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The Effects of Yoga with Meditation (YWM) on Self-Criticism, Self-Compassion, and Mindfulness

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THE EFFECTS OF YOGA WITH MEDITATION (YWM) ON SELF-CRITICISM, SELF-COMPASSION, AND MINDFULNESS

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Dissertation Approval

This is to certify that the thesis presented to us by Kelly Newby on the 15th day of May, 2014, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Abstract

This study investigated the effects of a mindfulness-based intervention, Yoga with Meditation (YWM), on self-criticism, self-compassion, and mindfulness in a graduate student population. When compared to a control group, the experimental group reported decreased self-criticism, and increased self-compassion and mindfulness. The experimental group consisted of graduate students interested in participating in weekly yoga and meditation classes over the course of a two-month time period. Each participant was encouraged to complete self-report measures prior to the first YWM session, and after the completion of each YWM class. Baseline and post-intervention scores of 24 individuals who attended at least four of the classes were included in the data analysis. The control group consisted of 24 graduate students in a research methods class who voluntarily completed the measures at week one for baseline data and at week four of the study to obtain post-test scores. The measures included the Philadelphia Mindfulness Scale (PHLMS), the Levels of Self-Criticism Scale (LOSC), and the Self-Compassion Scale (SCS). The YWM group reported significant decreased scores on the LOSC, and increased scores on the SCS and PHLMS, when compared to the control group who reported no significant changes from baseline to post-intervention. Results suggest that YWM may be a useful tool to increase levels of mindfulness and self-compassion, and more importantly, to decrease levels of self-criticism.

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Chapter 1

Introduction

Statement of the problem.

Cognitive theories posit that thought processes are associated with an individual's emotional experiences, whether positive and functional or negative and dysfunctional (Beck, 1967). Dysfunctional thoughts are related to emotional disturbance, mood instability, and depression, and are characterized by negative assumptions and self-criticism (Ramel, Goldin, Carmona, & McQuaid, 2004). Self-criticism is an aversive cognitive process, defined as a negative and harsh punitive evaluation of oneself (Powers, Zuroff, & Topciu, 2004).

Self-criticism has been identified as a major risk factor for the development of mood instability and psychopathology (Shaw & Segal, 1999). Self-criticism may lead to emotional distress (Blankstein & Dunkley, 2002), feelings of hopelessness and helplessness, interpersonal problems, depression, anxiety, and self-harming behaviors (Shaw & Segal, 1999). Individuals identified as self-critical may be among those at highest risk for suicide (Shaw & Segal, 1999).

In an effort to decrease self-criticism in individuals, there has been growing support for the utilization of practices based on mindfulness and self-compassion within Western psychotherapy. Traditional Western psychotherapy has begun to incorporate alternative methods of treatment, based on elements of Eastern practices introduced by Buddhism. Eastern philosophy includes Buddhism, or Buddhist psychology, which primarily focuses on increasing self-awareness and improving one's mental state by engaging in self-compassionate thoughts (Neff, 2003b).

Self-compassion is negatively related to self-criticism (Longe et al., 2010). Self-compassion entails becoming aware of one's physical and emotional state, acknowledging these states without judgment, recognizing that the experience of suffering is natural, and then treating the self with kindness (Neff, 2003a). Inducing self-compassion appears to help individuals cope with distressing and negative events and buffer against self-criticism (Leary, Tate, Adams, Allen, & Hancock, 2007). Therefore, self-compassion may directly impact self-criticism.

Programs designed to increase self-compassion have shown promise to improve mood (Neff, 2012). For example, self-compassion has been linked to improved emotional regulation, lower levels of anxiety and depression, and overall improved psychological well-being (Neff, 2003a). Additionally, Neff (2004) found that self-compassion was positively associated with greater perceived competence, less fear of failure, and mastery of goals. As Neff (2003a) described, the first step to becoming self-compassionate or increasing self-compassion is to become aware of one's state of being without judgment, otherwise known as mindfulness.

Mindfulness can be defined as paying attention on purpose, in the present moment, and doing so in a nonjudgmental way (Kabat-Zinn, 1990). Mindfulness practices have been associated with a multitude of positive mental health outcomes (Carmody & Baer, 2008). Brown and Ryan's research (2003) suggests that increasing levels of mindfulness is associated with improved self-regulation and positive emotional states, increased self-compassion, and decreased stress, anxiety, and rumination (Shapiro, Brown, & Biegel, 2007). Mindfulness has been incorporated into several evidence-based

treatments such as mindfulness-based stress reduction (MBSR), mindfulness-based relapse prevention (MBRP), dialectical behavior therapy (DBT), mindfulness-based cognitive therapy (MBCT), and acceptance and commitment therapy (ACT) (Davis & Hayes, 2011).

Practicing mindfulness is one way to increase self-compassion, which may decrease self-criticism. Yoga has been identified as one of the most effective ways to build mindfulness skills (Carmody & Baer, 2008) and has been included in the protocols of evidence-based treatments such as MBSR and MBCT. There are many different types of yoga, and various schools of thought differ in their definitions of yoga. Yoga can consist of postures, breathing methods, chanting, and meditation. It involves moving the body mindfully through poses while stretching and balancing the body (Daubenmier, 2005).

Yoga and meditation have been practiced in the Eastern part of the world for many years; however, in recent decades, it has become a popular practice in Western society (Ross & Thomas, 2010; Shelov & Suchday, 2009), and this increased interest has been followed by research into its effects (Somerstein, 2010). Practitioners of yoga have reported enjoyment and improved mood immediately following yoga practice (Miller, Bartholomew, & Springer, 2005). Yoga has been associated with improved symptoms of depression and anxiety (Somerstein, 2010; Streeter et al., 2007), increased self-esteem and life-satisfaction, and decreased perfectionism (Komiya & Taniguchi, 2011). Recently, yoga and meditation have been considered two independent practices; however, one of the goals of yoga is to prepare the body for meditation, which typically follows a traditional yoga practice (Walters, 2002).

A primary component within the practice of yoga is meditation (Ross & Thomas, 2010; Seldmeier et al., 2012). Meditation is another mindfulness practice consisting of an individual quieting the mind and staying in the present moment to increase self-awareness through nonjudgmental attention (Sedlmeier et al., 2012). Meditation has been associated with increased mindfulness (Bishop et al., 2004; Carmody & Baer, 2008), increased self-compassion (Burns et al., 2011), and decreased perfectionism (Burns, Lee, & Brown, 2011).

Mindfulness-based practices, such as yoga and meditation, may be acceptable, cost-effective means of increasing self-compassion and decreasing self-criticism. Yoga has been associated with increased levels of mindfulness (Conboy, Wilson, & Braun, 2010) and self-compassion (Conboy et al., 2010; Gard et al., 2012), and decreased levels of perfectionism (Komiya & Taniguchi, 2011). Meditation has also been associated with increased levels of mindfulness (Carmody & Baer, 2008) and self-compassion, and decreased levels of perfectionism (Burns et al., 2011). However, these studies examined yoga and meditation as independent practices. What remains unclear is how the combination of yoga and meditation together interact with these constructs.

To date, there has not been research examining the impact of the combination of yoga and meditation on self-criticism, self-compassion, and mindfulness. In theory, when mindfulness increases self-compassion and counters negative self-talk (Neff & McGehee, 2009), it may increase self-compassion and decrease self-criticism. Therefore, feasible, cost-effective, and acceptable mindfulness practices, such as yoga and meditation, may lead to further increased levels of mindfulness, increased levels of self-compassion, and decreased levels of self-criticism.

Purpose of the Study

The purpose of the current study is twofold: to further understand the relationships between self-criticism, self-compassion, and mindfulness, and to assess changes in these constructs immediately following yoga and meditation classes. It is essential to increase understanding of the interactions between self-criticism, self-compassion, and mindfulness and their sensitivity to change in order to increase therapeutic options. Exploring alternative ways to reduce self-criticism may provide more accessible options for individuals suffering with psychopathology who have limited access to or interest in conventional therapies.

Chapter 2

Review of the Literature

This review focuses on understanding the constructs of self-criticism, self-compassion, and mindfulness. This paper discusses the harmful impact of self-criticism on psychological functioning, as well as the extensive benefits of mindfulness and self-compassion. Alternative therapy options to address psychopathology associated with self-criticism include approaches aimed at increasing self-compassion and mindfulness. Mindfulness will be reviewed in depth, including both mindfulness-based therapies and mindfulness-based practices, such as yoga and meditation.

Self-Criticism.

Dysfunctional thoughts are related to mood instability and are characterized by negative assumptions and self-criticism (Ramel et al, 2004). Self-criticism is an aversive cognitive process, defined as a negative and harsh punitive evaluation of oneself (Powers, et al., 2004). Research on self-criticism began as an outgrowth of perfectionism and has been conceptualized as being either adaptive or maladaptive (Slaney, Rice, & Ashbey, 2002). Adaptive perfectionism is associated with positive characteristics such as optimism and high self-esteem, whereas maladaptive perfectionism is primarily associated with self-criticism and negative self-evaluation (Rice, Vergara, & Aldea, 2006; Taranis & Meyer, 2010; Trumpeter, Watson, & O'Leary, 2006).

The construct of self-criticism encompasses two related but independent subtypes of self-criticism. One category, comparative self-criticism (CSC), entails having a negative view of the self in comparison to others (Thompson & Zuroff, 2004). The other category, internalized self-criticism (ISC), entails having a negative view of the self in

comparison to personal standards (Thompson & Zuroff, 2004). Both categories of self-criticism are considered to be forms of maladaptive perfectionism and experienced as aversive (Trumpeter et al., 2006).

Etiology of self-criticism. Research indicates that self-criticism begins to emerge in childhood. Katz and Nelson (2007) have identified some mediating factors to the acquisition of self-criticism. They found that self-critical individuals commonly report a lack of warmth or care in childhood, have experienced excessive past family stress, and typically lack self-esteem; this was true for both the comparative self-criticism (CSC) and internalized self-criticism (ISC) subtypes (Katz & Nelson, 2007). Blankstein and Dunkely (2002) found that the primary mediating factor to self-criticism is an inability to effectively regulate emotions and cope with life stressors, which is learned beginning in childhood. Liotti and Gilbert (2011) found that children who lacked a supportive and caring environment may have difficulties with the maturation of cognitive competencies needed for emotion regulation.

Feelings of shame during childhood may cause depressive ruminations, leading to a self-critical cognitive style (Gilbert & Procter, 2006). Glassman and colleagues (2007) suggest that individuals who were excessively criticized in childhood learned to engage in self-criticism as a form of direct self-abuse. In addition to research, there are also many theories attempting to explain how and why self-criticism develops in certain individuals.

Theories of self-criticism. Among various theories in the self-criticism literature, the cognitive theory has been supported by research. According to the cognitive theory of psychopathology, the development of most pathology is due to irrational thoughts and

cognitive distortions (Beck, 2005). Cognitive distortions were originally defined by Beck (1967) as the result of processing information in ways that result in identifiable errors in thinking. These distorted perceptions may begin early in life and continue to expand with each experience. There are several cognitive distortions, or categories of commonly used distorted thought processes. Most closely related to self-criticism, one in particular, all-or-nothing thinking, also called black or white thinking, is based on the premise of identifying things and/or themselves as either a complete success or a complete failure (Hewitt & Flett, 1993). Beck and colleagues (1979) proposed that cognitive distortions are developed as a result of an individual generalizing his or her experiences into categories of thinking, or schemas.

Schemas are considered stable cognitive structures that represent an individual's past learning experiences (Beck, Rush, Shaw, & Emery, 1979). Research supports the presence of maladaptive schemas in individuals diagnosed with psychological disorders (Unoka, Tolgyes, & Czobor, 2007). One schema related to the cognitive distortion of all-or-nothing thinking is termed "unrelenting standards and hypercriticalness." Individuals with this schema may present as perfectionistic and driven and believe they must constantly strive to meet high standards (Young, Klosko, & Weishaar, 2003).

In addition to the general cognitive theory of self-criticism, self-discrepancy theory (SDT) is a model proposing that people set high standards in order to motivate their performance (Higgins, 1987). Although this motive has been supported by research (Gilbert, Clarke, Hempel, Miles, & Irons, 2004), the self-discrepancy theory describes how these motives develop into maladaptive thought patterns. The model identifies domains of the self: the actual self, the ideal self (what traits and qualities one would like

to possess), and the "ought" self (what traits and qualities one should possess). When there is a difference between these perceived selves, distress may occur, and the individual feels an obligation to attain the ideal or "ought" self. As a result, the individual suffers from feelings of guilt, worthlessness, and shame, and punishes himself or herself for not meeting personal standards (Higgins, 1987).

Higgins (1987) proposes that these cognitive processes may have developed from early childhood interactions with parents that involved the presence of negative consequences for unmet standards held by the parents. This particular discrepancy is associated with negative outcomes, such as irritability, low energy, lack of interest, anger, frustration, and self-criticism (Higgins, 1987). Thus, engaging in self-criticism may be a result of discrepancies between the real self and the ideal or "ought" self. Consistent with self-discrepancy theory, research suggests that discrepancies between their actual self and their ideal or "ought" self were typically associated with depression and anxiety in women (Heron & Smyth, 2013).

