Emotion dysregulation as a mediator of the relationship between mindfulness and depression

Alana Jacobs
Pacific University
Emotion dysregulation as a mediator of the relationship between mindfulness and depression

Abstract
Despite the numerous treatments available, Major Depressive Disorder (MDD) continues to plague millions of individuals, their loved ones, as well as society as a whole. Mindfulness based treatments have emerged as an alternative treatment option and are increasingly utilized to treat individuals struggling with MDD. A plethora of research has pointed to the effectiveness of mindfulness based treatments for MDD and numerous studies have demonstrated that increased mindfulness is associated with decreased symptoms of depression. However, there is a paucity of research focused on understanding the mechanisms of action underling mindfulness and depression. Within the small body of research that does exist, emotion regulation has been suggested as one important mechanism by which mindfulness leads to decreased symptoms of depression. The aim of this dissertation was to add to the limited body of research examining whether emotion regulation mediates the relationship between mindfulness and depression using correlational, self-report data from a sample of 185 college students. To investigate this hypothesis a mediation analysis was conducted, involving bootstrapping with an SPSS macro (Preacher & Hayes, 2004). Findings indicated that emotion dysregulation partially mediated the relationship between mindfulness and depression, as mindfulness and depression were still significantly related when emotion dysregulation was included in the model but the strength of their relationship was reduced. The implications and limitations of these findings are discussed.

Degree Type
Dissertation

Degree Name
Doctor of Psychology (PsyD)

Committee Chair
Michael S. Christopher, Ph.D

Second Advisor
Paul Michael, Ph.D.

Third Advisor
Christiane Brems, Ph.D., ABPP

Subject Categories
Psychiatry and Psychology

Comments
Library Use: LIH

This dissertation is available at CommonKnowledge: https://commons.pacificu.edu/spp/1089
Copyright and terms of use

If you have downloaded this document directly from the web or from CommonKnowledge, see the “Rights” section on the previous page for the terms of use.

If you have received this document through an interlibrary loan/document delivery service, the following terms of use apply:

Copyright in this work is held by the author(s). You may download or print any portion of this document for personal use only, or for any use that is allowed by fair use (Title 17, §107 U.S.C.). Except for personal or fair use, you or your borrowing library may not reproduce, remix, republish, post, transmit, or distribute this document, or any portion thereof, without the permission of the copyright owner. [Note: If this document is licensed under a Creative Commons license (see “Rights” on the previous page) which allows broader usage rights, your use is governed by the terms of that license.]

Inquiries regarding further use of these materials should be addressed to: CommonKnowledge Rights, Pacific University Library, 2043 College Way, Forest Grove, OR 97116, (503) 352-7209. Email inquiries may be directed to: copyright@pacificu.edu
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>iv</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>v</td>
</tr>
<tr>
<td>List of Tables</td>
<td>vi</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Literature Review</td>
<td>3</td>
</tr>
<tr>
<td>Introduction to Mindfulness</td>
<td>3</td>
</tr>
<tr>
<td>Definition</td>
<td>3</td>
</tr>
<tr>
<td>Background</td>
<td>3</td>
</tr>
<tr>
<td>Mindfulness Based-Therapies</td>
<td>5</td>
</tr>
<tr>
<td>Mindfulness-Based Stress Reduction</td>
<td>5</td>
</tr>
<tr>
<td>Mindfulness-Based Cognitive Therapy</td>
<td>5</td>
</tr>
<tr>
<td>Mindfulness &amp; Depression</td>
<td>6</td>
</tr>
<tr>
<td>Correlational Research</td>
<td>6</td>
</tr>
<tr>
<td>Treatment Outcome Research</td>
<td>8</td>
</tr>
<tr>
<td>Meta-Analysis</td>
<td>9</td>
</tr>
<tr>
<td>Emotion Regulation Definition &amp; Background</td>
<td>11</td>
</tr>
<tr>
<td>Mindfulness &amp; Emotion Regulation</td>
<td>12</td>
</tr>
<tr>
<td>Correlational Research</td>
<td>13</td>
</tr>
<tr>
<td>Treatment Outcome Research</td>
<td>14</td>
</tr>
<tr>
<td>Neurocognitive Research</td>
<td>15</td>
</tr>
</tbody>
</table>
Purpose of Present Study ................................................................. 24

