ and $t(331) = -4.32$, $p < .001$, respectively. The size of the effect of Eastern mindfulness is considered large ($\beta = .33$) and the effect of perfectionism is considered moderate ($\beta = -.22$) (Keith, 2005).

The multiple regression that included Eastern mindfulness, Western mindfulness, and perfectionism as predictors and psychological well-being as the criterion variable was also significant, R^2 =.440, $F(3, 330) = 86.57$, $p < .001$. Eastern mindfulness, Western mindfulness, and perfectionism accounted for 44.3% of the variance in psychological well-being (*Intercept* = 106.59, R^2 = .440, adjusted R^2 = .435, $R = .664$, $p < .001$). This is considered to be a moderate effect (Keith, 2005) given that the three independent variables explained almost half of the variance in psychological well-being, the dependent variable. Each of the three independent variables (Eastern mindfulness, Western mindfulness, and perfectionism) significantly predicted psychological well-being, $t(330) = 7.51$,

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$p < .001$, $t(330) = 9.15$, $p < .001$, and $t(330) = -4.93$, $p < .001$, respectively. The size of the effect of Eastern and Western mindfulness is considered large ($\beta = .33$; $\beta = .39$ respectively) and the effect of perfectionism is considered moderate ($\beta = -.21$) (Keith, 2005). It is worth noting that in the multiple regression that had physical health as the outcome variable, the method of administration (paper and pencil vs. online) and order of the instruments appeared to make a difference, $t(330) = -3.91$, $p < .001$. The size of the effect is considered moderate ($\beta = -.19$) (Keith, 2005).

Table 5

*Standard Multiple Regression between Physical Health and Eastern Mindfulness, Western Mindfulness, and Perfectionism (*N = *335)*

	B	Std. Error	β	Sig
MAAS	.37	.06	.33	.00
LMS	.05	.05	.04	.39
APS-R	−.17	.04	−.22	.00

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Table 6

*Standard Multiple Regression between Psychological Well-Being and Eastern Mindfulness, Western Mindfulness, and Perfectionism (*N = *334)*

	B	Std. Error	β	Sig
MAAS	.86	.12	.33	.00
LMS	.94	.10	.39	.00
APS-R	−.38	.08	−.21	.00

Analysis of Interactions

Subsequently, it was evaluated whether the two perfectionism subscales, namely, adaptive and maladaptive perfectionism, interacted with Eastern and Western mindfulness in their effects on physical health and psychological well-being. In order to conduct this statistical analysis the following variables were first centered: adaptive perfectionism, maladaptive perfectionism, Eastern mindfulness, and Western mindfulness. Then, several cross-product terms were created and added next to the model to test the possible interactions described above.

Physical Health as the Criterion Variable

Hierarchical multiple regressions were conducted to examine whether perfectionism and mindfulness interacted in their effects on physical health. Adaptive perfectionism, maladaptive perfectionism, Eastern mindfulness, and Western mindfulness were entered in the first step, and the four interaction terms (Eastern

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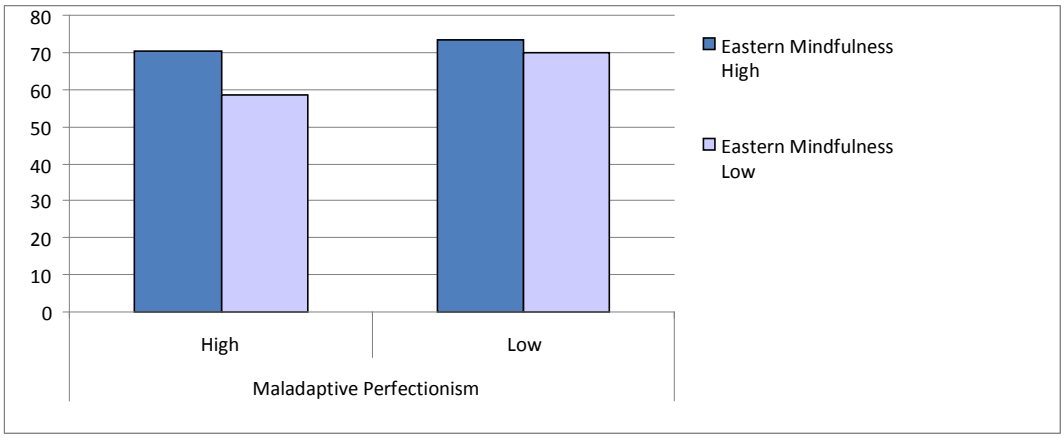
mindfulness and adaptive perfectionism; Eastern mindfulness and maladaptive perfectionism; Western mindfulness and adaptive perfectionism; and Western mindfulness and maladaptive perfectionism) were entered in the second step. Adaptive perfectionism, maladaptive perfectionism, Eastern mindfulness, and Western mindfulness accounted for 23.3% of the variance in students' physical health, R^2 =.23, $F(4, 330) = 25.09$, $p < .001$. Only the interaction between Eastern mindfulness and maladaptive perfectionism was found to be statistically significant, $\Delta R^2 = .02$, $F(1, 329) = 10.63$, $p < .01$. Being high (versus low) in Eastern mindfulness made more of a difference in physical health for participants who were high (versus low) in maladaptive perfectionism (see Figure 1).