Social comparison theory (SCT) (Festinger, 1954) postulates that humans drive to evaluate their abilities by making comparisons. Individuals will frequently evaluate their attributes against direct, physical standards. However, when these objective standards are unavailable, individuals tend to compare themselves to other people (Wood, 1989). Festinger coined the term "similarity hypothesis," indicating that individuals prefer to compare themselves with similar others, deeming their performance as unique and positive, or they see their performance as poor, or a failure (Wood, 1989). Festinger (1954) referred to upward comparisons as making comparisons with others who are superior (Wheeler, 1966), whereas downward comparisons consist of making

comparisons with others who are inferior (Wills, 1981). Wood (1989) states that in Western cultures, people feel pressure to continually improve their abilities, and through comparing themselves to others, they strive to meet and exceed others' abilities. It is also noted that social comparison leads to affiliation, and similarities lead to uniformity within groups (Wood, 1989). Social comparison theory can be compared to comparative self-criticism (CSC), in which individuals evaluate their self-worth based on comparisons to others.

Although self-critical thoughts impair functioning, perhaps there are reasons these thoughts are maintained. Gilbert and colleagues (2004) examined functional reasons for self-criticizing and found two primary reasons people engage in self-criticism. One reason was the desire to self-improve and prevent the self from making mistakes; the second involved anger at oneself and self-persecution to take revenge on the self (Gilbert et al., 2004). In support of the second function of self-criticism, Glassman and colleagues (2007) found that adolescents who have developed a self-critical cognitive style are more likely to engage in self-injurious behaviors as a form of self-punishment.

Consequences of self-criticism. Whether an individual is being verbally abused by another individual or the verbal abuse is self-inflicted, emotional consequences will follow. Researchers have suggested that self-criticism may stimulate the same neurophysiological systems as criticism received by others (Gilbert & Irons, 2005). Numerous studies have shown that self-criticism is associated with a multitude of negative outcomes (Bieling, Israeli, & Antony, 2004; Chang, 2006; Shaw & Segal, 1999). It may lead to emotional distress (Blankstein & Dunkley, 2002), feelings of

hopelessness and helplessness, interpersonal problems, depression, anxiety, and self-harming behaviors (Shaw & Segal, 1999).

Self-criticism has been identified as a primary risk factor for depression, self-injurious behaviors, and suicide (Blatt, 1995; Enns & Cox, 1999; Gilbert et al., 2010; Hamilton & Schweitzer, 1999; O'Connor, 2007). Individuals identified as self-critical may be among those at highest risk for suicide (Shaw & Segal, 1999), which has fueled researchers' interests to further understand the cognitive processes of self-criticism. Among adolescents, self-criticism has been strongly linked to hopelessness, a predictor of suicidal behaviors (Donaldson, Spirito, & Farnett, 2000). In fact, a self-imposed need for perfection may be the most powerful predictor in suicidality, even more significant than hopelessness itself (Shaw & Segal, 1999).

Self-criticism and perceived failure. Depression may result from self-criticism due to perceived failure and helplessness (e.g., Blatt & Zuroff, 1992). Self-critical individuals equate their failures with worthlessness, and typically respond with self-punishment rather than learning from the failure (Thompson & Zuroff, 2004). Perceived failure by adolescents in an academic setting was more predictive of suicidal thoughts and behaviors than self-esteem and perceived control in a longitudinal study (Martin, Staggers, & Anderson, 2011).

Self-critical individuals tend to define their self-worth by achievement, hold excessively high standards for themselves, and constantly scrutinize their performance, making them vulnerable to depressed mood when faced with failure (Cox, Clara, & Enns, 2009; Gruen, Silva, Ehrlich, Schweitzer, & Friedhoff, 1997; Mendelson & Gruen,

2005). When success is obtained, self-critics experience little satisfaction, if any, due to their constant striving for perfection (Thompson & Zuroff, 2004).

Blankstein and Dunkley (2002) found that self-criticism was associated with irrational thinking and overgeneralization of failure, low self-efficacy and motivation, and maladaptive learning experiences. Self-critical individuals tend to perceive stress as more aversive and intolerable, and to them, a failure is evidence of their worthlessness (Hewitt & Flett, 2002). Research indicates that when self-critical individuals are faced with failure, they are likely to experience depressive mood. For example, Mendelson and Gruen (2005) conducted a randomized controlled trial employing an in vivo stress-induction procedure. They found that participants with higher levels of self-criticism experienced increases in depressive mood when faced with failure (Mendelson & Gruen, 2005**).**

Self-critical individuals also experience negative physiological effects of failure (Gruen et al., 1997). In one study, participants were exposed to an induced-failure stressor. During various tests, they were repeatedly told their answers were incorrect, and were prevented from completing the test. Through blood samples, the researchers found that self-criticism was related to changes in biochemistry during the stress of failure, as evidenced by increases in plasma homovanillic acid (HVA). HVA is a hormone that responds to stress, and elevated HVA predicts later onset of anxiety and depression (Gruen et al., 1997).

Self-criticism and interpersonal factors. A protective factor in maintaining positive psychological health entails having a sense of social connectedness (Hutcherson, Seppala, & Gross, 2008). However, interpersonal relationships are a common struggle

among those who are self-critical. Blankstein and Dunkley (2002) found that self-criticism was associated with frequent self- and other-blame. Self-critical individuals tend to be so critical and attacking of themselves that they tend to generalize these thoughts to other people and experience intense competitiveness (Blatt & Zuroff, 1992).

Blankstein and Dunkley (2002) also found that self-criticism was associated with fear of being evaluated negatively. A strong desire for approval and fears of disapproval and separation from others may cause relationships to become superficial and distant (Zuroff, 1990). Self-criticism and dependency on others have been identified as risk factors for depression (Blatt, 1974), and these risk factors have recently sparked further research.

Although both self-criticism and dependency have been identified as risk factors, research suggests that self-criticism appears to be a stronger correlate of depressive symptoms than dependency (Tung-Hsueh Liu et al., 2012). In one study (Fazaa & Page, 2003), self-criticism and dependency were compared among 64 undergraduate students who attempted suicide. Not only was self-criticism found to be the primary factor associated with suicide attempts when compared to dependency, but the lethality of the attempt was much more severe in the self-critical participants (Fazaa & Page, 2003).

Sturman and Mongrain (2005) suggest that dependency is a secondary rather than a primary mediator of self-criticism. Self-critical individuals may feel so trapped in their feelings of inferiority and their internal criticism that suicide appears to be their only escape. While controlling for mood and dependency, the researchers concluded that self-critics are vulnerable to depression because of the subjective experience of entrapment and social comparison (Sturman & Mongrain, 2005). Although self-critical thoughts

impair functioning, individuals may believe that self-criticism will result in self-improvement, making fewer mistakes, and overall improved performance (Gilbert et al., 2004).

Self-criticism and performance. David Burns (1980) conceptualized perfectionism and self-criticism as culturally reinforced constructs. He stated, "the implied promise is that perfectionism brings rewards" (p. 34). Individuals may fear that relaxing high standards will decrease performance and outcomes. While individuals may engage in self-criticism to improve their performance (Gilbert et al., 2004), self-criticism ultimately decreases performance physiologically (Longe et al., 2010) by causing a high degree of distress that inhibits the striving for high standards through avoidance behaviors (Dunkley, Blankstein, Zuroff, Lecce, & Hui, 2006) and a lack of intrinsic motivation (Longbotto et al., 2012).

Researchers Mahoney and Avener (1977) investigated the influence of self-criticism on performance in U.S. Olympic team athletes while they were undergoing highly stressful evaluations of their skills. They found that superior performance was associated with minimizing the importance of past failures, while the less successful athletes were more likely to experience anxiety associated with mental images of failure (Mahoney & Avener, 1977). Meyers and colleagues (1979) confirmed Mahoney and Avener's (1979) findings in a study examining self-criticism in racquetball players. The less skilled players were more likely to set perfectionistic standards and had greater difficulty moving past mistakes more than the highly skilled players (Meyers, Cooke, Cullen, & Liles, 1979).

Can self-criticism be changed? Self-criticism is identified as a cognitive process, and according to Beck's cognitive theory, cognitions are subject to modification and change. The maintenance of cognitive distortions takes place when one has difficulty challenging negative self-talk and imagery with factual and balanced thoughts. Gilbert and colleagues (2006) conducted a study in which self-criticism and self-warmth were measured through an imagery intervention. The researchers found that self-critical individuals had difficulty generating self-soothing positive imagery (Gilbert, Baldwin, Irons, Baccus, & Palmer, 2006). While self-critical individuals found it easy to generate vivid images of a self-critical part of the self, they struggled to do the same with a compassionate part of the self (Gilbert et al., 2006). This study demonstrates why it can be easy to understand cognitive behavioral principles, but difficult to implement them. Gilbert et al. (2006) stated:

> For some people it may not be enough to teach them how to rationally re-evaluate their negative self-cognitions but the therapist needs to help build up and practice experiencing internal scripts and role relationships based on warmth (p. 197).

Learning to generate positive self-talk and imagery is a difficult task for individuals who engage in frequent self-criticism. Mikulincer and Shaver (2007) suggested that children who do not experience early soothing may not develop appropriate neural pathways needed for self-soothing. If self-soothing mental representations are not accessible, it may be difficult for self-critics to change these thought patterns (Mikulincer & Shaver, 2007).

Over the last 10 years, clinicians have argued that therapies should focus less on regulating negative emotions and more on developing and accentuating positive emotions

(Gilbert, McEwan, Gibbons, Chotai, Duarte, & Matos, 2012). In one study, Higgins (1987) encouraged clients to rehearse positive thoughts that inhibit accessibility to their negative thoughts. Through practicing positive and compassionate forms of self-evaluation, it may become possible to generate positive self-talk and imagery. This concept overlaps with Buddhist ideas of loving-kindness imagery, suggesting that developing compassion for the self and others may be a key to emotional well-being (Gilbert et al., 2006).

Self-critical individuals tend to have a fear of being kind to themselves (Gilbert & Procter, 2006; Longe et al., 2010). To measure fears of positive feelings, expert researchers in self-criticism (Gilbert et al., 2012) developed the Fear of Happiness Scale. They found that individuals may fear feeling happy because they then believe either something bad may happen or that they do not deserve to be happy. Gilbert and colleagues (2012) indicated that it may be distressing for an individual to be mindful of his or her emotions and challenge negative thoughts; therefore, therapists should assess an individual's fear of happiness to increase therapeutic efficacy.

Due to the growing support for the utilization of practices based on self-compassion and mindfulness, traditional Western psychotherapy has begun to incorporate Buddhist psychology as a means of decreasing self-criticism, through engaging in self-compassionate thoughts (Neff, 2003a). The components of self-compassion have been identified as protective factors for developing depressive symptoms in self-critical individuals (Wong & Mak, 2012).

Self-Compassion.

Self-compassion is negatively related to self-criticism (Longe et al., 2010). Inducing self-compassion appears to moderate reactions to distressing and negative events and buffers against self-criticism (Leary et al., 2007). Self-compassion is a construct that was originally inspired by Buddhist psychology and is gaining popularity among some Western psychologists and researchers, due to its potential contributions to improving mental health (Neff, 2003b). The roots of the word *compassion* come from the Latin terms meaning with (com) and to suffer with (pati) (Germer, 2009). Compassion is a construct that is commonly conceptualized as sympathy or concern for others; however, Buddhist psychologists emphasize that compassion for the self needs to be established before one is able to have compassion for others (Baer, 2010; Germer, 2009; Greenberg, 2009; Hofmann, Grossman, & Hinton, 2011; Neff, 2003a).

Neff (2003a) describes self-compassion as similar to the concept of compassion for others, only directed towards the self. Neff (2003a) defines self-compassion as becoming aware of one's physical and emotional state, acknowledging these states without judgment, recognizing that suffering is a natural part of the human condition, and then treating the self with kindness (Neff, 2003a). Germer (2009) agrees that pain and suffering are a shared common thread in all of humanity. Being kind to oneself, being aware of the self in the moment, listening to one's body, and feeling emotions are included in self-healing and self-regulation processes (Greenberg, 2009).

Neff indicated that mindfulness and self-compassion mutually support each other, which leads to optimal health and well-being. However, there is still a need to better define mindfulness in order to better understand how they are held together and how they

are separate (Neff, 2012). There are similarities and differences between mindfulness and self-compassion.

Based on the most widely used definition of mindfulness, this construct consists of both awareness and acceptance (awareness without judgment). Acceptance means to embrace what happens within the mind and body, moment to moment, just as it is, allowing an individual to interpret a situation accurately (Neff, 2012). Mindfulness includes the awareness of suffering, and acceptance is willingness to move toward and experience suffering (Neff, 2012). Self-compassion must include acceptance, with the added component of self-kindness (Germer, 2009). Self-kindness results from an individual's motivation to actively change the experience of pain and suffering by being self-soothing, comforting, and supportive. Neff (2012) stated that giving a hug to another human suffering is an act of compassion and shows care for that person, whereas self-compassion entails taking that same level of actively trying to soothe oneself in a difficult moment.

In addition to the active component of self-kindness, there are other differences between mindfulness and self-compassion. Self-compassion entails a common humanity component, a sense of sharing an individual's experience with others, or as Neff said, "we are all in the same boat together." Neff (2012) also gave an example of differentiating between mindfulness and self-compassion. For example, one can be mindful of the raisin, but is not likely to have compassion for that raisin.

The construct of self-compassion can be easily confused with other similar constructs that are used in Western culture. For example, self-compassion is different from self-pity. Self-pity is a subjective reaction, in which people tend to obsess about or

over identify with their suffering (Neff, Hsieh, & Dejitterat, 2005). On the other hand, the concept of self-compassion acknowledges that failures are part of being human, which allows for an objective evaluation of the situation and one's emotions (Neff, 2003a).