Statement of Hypothesis ................................................................. 25

Hypothesis 1 ..................................................................................... 25

Hypothesis 2 ..................................................................................... 25

Hypothesis 3 ..................................................................................... 25

Hypothesis 4 ..................................................................................... 25

Method ............................................................................................. 26

Participants ...................................................................................... 26

Measures .......................................................................................... 28

Demonstrative Questionnaire .......................................................... 28

The Mindful Attention Awareness Scale .......................................... 28

Center for Epidemiologic Studies Depression Scale ....................... 29

Difficulties in Emotion Regulation Scale .......................................... 30

Procedure ......................................................................................... 31

Results ............................................................................................... 34

Data Screening .................................................................................. 34

Distribution Screening & Descriptive Statistics ............................... 35
Preliminary Analysis ................................................................................................ 39
Main Analysis .......................................................................................................... 39
Discussion ................................................................................................................. 41
References ................................................................................................................ 47
Appendix A .................................................................................................................. 64
Appendix B .................................................................................................................. 65
Appendix C .................................................................................................................. 67
Appendix D .................................................................................................................. 69
Abstract

Despite the numerous treatments available, Major Depressive Disorder (MDD) continues to plague millions of individuals, their loved ones, as well as society as a whole. Mindfulness based treatments have emerged as an alternative treatment option and are increasingly utilized to treat individuals struggling with MDD. A plethora of research has pointed to the effectiveness of mindfulness based treatments for MDD and numerous studies have demonstrated that increased mindfulness is associated with decreased symptoms of depression. However, there is a paucity of research focused on understanding the mechanisms of action underling mindfulness and depression. Within the small body of research that does exist, emotion regulation has been suggested as one important mechanism by which mindfulness leads to decreased symptoms of depression. The aim of this dissertation was to add to the limited body of research examining whether emotion regulation mediates the relationship between mindfulness and depression using correlational, self-report data from a sample of 185 college students. To investigate this hypothesis a mediation analysis was conducted, involving bootstrapping with an SPSS macro (Preacher & Hayes, 2004). Findings indicated that emotion dysregulation partially mediated the relationship between mindfulness and depression, as mindfulness and depression were still significantly related when emotion dysregulation was included in the model but the strength of their relationship was reduced. The implications and limitations of these findings are discussed.

Keywords: mindfulness, depression, emotion dysregulation, emotion regulation
Acknowledgements

Thank you to my dissertation advisor, Dr. Michael Christopher for his guidance and support throughout this process. I am also grateful for his passion and commitment to studying mindfulness. I would also like to thank Dr. Paul Michael, for providing his expertise on statistics and patience with my plethora of emails and questions. I am grateful for his knowledge and guidance. Finally, I want to express my gratitude to my family and friends throughout this process. I particularly want to thank Jackie Malasky for providing unwavering support this past month.
List of Tables

Table 1: Demographic Information of Sample
Table 2: Reliability Estimates by Measure
Table 3: Means, Standard Deviations, Standard Error of the Mean, Skewness, and Kurtosis by Variable
Table 4: Intercorrelations between Variables
**Introduction**

Major Depressive Disorder (MDD) is a major public health concern, affecting millions of individuals and their loved ones every year, along with society as a whole. With an adult lifetime prevalence of 17%, MDD is one of the most prevalent mental health disorders in the country (Kessler et al., 2003; Richards, 2011). Those with depressive symptoms report more work and physical limitations, increased financial strain, decreased health status, more bed days, and higher levels of social irritability (Judd, Paulus, Wells, & Rapaport, 1996; Kessler et al., 2003). Relapse is common in MDD, adding to its major impact on individuals and society (Kuyken et al., 2008). Although there are currently a multitude of treatments for MDD, anti-depressant medication being the most commonly utilized, many individuals do not experience significant relief from their symptoms following treatment or are altogether non-responders, creating a need for research into alternative treatment options (Geddes et al., 2003; Kessler et al., 2003; National Institute for Clinical Excellence, 2004).