Figure 1

Interaction of Eastern Mindfulness and Maladaptive Perfectionism in Physical Health



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Psychological Well-Being as the Criterion Variable

Hierarchical multiple regressions were conducted to examine whether perfectionism and mindfulness interacted in their effects on psychological well-being. Adaptive perfectionism, maladaptive perfectionism, Eastern mindfulness, and Western mindfulness were entered in the first step, and the four interaction terms (Eastern mindfulness and adaptive perfectionism; Eastern mindfulness and maladaptive perfectionism; Western mindfulness and adaptive perfectionism; and Western mindfulness and maladaptive perfectionism) were entered in the second step. Adaptive perfectionism, maladaptive perfectionism, Eastern mindfulness, and Western mindfulness accounted for 61.7% of the variance in students' psychological well-being, R^2 =.62, $F(4, 329) = 132.50$, $p < .001$. Two out of the four interactions tested were statistically significant: (a) maladaptive perfectionism and Eastern mindfulness; and (b) adaptive perfectionism and Western mindfulness, $\Delta R^2 = .02$, $F(2, 327) = 9.20$, $p < .01$. Participants who reported higher levels of Eastern mindfulness reported higher levels of psychological well-being if they also reported lower levels of maladaptive perfectionism (see Figure 2). In addition, participants who reported higher levels of adaptive perfectionism reported higher levels of psychological well-being if they also reported higher levels of Western mindfulness (see Figure 3). The three significant interactions discussed above lend partial support to hypothesis 2, which stated that perfectionism and mindfulness would interact in their effects on physical health and psychological well-being.

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Figure 2

Interaction of Eastern Mindfulness and Maladaptive Perfectionism in Psychological Well-Being

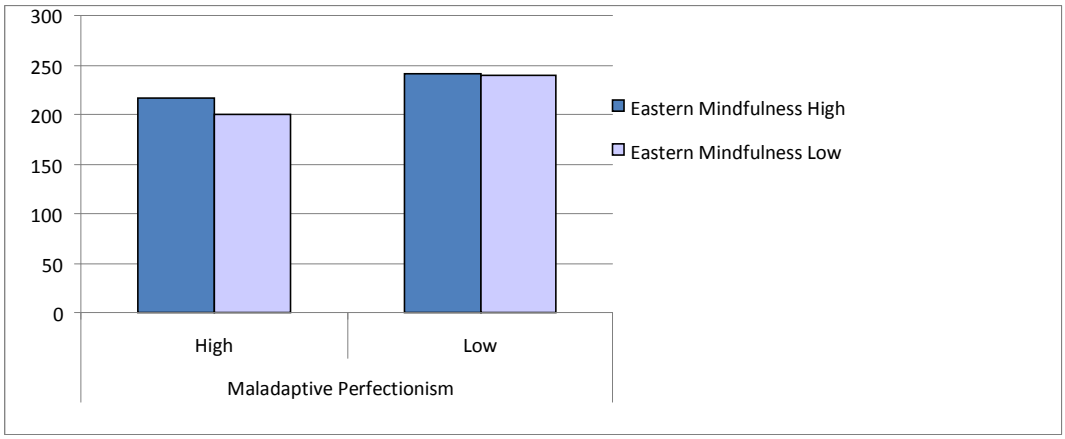
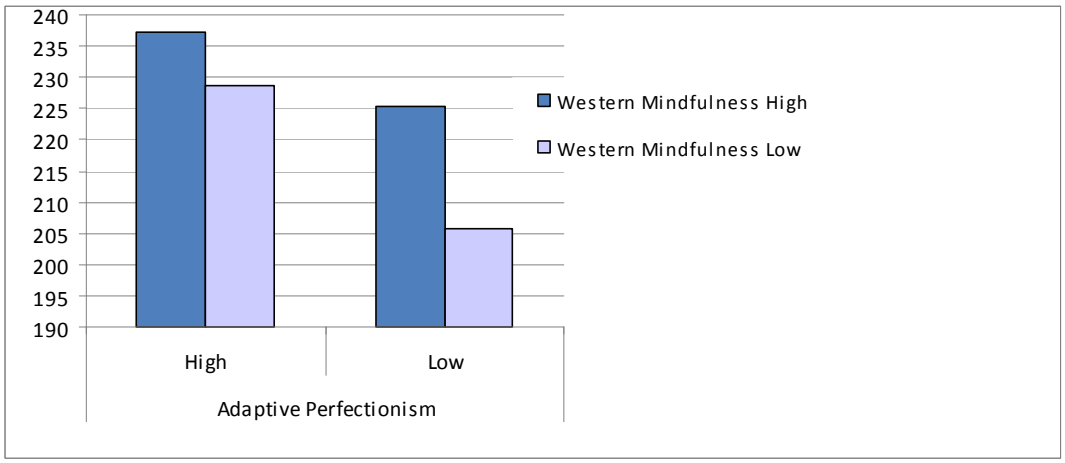