Self-compassion is different from self-esteem, in that an individual's self-acknowledgment is not based on comparison to others, and one's character is not based on events, as it is with the construct of self-esteem. Self-compassion is not based on a desire to bolster self-image or a need for self-worth (Neff et al., 2005). Self-esteem is considered to be a goal for people to work toward in highly individualistic Western cultures. While some level of self-esteem is considered healthy, if someone's self-esteem becomes too elevated, negative consequences may result, such as narcissism, self-absorption, lack of concern for others, distortions in self-knowledge, and even prejudice and aggression toward others (Neff, 2003a; Seligman, 1995). In addition, self-compassion has been found to be more predictive of an individual's level of self-worth than the construct of self-esteem (Neff & Vonk, 2009). When distinguishing self-compassion from self-esteem, Neff (2004) stated, "self-compassion helps to act as a buffer against the debilitating emotional impact of considering one's inadequacies, but self-esteem does not do so given that it is more contingent on positive self-evaluations" (p. 34).

Self-compassion is a cognitive process that can be utilized for coping with distress (Germer, 2009) and has been linked to improved emotional regulation, lower levels of anxiety and depression, and overall improved psychological well-being (Neff, 2003b). Neff (2003) identified self-compassion as an emotional regulation strategy, in which

people hold painful emotions in awareness with self-kindness and a sense of shared human experience, rather than avoiding such emotions. Through self-compassion research, Neff and colleagues (2005) discerned that when individuals acknowledge their suffering and treat themselves with compassion, they are not avoiding or repressing their thoughts and feelings. Furthermore, when people are objective during self-evaluations, they are more likely to prevent over identification with negative emotions and cognitions (Neff et al., 2005).

Self-compassion is correlated with positive mood and with achievement (Barnard & Curry, 2011) and negatively correlated with depression and anxiety in young adults (Neff & McGehee, 2009). Self-compassion has also been identified as the strongest correlate to subjective well-being in a college student population, when compared to self-esteem and social support (Neely, Schallert, Mohammed, Roberts, & Chen, 2009; Wei, Liao, Ku, & Shaffer, 2011).

Individuals high in self-compassion have reported fewer negative emotions associated with real, imagined, or remembered negative events, and they ruminate less about these events than individuals with less self-compassion (Leary et al., 2007). Neff (2004) found that self-compassion was associated with less fear of failure and greater perceived competence. Those high in self-compassion are more cognitively flexible and adaptive in stressful situations (Martin, Staggers, & Anderson, 2011). Neff's findings (2008) successfully replicated past studies indicating the correlation of academic failure with more adaptive ways of coping in self-compassionate individuals.

While self-criticism decreases motivation and performance, self-compassion can influence motivation and help an individual maintain their personal goals (Adams &

Leary, 2007). For example, Adams and Leary's randomized control trial (2007) examined why restricted eaters tend to overeat after breaking their personal dietary rules. They found that individuals exposed to self-compassion experienced less distress and did not overeat.

Self-compassion has been found to be associated with lower levels of anxiety and depression because when self-compassionate individuals have aversive experiences such as pain and failure, their negative thoughts and emotions are not intensified through self-criticism, isolation, or over identification (Neff, 2003a). Instead of avoiding painful feelings, these self-compassionate individuals tend to acknowledge them with awareness, kindness, and understanding. When people become aware of their suffering, they can begin to treat themselves with the same compassion that they may offer to another. When experiencing suffering or failure, instead of feeling isolated and separate from others, self-compassionate people tend to normalize their suffering by realizing that many others are feeling similar emotions (Neff, 2004).

Researchers have become increasingly interested in the relationship between self-compassion and achievement of goals (Neff et al., 2005). Being aware of negative emotions in a compassionate way is an adaptive coping skill to use when faced with failure (Kuyken et al., 2010). Self-compassion has been found to negatively correlate with self-criticism (Neff et.al, 2005). One reason self-critical individuals tend to struggle with being self-compassionate is a fear of failure. Self-compassionate individuals were found to lack self-criticism, while continuing to hold high personal standards, and to achieve generally greater levels of success (Neff, 2003b). Self-critical individuals tend to view their self-punishment as a form of motivation; it may be so distressing that it can

lead to avoidance of self-awareness, which is essential to continue to make positive changes and grow (Baer, 2010).

Individuals who implement self-compassion rather than self-criticism are more likely to admit mistakes, change behaviors, and set new goals quickly (Neff, 2009). While self-critical individuals tend to struggle with feelings of hopelessness, self-compassionate individuals view change as possible and tend to be more optimistic about the future (Neff, 2004). In addition, self-compassion is associated with higher intrinsic motivation and perceived confidence, emotional resiliency, greater academic goal adoption and performance, and less fear of failure (Neff et al., 2005). While self-criticism is based on evaluation, performance, or approval from others, self-compassion increases behavior that is based on care for oneself and others (Baer, 2010).

Can self-compassion be increased? Based on the promising results of self-compassion studies thus far, clinical psychologists have become interested in developing interventions aimed at increasing self-compassion (Barnard & Curry, 2011). Self-compassion can be used as a coping skill to regulate emotions, prevent depressive and anxiety symptoms, and help individuals to counteract negative self-talk and self-criticism (Baer, 2010; Leary et al., 2007; Neff & McGehee, 2009). Studies indicate that people can be taught to understand and increase self-compassion to improve their mental health. For example, Gilbert and Procter (2006) developed compassionate mind training (CMT), which combines self-compassion with cognitive restructuring. CMT has been found to be effective in treating individuals who struggle with self-criticism and have difficulty engaging in self-soothing (Gilbert & Procter, 2006).

Germer (2009) proposed five pathways to self-compassion: physical, mental, emotional, relational, and spiritual. Difficulty with self-forgiveness is a common obstacle in the beginning stages. Germer (2009) discussed the need for individuals to first recognize that they deserve to feel better. He suggested that using compassion for others can be a more viable first step toward becoming self-compassionate (Germer, 2009). Neurological research indicates that self-compassion and compassion for others activate similar regions of the brain (Longe et al., 2010). In addition, Germer (2009) highlights the importance of an individual's level of motivation to change their self-talk. It is important for individuals and their providers to understand the difficulty and anxiety involved in immediately embracing distressful emotions, and it may take varying amounts of time (Germer, 2009).

Programs designed to increase self-compassion have been successful in improving mood (Leary et al., 2007). Specifically, mindfulness-based interventions that increase self-compassion have been found to be efficacious (Barnard & Curry, 2011). As Neff (2003) described, the first step to becoming self-compassionate or increasing self-compassion is to become aware of one's state of being without judgment, otherwise known as mindfulness. Successful evidence-based mindfulness-based programs, such as Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress-Reduction (MBSR), appear to be mediated by self-compassion and mindfulness (Kuyken et al., 2010; Robbins, Keng, Ekblad, & Brantley, 2012).

Mindfulness.

In theory, if self-compassion counteracts self-criticism, one pathway to increase self-compassion is for an individual to learn and practice mindfulness. Research

indicates that mindfulness is a necessary component of self-compassion (Beddoe & Murphy, 2004; Neff, 2003b), and self-compassion has been identified as the primary mediator of change in mindfulness-based therapies (Baer, 2010).

Mindfulness requires individuals to develop an awareness of what they are doing, thinking, and feeling during any given activity (Somerstein, 2010). Jon Kabat-Zinn (1990) defines mindfulness as paying attention on purpose, in the present, and doing so in a nonjudgmental way. Both mindfulness and traditional cognitive therapy emphasize awareness and self-monitoring. While cognitive therapy encourages changing the content of one's thoughts, mindfulness is a multifaceted construct that attempts to change one's relationship to the thoughts (Wallace & Shapiro, 2006).

Mindfulness has been practiced for 2,500 years, but recently has seen an increase in both research and application (Davis & Hayes, 2011). Mindfulness practices appear to enhance psychological functioning and well-being (Carmody & Baer, 2008) and decrease negative habitual patterns that act as obstacles to judgment (Kabat-Zinn, 1990). It is a skill that can be practiced by virtually anyone in their daily lives to maintain and improve mental health and to cope with daily stressors. Netz and Lidor (2003) found that when mindfulness was taught during an exercise class, participants reported a reduction in state anxiety, depressive mood, and improved feelings of well-being as compared to the control group.

Mindfulness can be helpful in increasing awareness and attention, in order to be able to self-regulate thoughts and emotions (Bishop et al., 2004). Brown and Ryan's research (2003) suggests that mindfulness is associated with improved self-regulation and positive emotional states, increased self-compassion, and decreased stress, anxiety, and

rumination (Shapiro, Brown, & Biegel, 2007). Mindfulness also appears to increase both acceptance of experiences and cognitive control over thoughts (Hamilton, Kitzman, & Guyotte, 2006).

Increasing numbers of studies and dissertations addressing mindfulness are funded and published, providing evidence for the rising interest in its clinical applications (Kabat-Zinn, 2003). Several interventions that incorporate mindfulness for the purpose of stress reduction have led to clinically significant improvements in psychological functioning in various populations (Carmody & Baer, 2008). Mindfulness-based interventions are designed to teach mindfulness skills and help individuals decrease emotional reactivity to stressors (Britton, Shahar, Szepsenwol, & Jacobs, 2012). Birnie and colleagues (2010) found that when mindfulness skills increased, self-compassion subsequently increased.

Mindfulness-based interventions are suggested to have the potential to foster resiliency against mental illness and to promote healthy psychological functioning (Gard et al., 2012). A recent meta-analysis (Hoffman et al., 2010) reviewed 39 mindfulness-based therapy (MBT) studies and concluded that MBT should be recommended as an effective intervention.

Empirically supported mindfulness-based therapies (MBTs). Successful interventions have brought the Buddhist practice of mindfulness into today's psychotherapy, such as mindfulness-based stress reduction (MBSR), mindfulness-based relapse prevention (MBRP), dialectical behavior therapy (DBT), mindfulness-based cognitive therapy (MBCT) and acceptance and commitment therapy (ACT) (Davis & Hayes, 2011).

Mindfulness-based stress reduction (MBSR) was designed in 1979 as a tool to relieve suffering (Kabat-Zinn, 2003). As of 2007, there were 240 clinics with MBSR programs and more than 6,000 health care professionals who have been trained in MBSR (Mikulus, 2007). MBSR is a structured 8-week program using group therapy to learn and practice mindfulness meditation and mindful yoga exercises (Schmidt et al., 2011). The primary goal of this program is to help participants learn and practice nonjudgmental awareness of their experiences as they occur (Schmidt et al., 2011).

MBSR can decrease levels of stress and anxiety (Carmody & Baer, 2008) and increase psychological well-being and functioning (Branstrom, Kvillemo, Brandberg, & Moskowitz, 2010). In a study using an MBSR program, participants self-reported increased self-compassion, perspective taking, and mindfulness and decreased distress and mood disturbance (Birnie, Speca, & Carlson, 2010). In a study applying MBSR for individuals struggling with an anxiety disorder, results suggested that sessions once a week for 8 weeks can decrease symptoms, and participants can maintain symptom reduction if practice is continued (Miller, Fletcher, & Kabat-Zinn, 1995).

Another evidence-based treatment incorporating mindfulness is mindfulness-based relapse prevention (MBRP). One of the few randomized clinical trials using MBRP applied mindfulness-based interventions for incarcerated individuals with histories of substance abuse (Lee, Bowen, & An-Fu, 2011). When compared to a group using traditional talk therapy, the MBRP group experienced decreased depressive symptoms, which may be due to the emotion regulation strategies learned through practicing mindfulness (Hoppes, 2006).

Dialectical behavior therapy (DBT) is another evidence-based therapy with mindfulness as one of its primary components. DBT was originally developed to treat individuals with borderline personality disorder (BPD), and its central premise is to help individuals learn to regulate their emotions. DBT has been shown to significantly decrease self-harm and suicidal behaviors (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). The mindfulness component has been identified as a primary mechanism of change through blocking avoidance and exposing an individual to his or her emotions (Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006). Although DBT has shown promise as a therapeutic approach, it is a long and intensive form of therapy (Williams, Duggan, Crane, & Fennell, 2006).

Mindfulness-Based cognitive therapy (MBCT), another evidence-based treatment incorporating mindfulness, was developed by Zindel Segal, Mark Williams and John Teasdale. MBCT is based on Jon Kabat-Zinn's mindfulness-based stress reduction program and teaches individuals to be more aware of their thoughts and feelings without trying to change them (Kuyken et al., 2010). In an 8-week, randomized controlled trial using an MBCT program, participants struggling with depression responded to MBCT with improved emotional reactivity and decreased depressive symptoms (Britton et al., 2012). MBCT has been identified as a treatment that can reduce the relapse to depressive episodes and suicidal behavior (Williams et al., 2006). It was also found that the mediating factors of MBCT's effectiveness include increases in mindfulness, acceptance of experiences, and the cultivation of self-compassion (Kuyken et al., 2010).

Increasing interest in and applications of mindfulness encourages improving the research quality of the current studies. Kabat-Zinn (2003) stated:

> When a field is in its infancy, it is not uncommon for the first generation of studies to be more descriptive of the phenomenon rather than definitive demonstrations of efficacy. Attempts at the latter tend to evolve over time after the potential value of a new approach has been at least tentatively established (p. 145).

Research efforts to better understand the underlying mechanisms of mindfulness are increasing (Holzel et al., 2011). Although empirical research has demonstrated a strong relationship between increased mindfulness and improved psychological health, the mediating role and mechanisms of action need to be better understood through further research (Bishop et al., 2004). To date, mindfulness-based interventions appear to be primarily mediated by self-compassion and mindfulness (Gard et al., 2012).