The last decade has seen an explosion of research on mindfulness based treatments for psychological and medical conditions and numerous studies have demonstrated the effectiveness of mindfulness-based treatments for depression (Finucane & Mercer, 2006; Kabat-Zinn et al., 1992; Ma & Teasdale, 2004; Miller, Fletcher, & Kabat-Zinn, 1995; Shapiro, Schwartz, & Bonner, 1998). A growing number of psychologists are incorporating mindfulness interventions into their work with clients diagnosed with MDD and programs such as Mindfulness Based Cognitive Therapy (MBCT), a treatment that specifically uses mindfulness to prevent depressive relapse, are being used more frequently (Segal, Williams, & Teasdale, 2002). Although there is a significant amount of research pointing to the effectiveness of mindfulness based treatments for
depression, research on the mechanisms of action underlying this relationship is not as prolific. It is critical that there be substantial empirical evidence pointing to the active ingredients in mindfulness that alleviate depression so that psychologists can ethically, confidently, and effectively utilize mindfulness based treatments with depressed clients.

One mechanism of action underlying the relationship between mindfulness and depression that has received considerable attention is emotion regulation. Several correlational studies (Jimenez, Niles, & Park, 2010; Coffey & Hartman, 2008, 2010) and one treatment outcome study (Carmody, Baer, Lykins, & Olendzki, 2009) have suggested emotion regulation is a significant mediator of the relationship between mindfulness and depression, meaning that mindfulness increases adaptive emotion regulation which in turn decreases depression (Carmody et al., 2009). These findings make sense conceptually, given research findings demonstrating that mindfulness is associated with adaptive emotion regulation and depression is associated with emotion dysregulation (Arditte & Johnson, 2011; Arke & Craske, 2006; Baer, Smith, & Allen, 2004; Brown & Ryan, 2003; Gross & John, 2003; Hill & Updegraff, 2011; Joorman & Gotlib, 2010; Robins, Keng, Ekblad, & Brantley, 2011; Vujanovic, Bonn-Miller, Bernstein, McKee, & Zvolensky, 2010). Although there have been a few studies demonstrating the role of emotion regulation as a mediator of the relationship between mindfulness and depression, these findings must be replicated to ensure that they are reliable and valid. It is hoped that the current dissertation will add support to the current findings on emotion regulation as a mediator of the relationship between mindfulness and depression and provide impetus for more empirical studies examining how mindfulness exerts its beneficial effects on depression.
Review of the Literature

Introduction to Mindfulness

**Definition.** The term mindfulness is the English attempted translation of the word *smrti* (in Sanskrit), *Sati* (in Pali), and *Dran-pa* (in Tibetan) (Shapiro, Oman, Thoresen, Plante, & Flinders, 2008). There is no one agreed upon meaning of the term mindfulness, however, one common definition is the state of “awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). Mindfulness has been referred to as “bare attention” by Theravada scholar Bodhi (2000), describing a type of attention that involves removal of our conditioned emotional reactions, judgments, and ideas about the ways things should be (Bodhi, 2006). Bishop (2004) operationalized mindfulness as the self-regulation of attention characterized by curiosity, openness, and acceptance. A more specific explanation of mindfulness includes three parts: 1) intention in regards to knowing why one is paying attention and encompassing motivation, a conscious direction, and purpose, 2) attention, which speaks to directly knowing what is happening as it is happening, and 3) an attitude that is accepting, caring, and discerning (Shapiro, Carlson, Astin, & Freedman, 2006). Affection, compassion, and a curious and openhearted presence marked by friendliness underlie mindfulness, as the words for mind and heart are the same in Asian languages (Kabat-Zinn, 2003).

**Background.** Mindfulness has traditionally been called “the heart of Buddhist meditation” and is embedded in the teachings of the Buddha (Gunaratana, 1992; Hanh, 1999; Nanamoli & Bodhi, 1995; Thera, 1962). The Buddhist tradition often associates specific methods of meditation marked by recollection, care, and circumspection with the term mindfulness (Thera, 1962). It should be noted that among different forms of Buddhism and even sometimes
within the same tradition, the actual practices and emphases regarding mindfulness can vary considerably (Goldstein, 2002). Buddhism encompasses a conceptual and practice-oriented ethical framework based upon non-harming and mindfulness based practices fall within this larger framework. In Buddhism, non-harming reflects the idea that human suffering is directly tied to an “untrained mind,” a term coined by the Buddha that refers to unexamined behaviors. The view is that meditative practices address this suffering by facilitating the cultivation of an open heart, increased attention, conscious action, and increased mental clarity and calm (Kabat-Zinn, 2003).