Figure 3

Interaction of Western Mindfulness and Adaptive Perfectionism in Psychological Well-Being



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CHAPTER V

DISCUSSION

The purpose of this study was to contribute to the body of knowledge on the relationship between mindfulness, perfectionism, and physical and psychological well-being. This chapter outlines the results of the study and presents a comparison of these findings to those of previous research. Implications, limitations of the study, and suggestions for future research are discussed.

Summary and Conclusions

The findings of this study support all of the hypotheses presented in chapter 1, with the exception of hypothesis 2, which was partially supported by this research. As hypothesis 1 predicted, Eastern mindfulness, Western mindfulness, and perfectionism accounted for a significant amount of variance in perceived physical health and psychological well-being. This author is not aware of previous studies that examined this combination of predictor variables in relation to physical health and psychological well-being. Nonetheless, previous research supported relationships between Eastern mindfulness and physical health (Brown & Ryan, 2003), Eastern mindfulness and psychological well-being (Zvolenski et al., 2006), Western mindfulness and physical health (Langer, 1989), Western mindfulness and psychological well-being (Burpee & Langer, 2005), perfectionism and physical health (Lundh et al., 1994), and perfectionism and psychological well-being (Rice et al., 2006). It is worth noting that perfectionism negatively contributed to physical health

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and psychological well-being. This suggests that students' unrealistically high expectations and perception of a discrepancy between their expectations and their performance negatively influence their perception of physical health and psychological well-being.

Hypothesis 2, which stated that adaptive and maladaptive perfectionism would significantly interact with Eastern and Western mindfulness in their effects on physical and psychological well-being, was partially supported. Maladaptive perfectionism interacted with Eastern mindfulness in their effects on physical health and psychological well-being. Being high (versus low) in Eastern mindfulness made more of a difference in the direction of better physical health outcomes for those who were high (versus low) in maladaptive perfectionism. Results also indicate that students who were low in maladaptive perfectionism reported better psychological well-being than participants who were high in maladaptive perfectionism. In addition, being high in Eastern mindfulness made more of difference in the direction of better psychological well-being outcomes for those who were high in maladaptive perfectionism. Lastly, adaptive perfectionism was found to significantly interact with Western mindfulness in their effects on psychological well-being. Being high in Western mindfulness made more of a difference in the direction of better psychological well-being for those who were low in adaptive perfectionism. In addition, being high in Western mindfulness and high in adaptive perfectionism rendered the highest levels of psychological well-being.

As hypothesis 3 predicted, there was a positive relationship between Eastern mindfulness and perceived health. These results are aligned with those of Brown and

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Ryan (2003) and Zvolenski et al. (2006). Brown and Ryan examined Eastern mindfulness and physical health in college students and community adults and their results indicated a negative relationship between Eastern mindfulness and both reported physical symptoms and frequency of medical visits in the previous 21 days. Zvolenski et al. examined the relationship between Eastern mindfulness and participants' perceptions of their health in a sample of young adults recruited from the community. Their results also indicated a positive relationship between Eastern mindfulness and physical health.