Even as current, efficacious therapy programs have demonstrated an ability to increase mindfulness skills, and thus confer the benefits of mindfulness, there are alternative and arguably more accessible ways to increase mindfulness, such as practicing yoga and meditation. Mindfulness is the foundation for yoga and meditation, and these practices are associated with improved mood (Davis & Hayes, 2011). Yoga-based and mindfulness-based interventions may share similar underlying mechanisms of change (Gard et al., 2012), and yoga may be one way to increase mindfulness skills (Conboy et al., 2010).

Yoga.

Yoga has been identified as one of the most effective ways to build mindfulness skills (Carmody & Baer, 2008; Shelov & Suchday, 2009), and has been associated with increases in mindfulness (Conboy et al., 2010), increased self-compassion (Conboy et al.,

2010; Gard et al., 2012), and decreased perfectionism (Komiya & Taniguchi, 2011). Therefore, increased self-compassion may decrease self-criticism. In addition, yoga has been included in the protocols of evidence-based treatments such as MBSR and MBCT.

There are many different types of yoga, and various schools of thought differ in their definitions of yoga. Yoga can consist of postures, breathing methods, chanting, and meditation. Yoga classes can range from gentle to strenuous and from slow to fast-paced, based on preference, ability, and experience**.** It involves moving the body mindfully through poses while stretching and balancing the body (Daubenmier, 2005).

Yoga can be a form of awareness training, focusing on body experience, nonverbal expression, and the use of fantasy images (Clance, Mitchell, & Engelman, 1980). Some studies use the practice of *asanas* (postures) because they are easily observable when compared to other factors/roles in yoga (Streeter et al., 2007). Yoga focuses on stretching and building strength through positions, relaxation, meditation and breathing that allow one to become self-aware (Boudette, 2006). It focuses on the process of movement and breathing, rather than the end product. Yoga is about being present and in the moment, letting go of judgments, becoming more assertive, and accepting personal limits (Boudette, 2006). Because yoga requires focus on the physical movements and breath, it is a practice that constantly reminds one to stop thinking outside of the present moment (Kissen & Kissen-Kohn, 2009). In many schools of yoga, yoga practices are designed to shift the focus of usual thoughts and feelings, emptying the mind in order to focus on the body, which can boost the ego and reduce stress (Kissen & Kissen-Kohn, 2009).

Yoga is a practice that began in India, and can be traced back to 5,000-year-old archaeological artifacts (Tullis, 2007). Yoga and meditation have been practiced in the Eastern part of the world for many years, however, in recent decades, it has become a popular practice in Western society (Ross & Thomas, 2010; Shelov & Suchday, 2009), and this increased interest has been followed by research on its effects (Somerstein, 2010). Practitioners of yoga have reported enjoyment and improved mood immediately following yoga practice (Miller, Bartholomew, & Springer, 2005). Furthermore, yoga has been recognized by the National Center for Complementary and Alternative Medicine within the National Institutes of Health as a valid mind-body intervention (Shelov & Suchday, 2009).

Psychological effects of yoga. Yoga has been associated with improved depression and anxiety (Somerstein, 2010; Streeter et al., 2007), increased self-esteem and life-satisfaction, and decreased perfectionism (Komiya & Taniguchi, 2011). Pilkington and colleagues (2005) reviewed 35 studies on yoga and depression and found that yoga-based interventions may have a beneficial impact on depressive and anxiety disorders. Research studies have indicated that practicing yoga may result in reduced anxiety and depression (Somerstein, 2010; Streeter et al., 2007) and reduced tension, depression, anger, and confusion (Kraemer & Marquez, 2009). In a randomized controlled study, Lavey and colleagues (2005) held weekly yoga classes for an inpatient population. Participants in the yoga class experienced decreased anxiety, depression, anger, fatigue, and confusion (Lavey et al., 2005).

Yoga has been identified as an effective mindfulness skill to challenge maladaptive thoughts and schemas (Hamilton et al., 2006). Yoga has been found to

alleviate stress (Khalsa, Shorter, Cope, Wyshak, & Sklar, 2009), improve quality of life, and decrease fatigue (Kraemer & Marquez, 2009). Yoga-based therapeutic interventions consistently demonstrate the potential to influence mental well-being by improving mood (Posadzki, Parekh, & Glass, 2010).

Increasing the sense of control helps an individual manage negative thoughts and emotions more efficiently (Posadzki et al., 2010). In young adult swimmers, yoga was related to short-term reductions in anxiety, tension, depression, anger, and confusion (Berger & Owen, 1992). The yoga group also reported an increased sense of control as compared to the control group (Berger & Owen, 1992).

Following a preliminary study, Khalsa and colleagues (2009) conducted a 6-week intervention research study in which they were able to determine the effectiveness of a yoga-based program on mood and performance anxiety. There were significant decreases found in depression, performance anxiety, anger, and overall mood disturbance when compared to controls (Khalsa et al., 2009). Researchers Malathia and Damodaran (1999) found that although some degree of stress may be adaptive, too much can become debilitating. In their randomized control study, medical students demonstrated the impact of yoga on test-related stress. The yoga group experienced significantly lower anxiety on the day of the exam than their control group counterparts (Malathia & Damodaran, 1999).

Another study examined the effects of yoga on perceived quality of life. Participants in a research study were enrolled in a 4-month yoga-based residential program, including daily yoga, breathing, and meditation (Gard et al., 2012). Quality of life was significantly increased, as measured at baseline and post intervention, and improved quality of life was mediated by mindfulness and self-compassion.

The benefits of yoga have been compared to other forms of exercise, such as walking. Participants in a yoga class reported a greater number of physical and psychological health improvements, including improvements in musculoskeletal flexibility, balance, strength, body alignment, memory, endurance, and quality of life, and reductions in anxiety and depression when compared to those in a walking control group (Kraemer & Marquez, 2009). In another study, the differences between yoga practitioners, aerobic practitioners, and a control group of non practitioners were examined. Yoga practitioners reported a greater sense of self-awareness and responsiveness and improved self-image (Daubenmier, 2005). Netz and Lidor (2003) examined the psychological effects of yoga in just one session and found that yoga was associated with greater improvements in mood than other aerobic exercises. Another study measured the effects of yoga classes twice a week for 2 months. There was a significant increase in self-esteem, life-satisfaction, and enthusiasm for a better life and decreased anxiety and perfectionism (Komiya & Taniguchi, 2011). Although some research indicates yoga may decrease perfectionism, little is known about its impact on self-criticism.

Physiological effects of yoga. Anxiety disorders are associated with low levels of gamma-aminobutyric acid (GABA). GABA is a neurotransmitter that inhibits excitatory responses, and GABA levels can be treated with pharmacology (Streeter et al., 2007). One study compared a group completing a 60-minute yoga session to a reading-only control group. Streeter et al. (2007) found that yoga increased GABA levels and decreased anxiety symptoms. The authors found that GABA levels increased by 27% with just one session of yoga and that self-reported symptoms of anxiety decreased.

Yoga was found to be more effective, less time consuming**,** more accessible, and more cost-effective than psychotherapy (Carmody & Baer, 2008). Yoga is a practice in which one is encouraged to let go of self-judgment and to listen to one's body, mind, and spirit when practicing. In comparing popular aerobic exercises, one key component related to its effects on mood include mindfulness, which is why yoga has so often been recommended (Netz & Lidor, 2003).

In summary, yoga has been associated with an extensive array of psychological benefits. Specifically, it has been associated with increased mindfulness (Conboy et al., 2010), increased self-compassion (Conboy et al., 2010; Gard et al., 2012), and decreased perfectionism (Komiya & Taniguchi, 2011). Of the many different types of yoga, Hatha is the most commonly practiced in the United States. Hatha yoga is a movement-based form of relaxation and meditation, combining physical postures and breathing exercises (Impett, Daubenmier, & Hirschman, 2006). One type of Hatha yoga, referred to as Ananda yoga, includes positive affirmations as a part of the practice.

Ananda yoga. Ananda yoga is a type of Hatha yoga. It comes from the Raja/Kriya yoga tradition of Parmahansa Yogananda, who was the first "great master of yoga" to make his home in the West. His teachings impacted a close disciple, Swami Kriyananda, who in turn founded Ananda yoga (Walters, 2002). Ananda yoga is a very specific practice that takes place in Ananda communities; therefore, the primary reference describing Ananda yoga comes from a textbook that is used throughout the community (Walters, 2002).

The practice aims to integrate one's physical, emotional, and spiritual dimensions, and to raise one's level of awareness. Its techniques include *asanas* (postures),

pranayama (energy-control techniques), and above all, meditation (Walters, 2002). Like many other forms of yoga, Ananda yoga is very spiritually driven; there is a focus on surrendering individual control to a higher power (Walters, 2002). It is a gentle practice for beginners and can become increasingly challenging for experienced practitioners, but is never an aggressive or aerobic practice. Ananda yoga emphasizes physical safety and alignment, staying relaxed even in the midst of challenging asanas, mindful self-awareness, working consciously with *prana* (life-energy) to raise consciousness, and adapting postures to fit the goals and abilities of the individual (Walters, 2002).

One unique aspect of Ananda yoga is that each asana is paired with an affirmation, designed to amplify the bodily position's natural uplifting effect on the mind (Walters, 2002). The affirmations are usually practiced silently while performing the asanas. Much like cognitive therapy techniques, repetitive and positive silent affirmations are aimed at improving mood. Although some of the affirmations are spiritually based, they can easily be modified to suit the diversity of individuals within the class, without losing the intended effects. The affirmations are positive, empowering, and hopeful thoughts about the self, others, and the world. One of the goals of Ananda yoga is to prepare the body for meditation, which typically follows a traditional yoga practice (Walters, 2002).

Meditation.

A primary component within the practice of yoga is meditation (Ross & Thomas, 2010; Sedlmeier et al., 2012). Meditation has been associated with increased mindfulness (Bishop et al., 2004; Carmody & Baer, 2008), increased self-compassion

(Burns, Lee, & Brown, 2011), and decreased perfectionism (Burns, Lee, & Brown, 2011). Much like yoga, not all mindfulness is done through meditation, and not all meditation is necessarily done mindfully. The goals of meditation may include reducing and eliminating thoughts, and this is believed to be done through detaching from the physical body and becoming a witness to thoughts and feelings (Rubia, 2009). Through practice, meditators learn to not let the mind wander into the past or future, but to stay present and develop an awareness of thoughts and feelings with nonjudgmental acceptance (Sedlmeier et al., 2012).

Meditation is one of the most recommended and utilized practices in the world, improving physical, psychological, and spiritual health (Mikulas, 2007). Meditation is considered to be a physiological state of reduced metabolic activity that may provide relaxation, improve psychological balance, and stabilize emotions (Rubia, 2009).

Meditation has been of interest to psychologists in the United States since the 1970s and continues to grow in both practice and research (Burns et al., 2011). Randomized controlled trials have indicated that meditation increases mindfulness and self-compassion (Tanner et al., 2009). Meditation has also been found to reduce stress, trait anxiety, depression, and perfectionism (Alexander, Robinson, Orme-Johnson, Schneider, & Walton, 1994; Ferguson & Gowan, 1976; Yunesina, Aslani, Vash, & Yazdi, 2008). Individuals practicing meditation were found to have less sleep disturbance, less substance misuse, and fewer psychological complaints than a control group (Orme-Johnson et al., 2005).

Physiological effects of meditation. Increasingly, research has indicated that meditation may affect the physical body, including the immune and neuroendocrine

systems, which are impacted by stress and are associated with the development and maintenance of diseases (Davidson et al., 2003). Neuropsychological studies have shown significant shifts in consciousness during meditation, as measured through magnetic resonance imaging (MRI) and positron emission tomography (PET) scans (Kissen & Kissen-Kohn, 2009). Research has demonstrated that the extent of home practice of formal meditation exercises (body scan, yoga, sitting) is significantly correlated with degree of change in mindfulness (Carmody & Baer, 2008). Harvard University researchers used MRIs to monitor meditation and found that it activates the autonomic nervous system (Barbor, 2001). Additionally, meditation has been found to calm the sympathetic nervous system (reduced heart, respiratory, and pulse rates), reduce blood pressure and urinary vanillymandelic acid (VMA), and increase parasympathetic activity (Rubia, 2009).

Meditation can result in feelings of well-being and positive affect, which are indicative of the release of mood stabilizing neurohormones and neurotransmitters in the limbic brain areas. These hormones include dopamine, serotonin, and melatonin (Rubia, 2009). Meditation has also been shown to reduce the production of cortisol, which is one of the primary stress hormones (Barbor, 2001). These physiological changes are thought to be the result of increased control of the autonomic system, even when compared to relaxation groups, which appear to have different associated neural networks (Rubia, 2009).

Research thus far has provided evidence for the psychological and physiological benefits of incorporating meditation into the current study's yoga intervention. Mediation is a technique that can be used at any age and with no cost (Barnes,

2004). When considering meditation's recent rise in popularity, Burns and colleagues (2011) state, "perhaps it is ironic that meditation is a 5,000-year-old method that may be one of the more promising approaches to some of our twenty-first century challenges" (p. 142).

Since the 1970s, over 700 studies in over 160 scientific journals have been published indicating an association between meditation and decreased depression, anxiety, stress, and improved academic performance (Burns et al., 2011). There are many forms of mediation, such as concentrative meditation, mindful meditation, and guided meditation (Sedlmeier et al., 2012).