Mindfulness is not only accessible to individuals from traditions such as Buddhism. Given that mindfulness is about specific qualities of attention and awareness, it is an inherently universal capacity of humans, though people vary in their degree of mindfulness in relation to others and from moment to moment (Brown & Ryan, 2003). However, over the past 2,500 years the Buddhist tradition has been most figurative in developing and articulating ways to cultivate this inherent quality of attention and awareness. Although mindfulness is most linked to Buddhism, it should be noted that its essence is reflected in other traditions and teachings (see, for example, Chuang Tsu, 1964; Krishnamurti, 1999; Maharaj, 1973; Maharshi, 1959; Thakar, 1972; Tolle, 1999).

Approximately 25 years ago interest in Buddhist meditation and its potential applicability to the Western medical and mental health spheres began to emerge. The past several years have seen an explosion of attention towards mindfulness by researchers and health care professionals. Due to the growing research suggesting mindfulness’ effectiveness in both enhancing well-being and treating both medical and mental health concerns, the incorporation of mindfulness into medical and mental health treatment is continually increasing.
Mindfulness Based Therapies

Mindfulness is an important facet of many treatment models for psychological disorders. For example, Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999) and Dialectical Behavior Therapy (Linehan, 1993) incorporate mindfulness, however both these treatments include numerous other components. For the purposes of this dissertation, two treatments in which mindfulness is the primary focus will be briefly discussed.

**Mindfulness-Based Stress Reduction.** Mindfulness Based Stressed Reduction (MBSR), created by Jon Kabat-Zinn (1990), consists of one 2-3 hour weekly group class lasting eight weeks and one all day intensive mindfulness session. MBSR involves instruction on sitting meditation practices, body scan, mindful yoga, and the integration of mindfulness as a tool to cope with difficulties in daily life. Participants are encouraged to practice mindfulness while doing everyday activities, to practice formal meditation at home daily for 45 minutes throughout the program, and to record the total time spent in formal and informal home meditation.

**Mindfulness-Based Cognitive Therapy.** Mindfulness-Based Cognitive Therapy (MBCT) was created by Segal, Williams, and Teasdale (2002) and is designed for patients who have had one or more previous depressive episodes. Rationale for this treatment approach is based upon the information processing theory of depressive relapse which posits that individuals who have experienced major depressive episodes are vulnerable to recurrences whenever mild dysphoric states are encountered, as these states may re-trigger the depressive cognitions present during the previous episode, or episodes, and lead to a new depressive episode (Baer, 2006). MBCT is thought to facilitate a decentered or detached relationship to one’s thoughts or emotions through the practice of non-judgmental observation. Patients are
encouraged to view thoughts or feelings simply as things that are always coming and going, as well as changing, as opposed to reflections of who they are or the truth.

**Mindfulness and Depression**

To date, a plethora of studies have specifically examined the relationship between mindfulness and depression. Treatment outcome research (Kabat-Zinn et al., 1992; Finucane & Mercer, 2006; Miller, Fletcher, & Kabat-Zinn, 1995; Ma & Teasdale, 2004; Shapiro, Schwartz, & Bonner, 1998), correlational studies (Argus & Thompson, 2007; Bowlin & Baer, 2012; Frewen, Evans, Maraj, Dozois, & Partridge, 2008; Masuda & Tully, 2012; Prazak, Critelli, Martin, Miranda, Purdum, & Powers, 2012), and meta-analyses (Hofmann, Sawyer, Witt, & Oh, 2010; Klainin-Yobas, Cho, & Creedy, 2011; Khoury et al., 2013; Piet & Hougaard, 2011) have consistently demonstrated that increased mindfulness is associated with decreased depressive symptoms.