As hypothesis 5 predicted, Eastern mindfulness and psychological well-being were positively correlated. These results are aligned with previous research in this area. For instance, Brown and Ryan's (2003) results indicated positive relationships between several measures of eudaimonic (psychological) well-being (e.g., vitality, self-actualization, autonomy, relatedness) and Eastern mindfulness. In addition, Zvolenski et al. (2006) reported inverse relationships between Eastern mindfulness and measures of general distress (including subscales of anxiety and depression). Taken together, these results lend support to a positive association between well-being and Eastern mindfulness.

As hypotheses 4 and 6 predicted, there were positive relationships between Western mindfulness and perceived health, and between Western mindfulness and psychological well-being. These findings are aligned with those of previous research, such as an experimental study conducted by Langer (1989) and an intervention study conducted by Alexander et al. (1989). Langer's study involved two groups of elderly men who participated in a 5-day retreat. Members of the experimental group were

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asked to *be* (italics in original) the person they were 20 years ago while members of the control group were encouraged to remember and think about their experiences from 20 years ago. The context of the experimental group was how things were 20 years ago, while the context for the control group was the present. This study found that those assigned to the experimental group, whom according to Langer were involved in an activity that required a higher degree of Western mindfulness, showed improvement in several indicators of physical strength (e.g., joint flexibility, sitting height, finger length, dexterity, and vision without glasses). Members of the control group showed decreased performance (or less marked improvement) in these measures.

Therefore, Langer's findings suggest that situations that require a greater degree of Western mindfulness are positively associated with actual measures of physical health. In addition, Burpee and Langer's (2005) results showed a strong positive relationship between Western mindfulness and marital satisfaction. In this study, spouses who were open to new experiences, mentally engaged, and flexible, enjoyed more satisfying and fulfilling marital relationships. This supports a positive association between Western mindfulness and well-being. Moreover, the study by Alexander et al. (1989) conducted with residents of homes for the elderly indicated that participating in Western mindfulness training appeared to improve psychological and physiological functioning.

Aligned with hypotheses 7 and 8, results indicated negative relationships between perfectionism and perceived health and between perfectionism and psychological well-being. These findings are consistent with previous research.

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Research by Rice et al. (2006) indicated positive relationships between maladaptive aspects of perfectionism and depression, hopelessness, and perceived stress, and positive relationships between adaptive aspects of perfectionism and social connectedness. In addition, Chan's (2007) results supported negative relationships between perfectionism and subjective well-being (operationalized as satisfaction with life and positive affect) in a sample of gifted students aged 7 to 18. In regard to the negative relationship between perfectionism and physical health, findings of this study are also aligned with previous research. For instance, Brewerton and George (1993) found that patients treated for migraine had higher levels of perfectionism scores when compared with controls. In addition, Lundh et al. (1994) examined the relationship between perfectionism and insomnia in a county sample and in a clinical sample of patients diagnosed with insomnia. Perfectionism was correlated with sleep problems and with concerns over the adverse consequences of inadequate sleep.

As hypotheses 9 and 10 predicted, there were negative relationships between both Eastern and Western mindfulness and maladaptive perfectionism. These findings are aligned with the scarce research available in this area. For instance, Argus and Thompson (2008) found a negative relationship between Eastern mindfulness and maladaptive perfectionism in a sample of inpatients experiencing clinical depression. This author has not found any published studies examining the concept of Western mindfulness (e.g., using the LMS) and perfectionism. It is worth noting that Eastern mindfulness had a stronger negative relationship with maladaptive perfectionism than Western mindfulness. This is conceptually aligned with the meaning ascribed in the literature to these constructs, that is, Eastern mindfulness has

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been characterized as a state of nonjudgmental acceptance and awareness, in which every thought, feeling, or sensation is accepted as is (Bishop et al., 2004; Brown & Ryan, 2003) whereas Western mindfulness has been described by Langer (1989) as cognitive flexibility, openness to new information, and awareness of multiple perspectives, where new information is encountered with a disposition to attribute new meanings.

Implications

Previous studies have supported relationships between personality characteristics and physical and emotional well-being (Matarazzo et al., 1984; Rodin & Salovey, 1989; Taylor, 1990). The results of this study suggest that students' degree of mindfulness and perfectionism contribute to their experience of physical health and psychological well-being. These findings are important on many levels. First, it is important for parents to be aware that instilling in their children unusually high standards and promoting a focus on the discrepancy between performance expectation and performance evaluation is likely to have a negative impact on their children's well-being. Parents' and/or caregivers' points of view as well as the standards to which they subject their children tend to have a significant impact on the standards children will adopt for themselves. Therefore, raising caregivers' awareness about the pervasive negative impact of perfectionistic traits, especially the maladaptive aspects of perfectionism, may positively influence their children's physical and psychological well-being. Moreover, this knowledge may shed light on the importance of promoting their children's self-esteem on the basis of intrinsic

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qualities (e.g., values, principles) as opposed to external accomplishments. This is also important information for educators and counselors.