Loving-kindness meditation. One type of guided meditation that has been practiced in the East for years is loving-kindness meditation (LKM), otherwise known as *metta* (in Pali/Sanskrit). The primary goal of LKM is to develop a state of unconditional kindness to oneself and others (Hofmann et al., 2011). It helps one to gain awareness into inner feelings and resources to effectively cope with negative emotions (Kristeller & Johnson, 2003). For example, it can help identify the need and the ability to forgive oneself and/or others, which is often an imperative step in the beginning of psychotherapy.

Loving-Kindness meditation (LKM) leads people through different stages including focus on the self, then focus on a good friend, then focus on a neutral person, and ending with focus on a difficult/negatively viewed person while cultivating an attitude of loving-kindness. According to Buddharakkhita and the Dalai Lama, the sequence then includes combining all of these people and focusing on the universe (Hofmann et al., 2011). Depending on the experience of the individual and the allotted

time, people go through the steps slowly from visualization to actually feeling these intentions.

Although empirical research on LKM is limited, there have been some studies using neuroimaging and of the effects of LKM in conjunction with cognitive-behavior therapy (CBT). One study (Pace et al., 2008) examined the effects of compassion meditation on the immune responses to psychological stress. This randomized control trial used a nonclinical sample of undergraduate students. The experimental group received 6 weeks of compassion meditation training, while the controls engaged in a health discussion group. After exposing both groups to a laboratory-induced stress test, all participants were evaluated. The researchers examined levels of interleukin-6 and cortisol, which are related to stress levels and depression (Pace et al., 2008). Based on the results, Pace and colleagues concluded that compassion meditation may reduce stress-induced responses to the immune system. Another neurological study (Lutz et al., 2008) used LKM to demonstrate that the same brain regions are activated during external and self-inflicted compassion.

Loving-Kindness meditation (LKM) has been associated with improvements in levels of depression, social anxiety, marital conflict, anger, and coping; moreover, the positive effects of LKM on psychological functioning can be established after short periods of training (Hofmann et al., 2011). One of the reasons LKM may be so effective, and why its psychological benefits continue to be researched, is that *metta* is considered to be incompatible with anger, hatred, envy, and jealousy (Hofmann et al., 2011). It has been suggested that LKM with other mindfulness activities may be efficacious when added to the empirically supported treatment of cognitive behavioral therapy (Hofmann

et al., 2011). Acceptance of thoughts and emotions is a contrast to traditional psychotherapy, where the focus is upon changing thoughts and emotions. LKM is designed to accept that even negative thoughts and feelings are a natural, and even healthy, part of life (Hanh, 1993). LKM is of particular interest for the purpose of this study because it is a type of meditation that aims to cultivate compassion. This may be an important component of the yoga with meditation (YWM) intervention when considering the potential influences on self-compassion and self-criticism. Mindfulness-based practices, such as yoga and meditation, may be acceptable, cost-effective means of increasing self-compassion and decreasing self-criticism.

Hypotheses

1. In comparison to the control group, the yoga with meditation (YWM) group will have significantly greater decreases in self-criticism from baseline through post intervention, as measured by the Levels of Self-Criticism Scale (LOSC).

2. In comparison to the control group, the YWM group will have significantly greater increases in self-compassion from baseline through post intervention, as measured by the Self-Compassion Scale (SCS).

3. In comparison to the control group, the YWM group will have significantly greater increases in mindfulness from baseline through post intervention, as measured by the Philadelphia Mindfulness Scale (PHLMS).

4. Within both the experimental and control groups, mindfulness will positively correlate with self-compassion, and mindfulness and self-compassion will negatively correlate with self-criticism.

Chapter 4

Method

Design

This study used a within and between subjects quasi-experimental pretest/posttest design with a control group.

Design justification.

A quasi-experimental design is usually used when studying the feasibility of a pilot intervention on a specific population. This study recruited graduate students interested in yoga and meditation as the experimental group. The pretest provided baseline data, followed by the intervention of a minimum of four yoga classes (offered twice weekly). At the end of each class, participants completed measures evaluating levels of mindfulness, self-criticism, and self-compassion. The control group completed the pretest measures to provide baseline data, followed by posttest measures administered after 4 weeks.

Participants.

Participants were recruited from a college in the greater Philadelphia area. This college admits only graduate students and had a population of 1,475 students at the time of the study. All graduate students at Philadelphia College of Osteopathic Medicine (PCOM), with any level of experience with yoga (including none), were eligible for the study.

The experimental group, which consisted of 58 participants received the YWM intervention. Individuals who attended at least four of the classes were included in the

data analysis. The control group consisted of 24 participants who were students at the same college who did not participate in the yoga intervention. Demographics information was not collected in the current study.

Recruitment.

Flyers were posted on the PCOM campus and listed on the campus activity center's class schedule. Mass e-mails were sent to all students on the campus advertising the study. The flyers and emails described the class as a beginner class and part of a research study. Students were encouraged to call or e-mail with questions. Students were eligible to participate in the YWM class without participating in the study; completing the measures was entirely voluntary. The class was conducted as an open group, with people starting and stopping at different times throughout the 8 weeks of the study. Individuals who completed at least four consecutive classes were eligible to win a $200 Amazon gift card. To recruit participants for the control group, PCOM students in a research methods course who were not participating in the yoga classes were invited to complete measures at baseline and 4 weeks later.

Measures.

Philadelphia Mindfulness Scale. The Philadelphia Mindfulness Scale (PHLMS) is a 20-item self-report measure designed to identify awareness and acceptance as distinct components of mindfulness (Cardaciotto et al., 2008). Items are rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Examples of items include, "I am aware of thoughts I'm having when my mood changes," and "I try to put my problems out of mind."

Cardaciotto and colleagues (2008) indicated that good internal consistency was demonstrated with awareness (.81), and acceptance (.85). Exploratory factor analysis demonstrated a two-factor model, and found that awareness and acceptance subscales were uncorrelated (r = -.02, p > .05; Cardaciotto et al., 2008). The authors of this scale ran correlational analyses, revealing that the PHLMS subscale awareness significantly correlated with awareness, attention, and reflection. In addition, the subscale for acceptance was significantly positively correlated with acceptance and willingness and negatively correlated with rumination and thought suppression (Cardaciotto et al., 2008).

Overall, the authors of this scale concluded that it is a valid tool to measure the most acceptable definition of mindfulness in both clinical and nonclinical populations (Cardaciotto et al., 2008). The National Institutes of Health reviewed recent research on the various physical and psychological benefits of mindfulness and recognized the PHLMS as an empirically sound measure of mindfulness (Greeson, 2009). In a more recent study (Teper & Inzlict, 2013), researchers used the PHLMS because it specifically measures the two constructs of present-moment awareness and acceptance independently. Other researchers explored the impact of mindfulness on executive functioning during performance tasks and found that meditators demonstrated increased executive control when compared to nonmeditators (Teper & Inzlict, 2013).

Self-Compassion Scale. The Self-Compassion Scale (SCS) is a 26-item self-report measure to assess an individual's level of self-compassion (Neff, 2003a), using a Likert Scale ranging from 1 (*almost never*) to 5 (*almost always*). Items factor on six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. Examples of items include, "When I'm down and out, I remind

myself that there are lots of other people in the world feeling like I am," and "I am kind to myself when I'm experiencing suffering." The items were tested to establish correlation of scale items within the subscales.

Neff (2003) constructed the Self-Compassion Scale (SCS) by conducting a factor analysis with similar constructs in order to develop the six most appropriate subscales. Self-compassion was most effectively measured from the combination of these subscales (Neff, 2003a). The Self-Compassion Scale was developed using a college student population of both males and females who were White, Asian, Hispanic, and Black. Internal consistency for the scale was significant (.92), and construct validity was evaluated by demonstrating a negative correlation with self-criticism (-.65) and a positive correlation with self-acceptance (.62). There was a significant correlation (Neff, 2003a) when examining test-retest reliability (.93).

The subscales of the SCS were also found to have good internal consistency and to accurately represent the construct of self-compassion (Neff, 2003a). The SCS has been identified as a valid and reliable measure to assess self-compassion (Baer, 2010). Self-compassion, as measured by the Self-Compassion Scale, was also found to negatively correlate with self-criticism (Neff et al., 2005).

Levels of Self-Criticism Scale. The Levels of Self-Criticism Scale (LOSC) is a 22-item, self-report scale comprised of 2 subscales, comparative self-criticism (CSC) and internalized self-criticism (ISC) (Thompson & Zuroff, 2004). Items are rated on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very well*). Representative items include "I have a nagging sense of inferiority" and "I feel like a failure when I don't do as well as I would like to." The responses given are summed together, reflecting higher

self-criticism with higher scores (Thompson & Zuroff, 2004). This scale had strong internal consistency and validity (CSC = 0.81, ISC = 0.87) in a college student population including both male and female participants (Thompson & Zuroff, 2004). The LOSC related to the self-criticism, low self-esteem, and psychological distress scales of the Depression Experiences Questionnaire (DEQ) (Thompson & Zuroff, 2004). It has also been found to have good internal validity in both CSC (.67) and ISC (.84) (Katz & Nelson, 2007).

Procedure.

Participants in the experimental condition volunteered for a yoga-based study in which they were encouraged to attend at least four classes of the YWM. Individuals beginning the study were asked to attend their first class 15 minutes early to complete all paperwork. They were first asked to sign informed consent documents, which included a physical responsibility waiver. Participants were informed that the questionnaires had the potential to cause mild emotional discomfort and were encouraged to not answer any questions that caused discomfort. The consent forms were described and administered in person, and participants were invited to ask questions to confirm their understanding of the study. Participants were informed of their choice in signing the form, participating in the study, and withdrawing their consent at any time without penalty. Participants were then asked to complete the Philadelphia Mindfulness Scale (PHLMS), the Self-Compassion Scale (SCS), and the Levels of Self-Criticism Scale (LOSC) prior to beginning the class.

The classes were held twice weekly for 8 weeks. They consisted of beginner's level Hatha style/Ananda yoga, consisting of a breathing exercise, warm up and stretch

for 5 minutes, 45 minutes of various *asanas* (poses), 5 minutes of deep relaxation, and 15 minutes of *metta* (loving-kindness) meditation. The yoga teacher was a registered yoga teacher, with a 200-hour training certificate (RYT-200) from an Ananda yoga teacher training program. Ananda yoga is rooted in Hatha yoga. The *asanas* were introduced with an affirmation in which the students were encouraged to silently affirm for the duration of holding the pose. When the physical aspect of the yoga class ended, it was immediately followed by 20 minutes of metta, or loving-kindness meditation. All participants were asked to stay 15 minutes after each practice to complete the same three measures; the PHLMS, the SCS, and the LOSC.

Recruitment materials described the classes as being 90 minutes in duration, including the time needed to complete measures. There were pens and stacks of measures, and envelopes in a corner of the room. Written instructions were posted next to the measures to remind participants of the procedures. It was essential to protect anonymity and to blind the investigator to the participants' identity. Therefore, participants were asked to omit their names, and to only write the date and the name of the street they grew up on when they were 10 years old on each form. This was used to identify participants' respective repeated measures data, such as tracking attendance, and to look for change over time per each individual. When the measures were completed, participants placed them in an envelope, which was kept in a locked safe during the entire course of the study.

Participants who completed their fourth class were given a small piece of paper to enter their e-mail address if they wanted to be included in the raffle. They put the paper in a protected and sealed box, and after the study was complete, there was a drawing in

which one individual won a $200 Amazon gift card. The drawing was done by an individual unaffiliated with the study, and the winner received an e-mail notification.

The control group consisted of students enrolled in a research methods graduate psychology class. The investigator distributed informed consent forms to all students and discussed the entire form. Individuals volunteering to participate who were not already in the YWM class were provided the PHLMS, SCS, and the LOSC. When they completed the measures, they placed them in an envelope and sealed it. At week 4 of the study, this procedure was repeated. A total of 24 participants completed consent forms, all three measures at baseline, and all three measures at week 4, which comprised the control group.

All participants in this study reported their baseline levels of self-criticism, self-compassion, and mindfulness. After engaging in the mindfulness-based practices of yoga with meditation, it was hypothesized that posttest self-report measures of the experimental group would indicate increased levels of mindfulness and self-compassion and decreased levels of self-criticism. It was also hypothesized that there would be no significant changes from the baseline self-report measures completed by control group.

Chapter 5

Results

Overview.

All data collected in this study were entered and analyzed using Software Package for Statistical Analysis (SPSS). Yoga with meditation (YWM) was found to significantly decrease self-criticism in the experimental group as compared to the control group which had no such effects. Thus, hypothesis 1 was supported, as evidenced by a statistically significant decrease in LOSC (Level of Self-Criticism Scale) total scores for the experimental group from baseline to posttest (after visit 4). While participants in the YWM group reported somewhat greater self-compassion and mindfulness in comparison to the control group, this trend was not statistically significant. Increasing trends in total scores on the Self-Compassion Scale (SCS) and the Philadelphia Mindfulness Scale (PHLMS) for the experimental group provided partial support for hypotheses 2 and 3. Furthermore, a significant interaction effect of group (experimental and control) and time (baseline to visit 4) was noted on LOSC, SCS, and PHLMS total scores in the expected directions, suggesting that changes were due to YWM. Additionally, at baseline, the main dependent variables correlated significantly with each other in the expected directions, providing support for hypothesis 4.

Group comparisons at baseline and attrition.