**Correlational Research.** Argus and Thompson (2007) sought to examine the role of several processes, one of which was mindfulness, during a current episode of depression. Argus and Thompson (2007) administered surveys including multiple self-report measures to 141 patients diagnosed with MDD in an inpatient setting. Results found that increased self-reported mindfulness was associated with decreased self-reported depressive symptoms. Bowlin and Baer (2012) administered self-report measures to 280 undergraduate students to examine the role of dispositional mindfulness in relation to psychological symptoms and well-being after accounting for the effect of self- control. Results indicated that mindfulness accounted for significant variance in psychological well-being, which included depression, anxiety, and general distress. Masuda and Tully (2012) conducted a study investigating whether mindfulness and psychological flexibility uniquely and separately account for variability in psychological distress,
which included depression, by administering self-report measures to a non-clinical sample of 494 college undergraduates. Findings demonstrated that mindfulness was negatively associated with depression. Frewen et al. (2008) administered self-report measures assessing mindfulness and responses to automatic thoughts, such as the ability to let go, to 64 undergraduate students. Results indicated that measures of dispositional mindfulness were negatively associated with negative thought frequency and perceptions of the ability to let go of such thoughts. Given that ruminative thinking is a trademark of depression, this study lends support that increased mindfulness is correlated with less likelihood of depression symptomatology.

Further, the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), a measure of trait mindfulness, has been correlated with lower levels of emotional disturbance, including symptoms of depression, as measured by the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) and Beck Depression Inventory (BDI, Beckham & Leber, 1985). Cash and Whittingham (2010) conducted a study with a community sample of 106 experienced meditators and non-meditators to examine which of the five facets of mindfulness, from the five-factor model, are predictive of depression, anxiety, and stress. Participants were administered self-report questionnaires to assess the aforementioned variables. Results showed that the “nonjudgement” aspect of mindfulness was predictive of less depressive symptoms and higher levels of “acting with awareness of present moment experience” was predictive of reduced depression symptomatology. Song (2011) used a cross-sectional design to examine the relationship between mindfulness, depression, and anxiety in nursing students. Students completed structure questionnaires assessing the aforementioned variables and results indicated that depression was negatively associated with mindfulness. Desrosiers, Klemanski, and Nolen-Hoeksema (2013) sought to examine associations between specific facets of mindfulness, as
measured by the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), and dimensions of anxiety and depressive symptoms using the Mood and Anxiety Symptom Questionnaire among 187 treatment seeking adults. Results indicated that all facets of mindfulness were significantly related to all dimensions of depression except the observing component of mindfulness. Further, non-judging and non-reactivity demonstrated a significant negative relationship with both general-distress depression and anhedonic depression (Desrosiers et al., 2013). Further, support for the relationship between mindfulness is evidenced in a study conducted by Prazak et al. (2012) examining mindfulness skills as measured by the Kentucky Inventory of Mindfulness Skills (KIMS; Baer et al., 2004) and their relationship to physical and psychological health in 506 undergraduate students. Findings demonstrated an inverse relationship between mindfulness skills and negative affect, such as depression.

**Treatment Outcome Research.** Green and Bieling (2012) sought to examine the effectiveness of MBCT within a heterogeneous group of 23 psychiatric adult outpatients using self-report measures. Results demonstrated significant reductions in depressive symptoms at post-treatment. Shapiro et al. (2008) conducted a matched randomized controlled trial (RCT) to examine the short-term effects of an 8-week MBSR intervention on 78 pre-medical and medical students. Findings demonstrated an association between participation in MBSR and reduced overall psychological distress, including depression (Shapiro et al., 1998). This finding was also demonstrated in a study conducted by Kabat-Zinn et al. (1992), who sought to determine the effectiveness of MBSR for 22 patients with anxiety disorders. Results demonstrated that participation in MBSR was associated with significant reductions in both anxiety and depression at post treatment and three year follow up (Kabat-Zinn et al., 1992; Miller, Fletcher, & Kabat-Zinn, 1995). Teasdale et al. (2000) conducted a RCT comparing MBCT to treatment as usual
(TAU) in a large sample of patients whose MDD had returned after treatment with medication. Findings indicated that during the one year follow up period MBCT resulted in substantially less relapse rates in comparison to TAU for individuals who had experienced three or more previous major depressive episodes.