Second, it is important for educators and counselors to be aware of the negative impact of perfectionism on well-being. It would be helpful if college educators could be more aware of students who endure substandard levels of well-being as a result of their overly perfectionistic attitudes. This would allow college educators to consider assignments or grading criteria that, by their nature, tend to diminish students' focus on attaining a perfect score (e.g., pass/ fail). This may increase the likelihood that students be more engaged in the process (e.g., learning the material and/ or writing an essay they are satisfied with) versus the outcome (i.e., grade). It would also allow college instructors and administrators to facilitate referrals to counseling for students whose perfectionistic tendencies are taking a toll on their physical and emotional well-being. This information may be also illuminating for counselors working with college students. Many students may present at college counseling centers with symptoms of decreased physical or emotional health and counselors who are knowledgeable of the negative relationship between perfectionism and well-being would be in a better position to target this area in their interventions.

It is important especially for educators and counselors to be aware of the positive impact of Eastern and Western mindfulness on physical and psychological well-being. Educators in university settings may refer students to the literature on the practice of Eastern mindfulness and raise their curiosity about the positive impact that brief Eastern mindfulness practices may very likely have on their well-being.

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Counselors may be able to, more formally (e.g., making this a focus of counseling), introduce Eastern mindfulness interventions with students who tend to be overly perfectionistic and, more generally, with any student whose well-being is compromised. In this context, it is important for counselors to be aware of the inverse relationship between perfectionism and mindfulness so that they can appropriately use mindfulness interventions in an effort to help overly perfectionistic students.

Educators, on the other hand, can more directly promote the qualities associated with Western mindfulness, such as curiosity, engagement, flexibility, and a predisposition to ascribe new meanings to old stimuli. One avenue to achieve this goal is through the choice of assignments. For example, a history instructor may choose to ask students to visit one historical landmark and write an essay about it (or answer specific questions that stimulate students' cognitive flexibility) instead of taking an in-class exam that some students can manage to pass only by knowing the information by heart. The hope is that such an assignment will more likely raise students' curiosity and stimulate their engagement in the subject.

Ethical Considerations

The procedures followed in this study were aligned with the current American Psychological Association's (2010) guidelines for ethical research. All participants were presented with the informed consent letter prior to beginning the survey. The informed consent document outlined important details about the study, such as the topic of the research, the approximate amount of time that participation would entail, and the possible benefits and risks associated with participation. Only those who

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agreed to participate were provided with the survey or given access to the survey (for those completing the survey online). No identifying information was asked in the survey. Therefore, participants were assured that their participation was anonymous. Students were also informed that their participation was entirely voluntary and that they could withdraw their participation at any time without consequence. Even though this study posed no more than minimal risk, participants were provided with the contact information of the primary researcher and her supervisor, as well as of the chairperson of Fordham's Institutional Review Board in case participants had any questions or concerns about the study or their participation.

Limitations

A methodological limitation in this study is the use of self-report measures. Participants completed concomitant measures of Eastern and Western mindfulness, perfectionism, physical health, and well-being and it is possible that individuals whose physical and psychological well-being is compromised act more mindless or perceive a higher discrepancy between their expectations and their (health) performance. In other words, those individuals who feel more sick may also feel more judgmental and less accepting (i.e., Eastern mindfulness), as well as less engaged, less cognitively flexible, and less interested in assigning novel meaning to old stimuli (i.e., Western mindfulness). Taken together, this may constitute a potential problem in terms of common method variance (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Another limitation is that participants were drawn from a small sample of colleges only in a certain region (northeast) of the country. Students in the

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northeastern region of the United States may differ from students in other parts of the country. In addition, even within these institutions, participants were not randomly selected. Thus, differences may have existed between those who decided to participate and those who did not. Another consideration is that students participated in the study at different points in the semester and the specific timing might have influenced their responses, particularly on the physical health measure which asks respondents to rate their somatic symptoms during the past month.

All the students who participated online completed the measures in the same order, whereas those who participated in person completed the measures arranged in a single, but different, order. This makes it impossible to discern order effects from method of administration effects. It is also possible that students who completed this study in exchange for research credit differed from students whose participation was not in exchange for course credit.