Eighty-two participants were enrolled in the study, 24 in the control group and 58 in the experimental condition. Demographic information was not collected. Every participant in the experimental group completed at least one YWM class. A total of 42 individuals completed two classes, 34 completed three classes, and 29 completed four

classes. Of the 29 participants, 12 individuals went on to complete a total of five sessions, and six individuals went on to complete a total of six sessions. Only individuals who completed four or more YWM classes were included in the analyses, which used session 4 as the posttest point. This was planned as the cut-off a priori, in order to have enough participants for the analysis while simultaneously achieving a maximum amount of YWM. Therefore, 24 participants in the control group were compared to 29 participants who completed four sessions of YWM. Those participants who completed at least 4 sessions were the only experimental group participants included in baseline comparisons and posttest analyses. There was a difference in number of days between baseline and posttest for participants in experimental and control groups. All control group participants completed posttest measures 21 days after baseline measures. For YWM participants, the time between measurements ranged from 13 to 36 days, with a mean of 23 days (M = 22.59). A Mann-Whitney test was conducted to determine if there were significant group differences in the number of days between baseline and posttest. Distributions of days between measurements were not similar, as assessed by visual inspection. There was no statistically significantly difference in time between baseline and posttest between control (mean rank = 26) and experimental (mean rank = 27.83) groups, U = 372, z = .55, p = .58.

Descriptive statistics for dependent variables.

Initially, descriptive statistical analyses were conducted at baseline on all of the primary constructs of interest, which were self-criticism, self-compassion, and mindfulness, as measured by LOSC, SCS, and PHLMS, in both the experimental and the control group. Histograms and Kolmogorov-Smirnov tests of normality verified that the

dependent variables were normally distributed in both the experimental group [LOSC (D = .07, p = .20), SCS (D = .11, p = .20), PHLMS (D = .12, p = .20)] and the control group [LOSC (D = .11, p = .20), SCS (D = .11, p = .20), PHLMS (D = .11, p = .20)]. Visual inspection of the histograms also indicated that there were no outliers. Means (M) and standard deviations (SD) for LOSC, SCS, and PHLMS at baseline and posttest for both the control group and the experimental group are presented in Table 1.

Table 1

Baseline and Posttest Means and Standard Deviations for Dependent Variables

	Control Group				Experimental Group			
	Pretest		Posttest (V4)		Pretest		Posttest (V4)	
Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
MI	68.58	7.05	67.21	7.02	64.10	7.36	72.52	9.87
AWARE	37.33	5.56	36.92	4.98	37.45	4.64	41.10	5.51
ACCEPT	31.25	5.97	30.29	6.09	26.66	5.99	31.41	6.17
LOSC	87.33	18.13	84.79	17.75	80.83	17.88	64.62	16.73
ISC	48.00	10.20	44.46	11.00	45.17	10.47	35.48	12.71
CSC	39.33	10.76	40.33	8.97	35.66	11.12	29.14	9.34
SCS	18.22	3.77	18.10	4.05	18.26	3.22	20.97	3.75

Note. MI = Philadelphia Mindfulness Scale (PHLMS); AWARE = Awareness Subscale on PHLMS, ACCEPT = Acceptance Subscale on PHLMS; LOSC = Levels of Self-Criticism Scale; ISC = Internalized Self-Criticism Subscale on LOSC; CSC = Comparative Self-Criticism Subscale on LOSC; SCS = Self-Compassion Scale.

Baseline comparisons and attrition.

Initially, *t*-tests were conducted to identify any differences at baseline between participants who completed at least four sessions/visits and those who dropped out prior

to visit 4, in order to determine whether dropout alone biased the results. There were two individuals who dropped out of YWM and did not complete the baseline measures of LOSC and PHLMS. Findings indicated no significant differences between completers (individuals who completed at least four sessions) and noncompleters at baseline on the LOSC, $t(55) = -.127$, $p = .899$, SCS, $t(56) = .138$, $p = .890$, and PHLMS, $t(55) = -.613$, $p = .542$ (Table 2).

Table 2

Comparison of Completers to Noncompleters at Baseline on the LOSC, SCS, and the PHLMS

	Completer		Noncompleter	
Total Score	*M*	*SD*	*M*	*SD*
LOSC	80.83	17.88	80.21	18.45
SCS	18.26	3.22	18.39	3.68
PHLMS	64.10	7.36	62.96	6.64

Note. LOSC = Levels of Self-Criticism; SCS = Self-Compassion Scale; PHLMS = Philadelphia Mindfulness Scale.

Baseline comparisons between control and experimental groups. Independent samples *t*-tests were then conducted to examine whether differences existed between the experimental and control groups at baseline on the dependent measures in order to identify candidates for covariates (Table 3). Results indicated that there were no

significant differences between the experimental and control groups on LOSC, $t(51) = .1.31$, $p = .20$ and SCS, $t(51) = -.04$, $p = .97$. Control group participants, however, were significantly higher in total mindfulness on the PHLMS, $t(51) = 2.25$, $p < .05$ at baseline, and on the PHLMS acceptance subscale, $t(51) = 2.79$, $p < .05$, but not the awareness subscale, $t(51) = -.08$, $p = .94$. Levene's test indicated no significant differences between groups in variance on any of the dependent variables in these analyses.

Table 3

Baseline Comparison of Means Between Groups on LOSC, LOSC-CSC/ISC, SCS, PHLMS and PHLMS-AWARE/ACCEPT

	Control Group		YWM Group		
Dependent Variable	*M*	*SD*	*M*	*SD*	*t*
Total LOSC	87.33	18.13	80.83	17.88	1.31
Total CSC	39.33	10.76	35.66	11.12	1.22
Total ISC	48.00	10.20	45.17	10.48	0.99
Total SCS	18.22	3.77	18.26	3.22	-0.04
Total PHLMS	68.58	7.05	64.10	7.36	*2.25
Total PHLMS-AWARE	37.33	5.56	37.45	4.64	-0.08
Total PHLMS-ACCEPT	31.25	5.97	26.66	5.99	*2.79

Note. LOSC = Levels of Self-Criticism Scale; CSC = Comparative Self-Criticism Subscale of LOSC; ISC = Internalized Self-Criticism Subscale of LOSC; SCS = Self-Compassion Scale; PHLMS = Philadelphia Mindfulness Scale; PHLMS-AWARE = Awareness Subscale of PHLMS; PHLMS-ACCEPT = Acceptance Subscale of PHLMS.

*$p < .05$

Baseline comparisons on subscales. Due to significant baseline differences between the control and experimental groups on the acceptance subscale of the PHLMS, a multivariate analysis of variance (MANOVA) was conducted to determine whether groups were also different on a combination of Self-Compassion Scale (SCS) subscales

similar to PHLMS Acceptance (Table 4). The MANOVA indicated no significant differences between the experimental and control groups on the SCS subscales of self-kindness, self-judgment, and mindfulness at baseline, $\lambda = .93$, $F(3,49) = 1.27$, $p = .30$.

Table 4

Baseline Comparison of Experimental and Control Groups on Self-Kindness, Self-Judgment, and Mindfulness

Variable	*SS*	*df*	*MS*	*F*	*P*
SK	0.91	1	0.91	1.61	0.21
SJ	0.54	1	0.54	0.83	0.36
MI	0.10	1	0.10	0.22	0.64

Note. SK = Self-Kindness; SJ = Self-Judgment; MI = Mindfulness.

To examine the relationship between the constructs of interest, Pearson product-correlations were conducted at baseline to address the fourth hypothesis (Table 5). For total measure scores, there was a moderate positive correlation between mindfulness (PHLMS) and self-compassion (SCS; $r = .56$, $p < .01$), a strong negative correlation between self-criticism (LOSC) and self-compassion (SCS; $r = -.75$; $p < .01$), and a moderate negative correlation between mindfulness (PHLMS) and self-criticism (LOSC; $r = -.49$, $p < .01$).

Table 5

Correlations Among PHLMS, LOSC, and SCS

	Measure		
Measure	PHLMS	LOSC	SCS
PHLMS	.	-0.49	0.56
LOSC	-0.49	.	-0.75
SCS	0.56	-0.75	.

Note. PHLMS = Philadelphia Mindfulness Scale; LOSC = Levels of Self-Criticism; SCS = Self-Compassion Scale.

A correlation matrix (as shown in Table 6) was also prepared at baseline to identify correlations for all of the subscales within the three variables. On the Self-Compassion Scale (SCS), the self-kindness (SK) subscale was positively correlated with the reverse-scored subscale of self-judgment (SJ; $r = .69$, $p < .01$), and on the reverse-scored subscale, mindfulness (MI; $r = .65$, $p < .01$). On the subscales of the Levels of Self-Criticism, Comparative Self-Criticism and Internalized Self-Criticism, there were negative correlations with one of the PHLMS subscales, acceptance, and the SCS subscale self-judgment ($r = -.50$, $p < .01$). Additionally, there was a moderately significant negative correlation between the SCS subscale self-judgment and the LOSC subscale comparative self-criticism ($r = -.50$, $p < .01$)

Table 6

Baseline Correlations Between Subscales of LOSC, SCS, and PHLMS

		Measure									
		PHLMS		SCS						LOSC	
Scale	Subscale	AWARE	ACCEPT	SELF-KIND	SELF-JUDGE	CH	IS	MIND	OI	CSC	ISC
PHLMS	AWARE	1.00	-0.13	0.08	-0.07	0.13	-0.11	0.39**	-0.03	0.02	0.17
	ACCEPT	-0.13	1.00	0.52**	0.57**	0.06	0.52**	0.27*	0.54**	0.47**	0.42**
SCS	SELF-KIND	0.08	0.52**	1.00	0.69**	0.47**	0.40**	0.65**	0.53**	0.48**	0.52**
	SELF-JUDGE	-0.07	0.57**	0.69**	1.00	0.26*	0.60**	0.34**	0.69**	0.50**	0.70**
	CH	0.13	0.06	0.47**	0.26*	1.00	0.22	0.47**	0.17	0.31**	-0.22
	IS	-0.11	0.52**	0.40**	0.60**	0.22	1.00	0.17	0.54**	0.54**	0.53**
	MIND	0.39**	0.27*	0.65**	0.34**	0.47**	0.17	1.00	0.38**	0.40**	0.32**
	OI	-0.03	0.54**	0.53**	0.69**	0.17	0.54**	0.38**	1.00	0.50**	0.66**
LOSC	CSC	0.015	0.47**	-0.48**	-0.50**	-0.31**	0-.54**	-0.40**	-0.50**	1.00	0.52**
	ISC	0.17	-0.42**	-0.52**	-0.70**	-0.22	-0.53**	-0.32**	-0.66**	0.52**	1.00

Note. PHLMS = Philadelphia Mindfulness Scale; AWARE = Awareness subscale of PHLMS; ACCEPT = Acceptance subscale of PHLMS; SCS = Self-Compassion Scale; SELF-KIND = Self-Kindness subscale of SCS; SELF-JUDGE = Self-Judgment subscale of SCS; CH = Common Humanity subscale of SCS; IS = Isolation subscale of SCS; MI = Mindfulness subscale of SCS; OI = Over-Identified subscale of SCS; LOSC = Levels of Self-Criticism; CSC = Comparative Self-Criticism subscale of LOSC; ISC = Internalized Self-Criticism subscale of LOSC.

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

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

Multivariate analyses: Changes in mindfulness, self-compassion, and self-criticism.

A repeated measures multivariate analysis of covariance (MANCOVA) was run to determine changes on LOSC, SCS, and PHLMS from baseline to postintervention to test hypotheses 1 through 3. The one subscale of mindfulness, acceptance, was the only significant difference found between the experimental and control group at baseline. Acceptance, however, was not controlled for in the MANCOVA as a covariate due to the fact that the control group scored higher on this variable at baseline. If the analysis showed significantly higher mindfulness scores in the experimental group than the control group at posttest, this would indicate an even stronger effect of the intervention on this particular variable. Because participants had a greater number of days between baseline and posttest in the experimental group than controls, it is possible that increased time to practice could have accounted for positive changes. Therefore, it made sense to include time between baseline and posttest as a covariate.

As shown in Table 7, the MANCOVA Wilks lambda indicated a significant main effect for group assignment on the linear combination of the dependent variables, $\lambda = .8$, $F(3, 48) = 3.99$, $p < .05$. Subsequently, univariate tests were conducted to determine which of the dependent variables accounted for the main effect. Univariate tests indicated significant group differences from pretest to posttest on LOSC, $F(1,50) = 7.83$, $p < .01$, $\eta_p^2 = .14$, but no significant group effect on the SCS or the PHLMS. There was no significant main effect of time or of days between baseline and posttest, nor was the interaction significant between time and days between baseline and posttest. There was, however, a significant overall interaction between group and time, $\lambda = 65$, $F(3,48) = 8.65$,

$p < .001$, $\eta_p^2 = .35$. Univariate tests showed a significant interaction effect for total SCS, $F(1,50) = 15.19$, $p < .001$, $\eta_p^2 = .23$, total LOSC, $F(1,50) = 14.42$, $p < .001$, $\eta_p^2 = .22$, and total PHLMS [$F(1,50) = 21.42$, $p < .001$, $\eta_p^2 = .30$]. Significant interactions indicate that the effect of one independent variable (experimental or control group) on LOSC, SCS, PHLMS depends on the levels of the other independent variable (baseline or posttest). These interactions suggest trends from baseline to visit 4 on the SCS, LOSC, and PHLMS were significantly different depending on which group participants were in, the experimental or the control group (Figures 1 through 3).