Similar to Teasdale’s (2000) study, however, with participants who were not currently experiencing symptoms, Ma and Teasdale (2004) conducted a RCT with previously depressed individuals in which participants were randomly assigned to either TAU or MBCT with TAU. Results indicated that in participants with three or more previous depressive episodes, the first of which was early in their life, MBCT reduced relapse from 78% to 36%, however MBCT failed to lower relapse rates in participants with only two previous depressive episodes (Ma & Teasdale, 2004). Finucane and Mercer (2006) also sought to examine the effectiveness of mindfulness treatments for depression by conducting an exploratory mixed methods study involving 13 participants with recurrent depression or recurrent depression and anxiety who were currently experiencing symptoms. Results indicated that 72% of patients experienced a decrease in their symptoms of depression. In summary, the research to date consistently demonstrates an inverse relationship between mindfulness and depression, however, why this is so remains an important question.

**Meta-analysis.** Several meta-analyses have been conducted to study the relationship between mindfulness and depression. A recent meta-analysis conducted by Koury et al. (2013) conducted a comprehensive effect-size analysis of 219 studies involving 12,145 participants to evaluate the efficacy of Mindfulness Based Treatments (MBTs). Results pertinent to this dissertation found a moderately strong effect size on depression (Hedge’s $g = .69$) for five pre-post test studies and a moderate effect size on depression for eight wait list control studies.
(Hedge’s $g = .53$). At follow up two pre-post test studies targeting depression showed a large mean effect size (Hedge's $g = .75$) when only including mood measures. In summary, results indicated that MBTs showed large and clinically significant effects in treating depression and gains were maintained at follow up. Hofmann, Sawyer, Wit, and Oh (2010) conducted a meta-analysis of 39 pre-post studies of MBTs in which all dependent variables were restricted to anxiety and depression measures. MBTs demonstrated a moderate effect size for reducing anxiety ($g = .63$) and depressive symptoms ($g = .59$). Large or robust effect sizes were found for reducing anxiety and depressive symptoms when MBT was used with patients with anxiety ($g = .97$) or mood disorders ($g = .95$). Klainin-Yobas, Cho, and Creedy (2011) conducted a meta-analysis to determine the efficacy of mindfulness-based interventions on depressive symptoms in individuals with various psychological disorders using experimental and quasi-experimental studies. Results demonstrated that mindfulness based interventions are superior to standard care in preventing relapse and decreasing depressive symptoms with effect sizes ranging from .11 to 1.65. Chiesa and Serretti (2011) conducted a meta-analysis of studies examining the efficacy of MBCT with psychiatric patients. Their three main findings are as follows: 1) MBCT in conjunction with usual care was significantly better at decreasing MDD relapse than usual care alone among those with three or more previous depressive episodes; 2) MBCT along with gradual discontinuation of maintenance anti-depressant medications showed similar relapse rates at one year as continuation of maintenance anti-depressants; and 3) MBCT may be helpful in decreasing residual depressive symptoms in those with MDD and for reducing anxiety symptoms in those with Bipolar Disorder, in remission and other anxiety disorders. Further, a meta-analysis conducted by Piet and Hougaard (2011) sought to evaluate the effectiveness of MBCT for relapse prevention among patients with recurrent MDD in remission. Findings demonstrated
that MBCT significantly reduces risk of relapse/recurrence and is more effective at reducing relapse compared to treatment as usual or placebo control for patients with three or more previous depressive episodes. The aforementioned meta-analyses provide evidence that mindfulness based treatment are effective in reducing symptoms of depression.