Lastly, it is important to put the results obtained in this study in the context of the sample of students that participated. Approximately two-thirds of the participants were female, two thirds were Caucasian, and the majority were from middle and upper socioeconomic backgrounds. This limits the generalizability of the results of this study to broader, more diverse populations.

Recommendations for Future Research

It is important that future research in this area be conducted addressing the limitations discussed above. Several other avenues of research may contribute to the body of knowledge in this area. For example, because the predictor variables used in this study are broad qualities that encompass several individual characteristics, it

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would be important to know more specifically what aspects of Eastern and Western mindfulness and perfectionism are associated with certain areas of physical health and psychological well-being. Therefore, looking at the relationships between these concepts at a narrower level may allow researchers to make conclusions that have more direct implications for practice. For example, it may be that the Engagement aspect of Western mindfulness is very strongly related to the Purpose in Life subscale of psychological well-being. If enough research is able to replicate finding at this level of analysis, more specific interventions could be devised that educators and counselors may drawn upon when deemed appropriate.

It is also important to know more about the personal variables that were a focus of this study in terms of their developmental course. For instance, future research could address whether some of the predictor variables used in this study are more likely to be acquired in one developmental stage versus another (e.g., childhood, adolescence, young adulthood). This will increase educators' knowledge about when to introduce interventions aimed at developing an optimum level of these personality characteristics. It would also be worthwhile to study mindfulness and perfectionism in relation to vocational and career choice. It is possible that different levels of these variables are particularly aligned with success in certain professions. For example, it is likely that very high levels of perfectionism could pose an obstacle for teachers of very young children (more so than to individuals in other occupations) since it may prevent their ability to adapt to each individual child's pace and way of learning.

In a different vein, research to date has explored the relationship between perfectionism and self-esteem in individuals with eating disorders (e.g., Peck &

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Lightsey, 2008; Sassaroli, Gallucci, & Ruggiero, 2008; Steele, Corsini, & Wade, 2007). It seems worthwhile for future research to incorporate the possible moderating role of mindfulness in buffering the association between perfectionism and eating disorder severity. Developing a mindful stance seems to be a more attainable goal in this age of managed care (characterized by short-term treatment) than the prospect of increasing self-esteem. Therefore, the positive effects of mindfulness and its ability to buffer the negative aspects of perfectionism may prove to be helpful knowledge for clinicians working with eating-disordered populations. Studying the intrapersonal qualities that may help to ameliorate the severity of eating disorders as well as their negative consequences is especially relevant since anorexia nervosa is the psychiatric diagnosis with the highest mortality rate (Miller et al., 2005).

Final Conclusion

This study supports significant relationships between Eastern mindfulness, Western mindfulness, perfectionism, physical health, and psychological well-being. Mindfulness and perfectionism predicted physical health and psychological well-being in a sample of college students aged 29 or younger. Mindfulness and the adaptive and maladaptive aspects of perfectionism were also found to interact in their effects on physical health and psychological well-being. These results have important implications for parents and other caregivers as well as for educators and counselors. These findings suggest that the relationship between personality characteristics and well-being is a fruitful area for further research.

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APPENDIXES

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APPENDIX A

INFORMED CONSENT FORM FOR RESEARCH STUDY

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FORDHAM UNIVERSITY

THE JESUIT UNIVERSITY OF NEW YORK

Dear Participant,

My name is Claudia Perolini and I am a graduate student at Fordham University. I am studying for my doctorate in counseling psychology and I am conducting a research study on the experiences of college students. The purpose of the study is to investigate the relationships between certain personality traits and well-being in college students. Undergraduate students from any major may participate in this study. I realize how busy you might be, so I selected questionnaires that would take you no longer than 25 minutes to complete. The results of this study will help us better understand your experiences.

This study consists of a five-part written survey. The first part asks for background information such as your age, gender, and year in school. The second and third parts ask about your attitudes and feelings. The fourth part asks about your physical health including minor physical symptoms that many people experience in their everyday life. The fifth part asks you about your well-being.

There is no identifying information recorded on the surveys, but all of the information collected in this study will be kept confidential nonetheless in a locked cabinet at Fordham University. Only my supervising faculty member and I will have access to the completed surveys. Participation in this study is completely voluntary and you may discontinue answering questions at any time without penalty. Your decision about whether or not to participate in this study has no bearing on your grades in any course or your standing in your academic program.