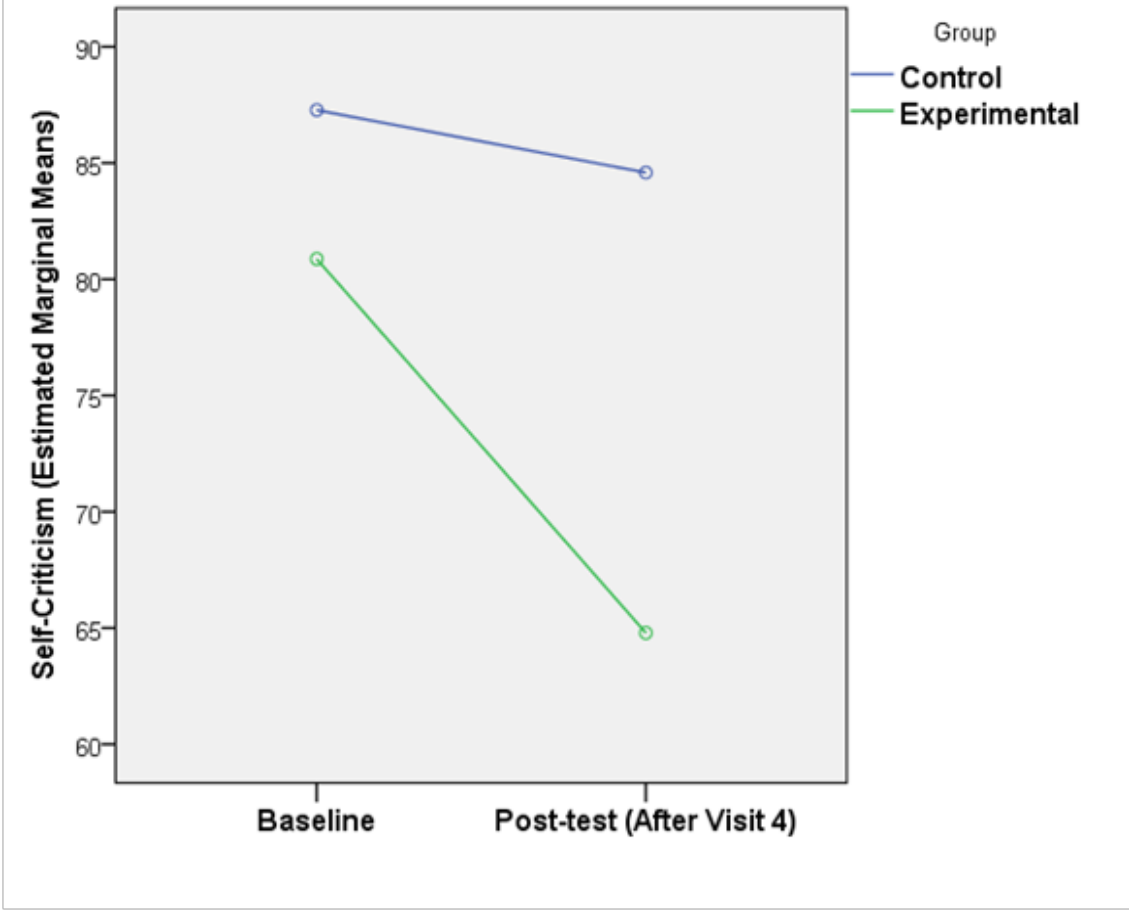

Figure 1. Interaction between group and time for self-criticism.

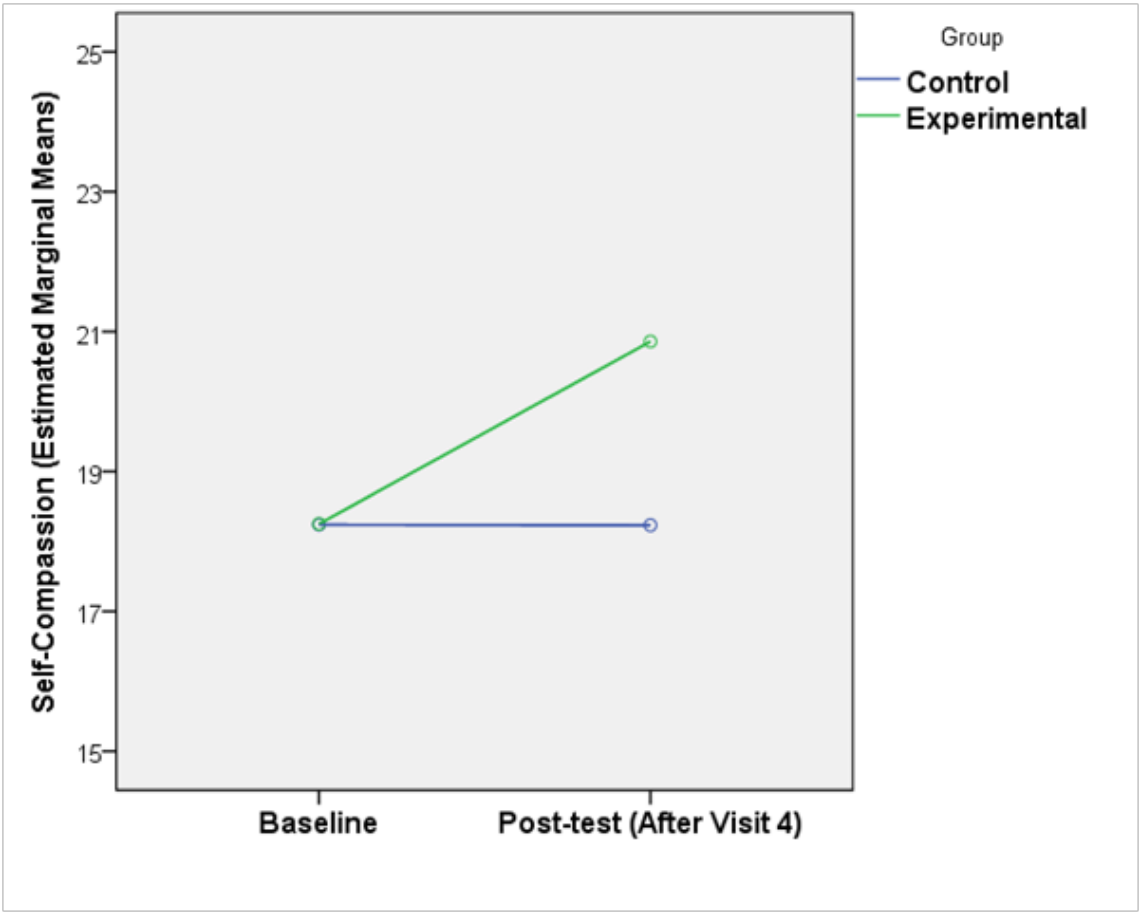

Figure 2. Interaction between group and time for self-compassion.

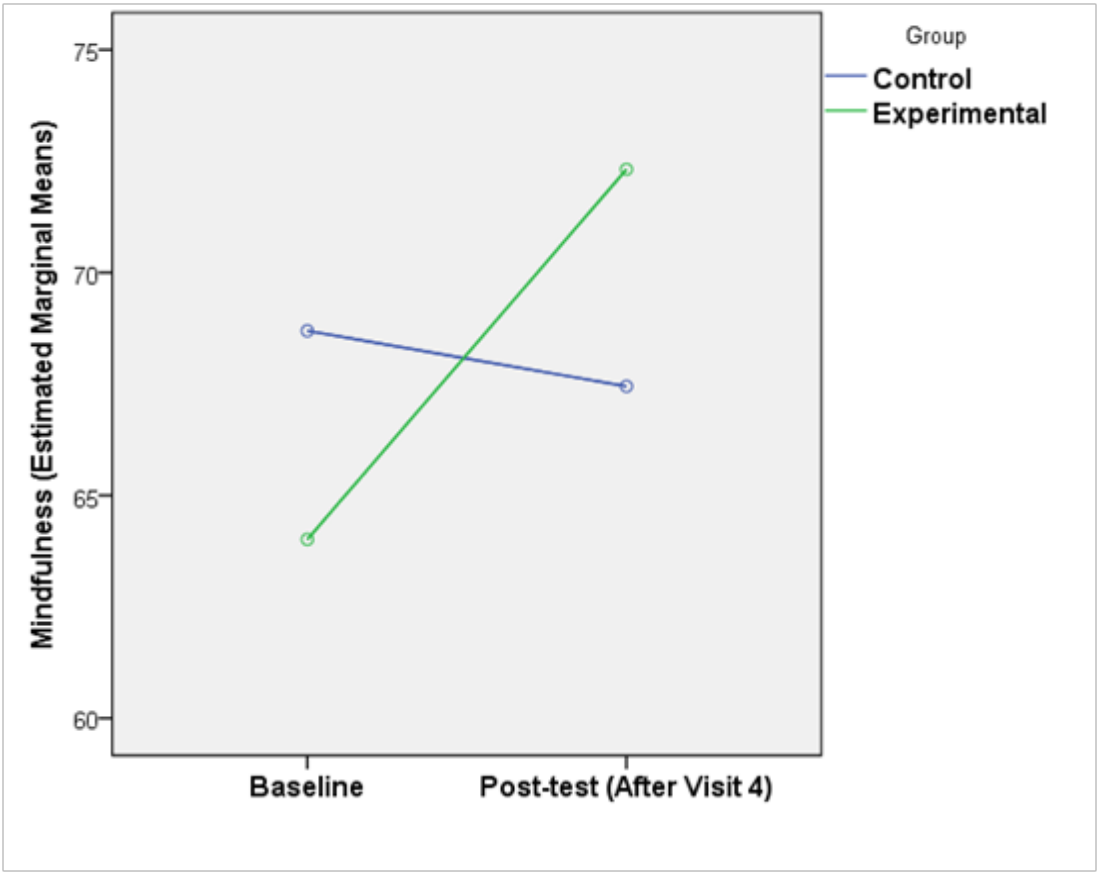

Figure 3. Interaction between group and time for mindfulness.

As shown in Figures 1 through 3, differences in total score trends were observed between the control and experimental groups from baseline to posttest. The control group remained relatively flat in LOSC, SCS, and PHLMS from baseline to posttest, decreasing slightly in levels of mindfulness and self-criticism. In contrast, scores for the experimental group increased on the SCS and PHLMS and decreased on the LOSC.

Table 7

Main and Interaction Effects of YWM/Controls and Time

	Group Main Effect			Time Main Effect			Group x Time Interaction		
Measure	*F*	*p*	η_p^2	*F*	*p*	η_p^2	*F*	*p*	η_p^2
SCS	1.78	0.19	0.03	0.77	0.39	0.02	15.19	<0.05	0.23
F(1, 50)									
LOSC	7.83	<0.05	0.14	0.33	0.57	0.01	14.42	<0.05	0.22
F(1, 50)									
PHLMS	0.00	0.96	0.00	0.00	0.97	0.00	21.43	<0.05	0.30
F(1, 50)									

Note. SCS = Self-Compassion Scale; LOSC = Levels of Self-Criticism; PHLMS = Philadelphia Mindfulness Scale.

To further examine significant decreases observed in self-criticism (LOSC) in the YWM group and differences between the two groups, we conducted a MANCOVA with LOSC subscales controlling for baseline differences in the acceptance subscale of the PHLMS. The overall MANCOVA indicated statistically significant differences between the groups on comparative self-criticism (CSC) and internalized self-criticism (ISC) [λ =.55, $F(2, 49) = 20.37$, $p < .001$, $\eta_p^2 = .454$]. It appears that after visit 4, the YWM group was significantly lower on CSC (11-point difference) and ISC (9-point difference) relative to the control group. Effect sizes of .42 for CSC and .20 for ISC suggest that

changes in total LOSC were mainly caused by decreases in comparative self-criticism. Therefore, the greatest change among the constructs of interest (self-criticism, self-compassion, and mindfulness) was found in self-criticism. More specifically, the greatest changes resulting from YWM were found to be within comparative self-criticism, as compared to internalized self-criticism.

Chapter 6

Discussion

This study examined the effects of an intervention, yoga with meditation (YWM), on self-criticism, self-compassion, and mindfulness. To date, there has been limited research combining yoga with meditation as an intervention, nor has a study yet to simultaneously measure the constructs of self-criticism, self-compassion, and mindfulness. In addition, this study is the first of its kind to couple Ananda yoga with loving-kindness meditation/*metta.* This study was designed to evaluate accessible, affordable treatment options for self-criticism. The sample in this study was comprised of graduate students, a goal-oriented population vulnerable to high levels of academic-related stress and self-criticism (Dyrbye et al., 2008).

The results of this study indicated that the YWM group had significantly greater decreases in self-criticism from baseline through postintervention in comparison to the control group, as measured by the Levels of Self-Criticism Scale (LOSC). Additionally, measures of mindfulness and self-compassion reflected significantly different trends from baseline to posttest for participants in YWM compared to the control group, with YWM participants experiencing increases on these dimensions versus flat or decreasing levels for the control group. Furthermore, effects on self-criticism appear to be driven by reductions in comparative self-criticism (having a negative view of the self in comparison to others) versus internalized self-criticism.

There are a number of possible explanations for the relatively greater decreases in comparative self-criticism in this sample. Self-Discrepancy theory (SDT) implies that when there is a discrepancy between the actual and ideal or “ought” self, an individual is inclined to engage in self-punishment in the form of self-criticism (Heron & Smyth,

2013; Higgins, 1978). Perhaps YWM is one way to lessen the gap between the actual and the ideal or "ought" self by decreasing self-criticism, specifically comparative self-criticism (CSC). YWM may be particularly helpful for individuals in competitive graduate-level programs who may use self-criticism as a way of improving themselves, avoiding mistakes, or punishing themselves (Gilbert et al., 2004). YWM may teach skills that counter self-critical thought processes linked to decreased performance (Dunkley et al., 2006; Longe et al., 2010) and decreased motivation (Longbottom et al., 2012).