There are no apparent risks involved in your participation. However, if you have any questions or concerns regarding your participation in the study, please feel free to contact me at (203)-215-6241. You may also contact Dr. Merle Keitel, my supervising faculty member, at (212)-636-6468. Dr. E. Doyle McCarthy, Chair of Fordham University's Institutional Review Board, can answer any questions you may have about your rights as a research participant. She can be reached at 212-636-7946.

All participants will be entered into a random drawing to win one of two $100 American Express gift certificates. Please provide your contact information on the next page so that I can contact you in the event that you win one of these two gift certificates.

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If you agree to participate in this study, please sign one copy of this form and return it to me, separate from the completed survey. Keep the other copy for your records. There will be no way to connect this informed consent with your responses to the survey. If you do not wish to participate, simply return the packet of questionnaires to me. Thank you very much for your time and consideration.

Sincerely,

Claudia Perolini
Doctoral Student in Counseling Psychology
Fordham University

I agree to participate in this research study on the experiences of college students. I understand that I will complete a series of confidential surveys that will be identified only by a code number but not my name. I also understand that there are no anticipated risks of participation. I understand that participation is voluntary and that I am free to withdraw participation at any time without penalty.

Name Signature Date

E-mail Address

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APPENDIX B

BACKGROUND QUESTIONNAIRE

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Background Questionnaire

1. Age:_____

2. Gender:

_____Female
_____Male

3. Race/Ethnicity:

_____African American
_____American Indian
_____Asian
_____Other: _____ (Please specify)
_____Caucasian
_____Hispanic
_____Pacific Islander

4. Total annual family income

_____Less than $20,000 _____$20,000-$50,000 _____$50,000-$80,000
_____$80,000-$100,000 _____More than $100,000

5. I am a college:

_____Freshman
_____Sophomore
_____Junior
_____Senior
_____Other:_____

6. Name of the college or university I am attending: _____

7. Cumulative College GPA _____

8. Number of credit hours I am taking **this semester** _____

9. During **last semester,** I visited the Health Center approximately _____ times

10. During **last semester,** I visited the Counseling Center/ Psychology Services approximately _____ times

11. Are you currently employed? _____Yes
_____No

If yes: I work (on average) _____ hours per week

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APPENDIX C

PERMISSION TO USE INSTRUMENTS

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Mindful Attention Awareness Scale

RE: Permission to use the MAAS
Wed, January 13, 2010 11:47:43 AM
From: Kirk Warren Brown <kwbrown@vcu.edu>
...
View Contact
To: Claudia Perolini <perolini@fordham.edu>

hi Claudia,

Yes you are welcome to use the MAAS; you can find the scale available for download on the Resources page of my Lab website; the url is shown below.

All the best with your research,

Kirk Warren Brown, PhD

From: Claudia Perolini [mailto:perolini@fordham.edu]
Sent: Tuesday, January 12, 2010 8:10 PM
To: kirk@scp.rochester.edu; kwbrown@vcu.edu
Subject: Permission to use the MAAS

Hi Dr. Brown,

My name is Claudia Perolini and I am a doctoral student at Fordham University in the counseling psychology program. I am currently developing a research study in conjunction with my degree requirements and I will be investigating the relationships among mindfulness, perfectionism, and well-being in college students. I am e-mailing you to ask your permission to use your Mindful Attention Awareness Scale. Thank you very much in advance for your time.

Sincerely,
Claudia Perolini

Langer Mindfulness Scale

From: "Ellen Langer" <langer@wjh.harvard.edu>
Sent: Tuesday, September 22, 2009 7:33 PM
To: "Michael Pirson" <pirson@fordham.edu>
Subject: Re: (no subject)

but of course

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Michael Pirson wrote:
hi Ellen,

Quick request: Claudia Perolini is a PhD Student interested in the connection of mindfulness and well being. For her thesis she will want to use the LMS. For the proposal she needs a permission email from you to let her use it.

Could you just send an email saying yes she can?

Thanks and all the best,
Michael

Almost Perfect Scale—Revised

NOTE: You have my permission to use the APS-R for research only. Such use indicates agreement with the stated terms, is limited to one year from today's date, and involves appropriate citations in the event of publication. I would also like to be informed of any data gathered and findings on the scale.

Physical Health Questionnaire

Hello Claudia,

You are welcome to use the PHQ in your research. Please let me know if you need me to send you a copy of the scale or article. All the best in your research. Take care,

Aaron Schat, Ph.D.

From: Claudia Perolini [mailto:perolini@fordham.edu]
Sent: Tuesday, January 12, 2010 8:08 PM
To: schata@mcmaster.ca
Subject: Permission to use the Physical Health Questionnaire

Hi Dr. Schat,

My name is Claudia Perolini and I am a doctoral student at Fordham University in the counseling psychology program. I am currently developing a research project in conjunction with my degree requirements and I will be investigating the relationships among mindfulness, perfectionism, and well-being in college students. I am e-mailing you to ask your permission to use the Physical Health Questionnaire. Thank you very much in advance for your time.

Claudia Perolini

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Scales of Psychological Well-Being

Re: Ryff Scales of Psychological Well-Being
Sat, October 24, 2009 6:29:59 PM
Carol Ryff <cryff@wisc.edu>
From: ...
View Contact
To: perolini@fordham.edu

2 Files Download All
14-item handout.doc (118KB); Form in word 6 format.doc (65KB)

Thanks for your interest in the well-being scales and the brief description of your dissertation plans. Attached please find two files. The first includes items for the six scales of well-being plus a list of published studies using them. The second includes a formatted version of the full instrument.

Please note I strongly recommend that you NOT use the ultra-short-form version (3 items per scale). That level of assessment has psychometric problems and does not do a good job of covering the content of the six well-being constructs.

Best wishes for your dissertation and please send me copies of any findings you generate with the well-being scales,
Carol Ryff

At 03:20 PM 10/22/2009, you wrote:
Dear Dr. Ryff,

My name is Claudia Perolini and I am a doctoral student in Counseling Psychology at Fordham University in New York.

I am interested in using the Ryff Scales of Psychological Well-Being as a dependent variable for my dissertation. My dissertation will examine the relationships among mindfulness, perfectionism, optimism, and well-being in college students. If feasible, it is likely that measures will be administered either in a paper and pencil format or online (e.g., through a university's website or a link to access the questionnaires).

I would like to ask your permission to use this instrument and to kindly ask you if could send the scales to me (I will likely be using the form that has seven items per dimension).Thank you very much in advance. Please let me know if there is any other information that you might need. Sincerely,

Claudia Perolini

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ABSTRACT

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MINDFULNESS AND PERFECTIONISM AS PREDICTORS OF PHYSICAL AND PSYCHOLOGICAL WELL-BEING IN COLLEGE STUDENTS

Claudia Mariana Perolini, PhD

Fordham University, New York, 2011

Mentor: Merle A. Keitel, PhD

The purpose of this study was to examine whether perfectionism and Eastern and Western views of mindfulness predicted psychological well-being and physical health in college students. This study also examined the relationship between mindfulness and perfectionism. The sample consisted of 335 college students aged 29 or younger. More than half of the participants completed the measures online in exchange for course-credit. The rest of the participants completed the measures in person and did not receive course credit for their participation. All participants provided informed consent prior to starting the survey. The survey included a demographic questionnaire, the Mindful Attention Awareness Scale, the Langer Mindfulness Scale, the Almost Perfect Scale—Revised, the Physical Health Questionnaire, and the Scales of Psychological Well-Being.

Statistical analyses indicated positive correlations between Eastern and Western mindfulness and perceived health, and between Eastern and Western

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mindfulness and psychological well-being. Perfectionism was negatively correlated with perceived health and psychological well-being. In addition, the maladaptive aspects of perfectionism were negatively correlated with Eastern and Western mindfulness. In contrast, adaptive perfectionism was positively correlated with Eastern and Western mindfulness. Standard multiple regression analyses indicated that Eastern mindfulness, Western mindfulness, and perfectionism accounted for significant variation in physical health and psychological well-being. Hierarchical multiple regression analyses indicated that Eastern mindfulness and maladaptive perfectionism interacted in their effects on both physical health and psychological well-being. Adaptive perfectionism and Western mindfulness were also found to interact in their effects on psychological well-being. Taken together, these findings underscore the relationship between these personality variables and individuals' well-being and stress the importance of future research to continue to elucidate the multifaceted interrelationships between mindfulness, perfectionism, and well-being.

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VITA

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VITA

CLAUDIA MARIANA PEROLINI

Date of Birth	February 24, 1978
Place of Birth	Montevideo, Uruguay
High School	Colegio y Liceo Santa Rita Montevideo, Uruguay Graduated March 1996
Bachelor of Arts Business Administration	Universidad ORT Uruguay Montevideo, Uruguay Conferred June 2000
Bachelor of Arts Psychology	Southern Connecticut State University New Haven, Connecticut Conferred May 2005
Master of Science in Education	Fordham University New York, New York Conferred May 2010
Current Position	Psychology Extern Iona College Counseling Center 2010-present

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