Changes in CSC can also be explained by social comparison theory (Festinger, 1954), which posits that humans have a drive to evaluate their abilities by making comparisons. Individuals will frequently evaluate their attributes by comparing themselves to other people (Wood, 1989). In Western cultures, people tend to feel pressure to continually improve their abilities, and by comparing themselves to others, they strive to meet and exceed others' abilities**.** Reducing self-criticism can be very challenging for individuals (Gilbert et al., 2006; Mikulincer & Shaver, 2007); however, self-compassion and mindfulness have been identified as protective factors that have been increasing in popularity in the West (Neff, 2003a; Wong & Mak, 2012). Although these alternative elements have been added to some "traditional" psychotherapies, the cost, time, and stigma associated with psychotherapy may still function as barriers to treatment. Therefore, this study offers promising alternatives to psychotherapy for potentially decreasing self-criticism and increasing self-compassion.

Results of the current study confirm that self-compassion is negatively related to self-criticism (Longe et al., 2010). In addition, self-compassion increased in the YWM group, when compared to the control group. While self-critical individuals tend to

struggle with feelings of hopelessness, self-compassionate individuals tend to be more optimistic (Neff, 2004), motivated, confident, resilient, and less afraid of failure (Neff et al., 2005). The YWM intervention encouraged courage and unconditional self-acceptance through the asana affirmations and meditation. Overall, inducing self-compassion appears to be a useful emotional self-regulating coping skill and buffers against self-criticism (Leary et al., 2007). Finding alternative ways to decrease self-criticism and increase self-compassion may not only improve mood, but may also assist in short-term psychotherapeutic techniques.

Existing interventions aimed at combining alternative with traditional approaches influenced the procedures used in this study. For example, compassionate mind training (CMT) combines self-compassion with cognitive restructuring and has been found to be effective in treating individuals who struggle with self-criticism and have difficulty engaging in self-soothing (Gilbert & Procter, 2006). In an attempt to decrease self-criticism, this study utilized techniques aimed at increasing self-compassion, including mindfulness exercises, positive affirmations, and compassion-based meditation practices. As Neff (2003) described, the first step to becoming self-compassionate or increasing self-compassion is to become aware of one's state of being without judgment, otherwise known as mindfulness.

In order to increase self-compassion or decrease self-criticism, mindfulness has been posited to be an essential first step (Beddoe & Murphy, 2004; Neff, 2003b). Results of the current study indicated that mindfulness was increased within the YWM group compared to the control group. Self-compassion and mindfulness have been identified as the primary mediators of change in mindfulness-based therapies (Baer, 2010; Kuyken et

al., 2010; Robbins et al., 2012), such as mindfulness-based cognitive therapy (MBCT) and mindfulness-based stress-reduction (MBSR). While MBSR incorporates yoga within the treatment protocol (Schmidt et al., 2011), yoga as a stand-alone practice is also an effective way to build mindfulness skills (Carmody & Baer, 2008; Shelov & Suchday, 2009).

Yoga has been associated with increased mindfulness (Conboy et al., 2010), increased self-compassion (Conboy et al., 2010; Gard et al., 2012), and decreased perfectionism (Komiya & Taniguchi, 2011), and YWM appears to be consistent with the existing body of literature. For the purposes of this study, and to increase the likelihood of change within mindfulness, self-compassion, and self-criticism, Ananda yoga and loving-kindness meditation (LKM) were chosen for the intervention. The researcher, a yoga teacher, utilized Ananda yoga within the YWM intervention because it included positive affirmations within the asanas, similar to positive affirmations used in cognitive therapy, or compassionate mind training (CMT), which combines cognitive therapy with cultivating compassion.

Traditional yoga is typically followed by a form of meditation (Walters, 2002). Meditation has been associated with increased mindfulness (Bishop et al., 2004; Carmody & Baer, 2008), increased self-compassion (Burns et al., 2011), and decreased perfectionism (Burns et al., 2011). To focus specifically on the cultivation of self and other compassion (Hofmann et al., 2011), loving-kindness meditation (LKM), or *metta*, was chosen for the YWM intervention.

Previous research has indicated that loving-kindness meditation has been associated with decreased depression and anxiety, and the positive effects can be

established after short periods of training (Hofmann et al., 2011). One of the reasons LKM may be so effective in reducing self-criticism, and why its psychological benefits may continue to be researched, is that LKM is considered to be incompatible with criticism of the self and others (Hofmann et al., 2011). Results of the current study support previous research; self-criticism, specifically comparative self-criticism (CSC), was significantly reduced after YWM. Perhaps the repetitive nature of LKM, focusing on cultivating compassion, reduces an individual's tendency to self-criticize.

Alternative mindfulness-based practices such as yoga and meditation have been found to counteract self-criticism by increasing mindfulness (Bishop et al., 2004; Carmody & Baer, 2008; Conboy et al., 2010; Shelov & Suchday, 2009), and self-compassion (Burns et al., 2011; Conboy et al., 2010; Gard et al., 2012). However, with the exception of the current study, research had not yet combined yoga with meditation as a technique to decrease self-criticism and to increase mindfulness and self-compassion.

Yoga with meditation (YWM) as an intervention.

Although evidence-based therapy has advanced with its inclusion of mindfulness as an emotional self-regulating coping mechanism, YWM allows individuals an additional alternative to psychotherapy. Traditional psychotherapy, including cognitive behavior therapy (CBT), is not always effective for everyone (Kenny & Williams, 2007). In addition, psychotherapy can be costly, time consuming, and often carries stigma. Many mindfulness-based therapies require weekly sessions for 8 to 12 weeks, whereas the YWM intervention required only four sessions to facilitate significant changes. Overall, results suggest that YWM may be a useful intervention for self-critical individuals, either as an alternative to or in conjunction with traditional psychotherapy.

Self-criticism was the construct of greatest interest in this study, given the psychotherapeutic implications and its association with psychopathology and suicidal behaviors (Blatt, 1995; Enns & Cox, 1999; Gilbert et al., 2010; Hamilton & Schweitzer, 1999; O'Connor, 2007; Shaw & Segal, 1999). It was not expected to change more than the other constructs in a brief intervention given the limited literature about self-criticism and because it is considered a trait, which can be less sensitive to change than a state. However, there were statistically significant reductions in self-criticism as a result of four YWM sessions. Therefore, the decreases in self-criticism can provide promising, useful information for all therapeutic approaches aimed at reducing self-criticism. In addition, the results of YWM may help providers todevelop alternatives or adjunctive treatments to existing practices targeting self-criticism.

Mechanisms of change. Within the yoga with meditation (YWM) intervention, individuals were consistently encouraged to be mindful in their own practice, rather than comparing their performance or appearance to others in the class. Yoga with meditation (YWM) encouraged self and other compassion and discouraged judgment about oneself and others. This, in turn, may have decreased the tendency for participants to compare themselves to others over time.

Based on the trends of increases within these constructs, YWM may have helped people become more mindful and self-compassionate after a limited number of sessions. Therefore, it is likely that a reasonably larger sample size would show statistically significant increases in mindfulness and self-compassion. In addition, if individuals engage in YWM for a longer period of time, changes on all constructs may be found. Regardless, YWM may have helped participants to be less negative toward themselves,

or less self-critical. While mindfulness and self-compassion overlap with aspects of YWM, perhaps mindfulness is not a mandatory component of yoga and meditation.

There may be an order to the development of self-compassion through mindfulness/YWM practice, starting first with reduced negative self-judgment (specifically through reductions in negative social comparison) and progressing to more positive evaluations of oneself with practice. This relates to the mechanisms of mindfulness, first reducing negative cognitive-affective reactivity by becoming an objective observer. Over time, with more advanced practice of YWM, the positive evaluations may increase, leading to further decreases in self-criticism, increased coping through self-compassion, and generalizable mindfulness skills. Future research may examine whether these changes endure over time.

Strengths and limitations.

This study added to the current self-criticism, mindfulness, and self-compassion literature. The yoga with meditation (YWM) group was popular and inexpensive, and students reported wanting to participate due to various benefits and enjoyment of the classes. While a limitation of the current study is an inability to generalize to other populations, the sample used in this study included graduate students, who are likely to strive for high standards and engage in self-criticism. Generalizability is also limited to a nonclinical population. However, one strength of this study was the inclusion of a control group, drawn from a student population similar to the experimental group.

Another limitation of this study was the presence of group preference and an absence of randomization. Individuals volunteered to be in the experimental group; therefore, participants were not randomly assigned to either of the two groups. There

may have been biases among participants, due to the dual roles of the examiner and the teacher of the YWM intervention. In addition, there are natural limitations when using only self-report data, as well as a small sample size, due to the availability of participants and time restrictions. Future studies should include randomization to address this limitation.

The results of this study showed that although there are similarities amongst the constructs, there are clear differences between them. Therefore, it may be possible to be mindful without being self-compassionate, and it may be possible to decrease self-criticism without being mindful or self-compassionate. Unfortunately, the results are not able to distinguish between the effects of yoga and meditation. In addition, there are a multitude of variations within yoga and meditation practices and unidentified extraneous variables that may have contributed to or prevented change within this study.

Another limitation of the current study is that the same person who provided the intervention also collected the data. Methodological steps were taken, such as collecting de-identified data, to minimize the risk of demand characteristics as a threat to the external validity of this study. In addition, the de-identified data allowed the researcher to have greater confidence the participants were responding honestly and not as a result of demand characteristics. Though the investigator did not have the time or resources to collect follow-up data, the prospective, longitudinal, quasi-experimental design allowed for greater confidence in attributing a causal role to the intervention.

Within the YWM classes, the teacher announced each affirmation when the participants began to hold a pose. There are affirmations designed specifically for Ananda yoga, and each pose is paired with one of them. For the purposes of YWM,

some of those affirmations were modified to meet the diverse beliefs of all the participants. However, the acceptance component of mindfulness calls into question the function of affirmations. Students may not necessarily believe or agree with an affirmation, such as "I am calm, I am poised." In addition, LKM is a guided meditation, which may similarly contradict acceptance of the moment, thoughts, or emotions of the individual participant. This may present obstacles for an individual if these thoughts have not been internalized or believed. Similar obstacles may arise within cognitive therapy techniques in which an individual is encouraged to challenge irrational or distorted thoughts and replace them with more accurate and rational thoughts.

Perhaps students of YWM may benefit more with additional modifications to the affirmations. The teacher could present the affirmations to the class in the form of open-ended statements, allowing for individualized emotions to be incorporated into each participant's thoughts while holding a pose. In addition, it may be helpful or more in line with the construct of acceptance if the individual were encouraged to think of a past memory in which a particular emotion was experienced. This may also help the individual to internalize the affirmation or emotion during LKM.

Future directions.

The results of this yoga with meditation (YWM) treatment study indicated statistically significant changes in the hypothesized directions. Yoga with meditation (YWM) appeared to decrease self-criticism and to increase self-compassion and mindfulness. This study contributes to the current literature supporting alternative ways

to address self-criticism, psychopathology, and societal concerns surrounding suicidal behaviors.

The greatest change as a result of this intervention was seen in the construct of self-criticism. Specifically, comparative self-criticism (CSC) was significantly reduced at post intervention, compared to internalized self-criticism (ISC). It may be helpful for researchers to continue to examine the more specific construct of comparative self-criticism in order to improve treatments targeting psychopathology associated with self-criticism. In regards to the intervention of YWM, it may be important to independently measure the different components to understand what causes the changes in self-criticism. Future studies may want to include four groups: A YWM group, a yoga-only group, a meditation-only group, and a control group.

Replication of this study using randomization and a larger sample of participants would strengthen the findings of the current study. It may also be beneficial to research the YWM intervention in a clinical sample and to examine possible differences between a clinical and nonclinical population. In addition, future research can incorporate more directly observable methods of measurement, as opposed to limiting data collection to self-report. Studies could implement physical measures to assess changes in levels of cortisol, blood pressure, and sleep. Due to the amount and diversity of feedback from participants, adding qualitative measures could provide important means to tailoring best-treatment approaches.

In an attempt to strengthen evidence-based treatments, it may be beneficial to examine YWM in conjunction with cognitive therapy protocols. It may be helpful to conduct a study looking at the effects of individual cognitive behavioral therapy (CBT) in

conjunction with YWM. The study could include four groups: YWM group, a CBT group, a YWM with CBT, and a control group. Changes in mindfulness, self-compassion, and self-criticism could be measured in all groups at baseline and post intervention.

A future study could include group CBT with YWM. The group could begin with helping participants to identify self-critical thoughts and provide psycho education to address the impact of self-criticism on mood to process obstacles to self-compassion. The YWM would immediately follow, providing a way to practice mindfulness and self-compassion. The group session could be 2 hours in duration to include both CBT and YWM, and participants would be encouraged to attend once a week for 8 weeks. It would be helpful to measure change at 4 weeks to compare to YWM-only, at 8 weeks to address any further changes, and follow-up sessions at 6 and 9 months to address enduring changes.

In conclusion, the results of YWM provide encouraging alternative treatment options to address self-criticism. Perhaps incorporating components of YWM in conjunction with approaches based on the cognitive model would lead to strong treatment outcomes. Future studies may benefit from larger, more controlled replication studies to augment the findings of the current study.

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