**Emotion Regulation Definition and Background**

Emotion regulation refers to “conscious or unconscious processes that influence the occurrence, intensity, duration, and expression of emotion” (Gross, 2002). Emotion regulation has also been defined as “processes that amplify, attenuate, or maintain the strength of emotional reactions” (Davidson, 2000; Gross, 1998). More specifically, adaptive regulation has been defined as the ability to flexibly regulate emotion in accordance with what the environment demands (Thompson, 1994). Berking (2007) has proposed a model that conceptualizes adaptive emotion regulation as an interaction between nine skills including: 1) consciously processing emotions/being aware of emotions; 2) identifying and labeling emotions; 3) interpreting emotion related body sensations correctly; 4) understanding the prompts of emotions; 5) supporting oneself in emotionally distressing situations; 6) actively modifying negative emotions in order to feel better; 7) accepting emotions; 8) being resilient to tolerate negative emotions; and 9) confronting emotionally distressing situations in order to attain important goals. Many psychologists believe that emotional regulation is crucial for healthy psychological functioning (Cicchetti, Ackerman, & Izard, 1995; Davidson, 2000; Gross, 1998). Further, difficulties in emotion regulation or emotion dysregulation have been found to play a role in numerous form of psychopathology (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Roemer, Lee, Salters-Pedneault, Erisman, Orsillo, & Mennin, 2009; Tull, Barrett, McMillan, & Roemer, 2007).
Mindfulness and Emotion Regulation. A growing body of literature suggests that mindfulness practice results in more adaptive emotion regulation strategies. Studies have found that avoidance or overengagement with one’s emotions is associated with more problematic psychological and health outcomes (Hayes & Feldman, 2004; Gross, 2002; Salovey, Rothman, Detweiler, & Steward, 2002; Sergerstrom, Stanton, Alden, & Shortridge, 2003). Considering that mindfulness practice encourages the antithesis of avoidance or over engagement with emotions and rather encourages the cultivation of a “de-centered” relationship with one’s inner experience in which one does not avoid emotions but simply attunes to the inner experience without judging or analyzing, it seems logical that mindfulness would encourage adaptive emotion regulation strategies. In contrast to traditional emotion regulation strategies such as re-interpretation of negative stimuli, mindfulness fosters nonjudgmental awareness of one’s present moment experience which results in accurate labeling of emotions and flexible responding to emotions (Creswell, Way, Eisenberger, & Lieberman, 2007; Davidson et al., 2003; Nielsen & Kaszniak, 2006; Farb, Anderson, & Segal, 2012; Jimenez, Niles, & Park, 2010). Further, mindfulness fosters adaptive emotion regulation through the cultivation of experiential acceptance of thoughts and moods and ultimately a sense of efficacy in mood repair (Feldman et al., 2007; Jimenez et al., 2010). In addition, it has been thought that mindfulness fosters adaptive emotion regulation by helping the individual recognize that distressing thoughts or feelings are not necessarily accurate representations of reality (Linehan, 1993; Teasdale, 1999; Teasdale, Segal, & Williams, 1995 in Coffey & Hartman, 2008). Mindfulness also facilitates the ability to effectively manage emotions through exposure and desensitization, given that mindfulness practice involves attending to negative or uncomfortable emotions, which often decrease their intensity (Kabat-Zin, 1992; Linehan, 1993; Lynch & Bronner, 2006).
**Correlational Research.** Hill and Updegraff (2011) conducted a sampling study with 96 young adults to examine the way in which mindfulness increases emotion regulation. Updegraff (2011) found that self-reported level of mindfulness was associated with higher levels of differentiation of one’s discrete emotional experience, which is a process involved in effective emotion regulation. A study conducted by Vujanovic et al. (2010) examined whether mindfulness skills foster adaptive emotion regulation over and above the benefits of distress tolerance and after accounting for the effects of negative affectivity and anxiety sensitivity. To do this Vujanovic et al. (2010) conducted a study with 193 young adults from a non-clinical community samples to specifically determine the incremental predictive validity of mindfulness skills as related to multiple components of emotion regulation. Results demonstrated significant inverse relationships between numerous components of the KIMS and Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), highlighting the many ways in which mindfulness is related to emotion regulation.

Goodall, Trejnowska, and Darling (2012) conducted a study with 192 participants who had no prior mindfulness training to examine the relationship between dispositional mindfulness and emotion regulation abilities. Factor analysis revealed a significant relationship between dispositional mindfulness and emotion regulation, specifically with regards to the FFMQ subscales: acting with awareness, non-judging of experience, and non-reactivity to inner experiences and the DERS subscales: non-acceptance of emotional response, difficulties engaging in goal directed behavior, and impulse control difficulties. These results provide support for the idea that the relationship between emotion regulation and mindfulness may be bi-directional, specifically that mindfulness based interventions will increase emotion regulation abilities and also that those with more adaptive emotion regulation strategies will have higher
levels of dispositional mindfulness. Further, support for the negative relationship between mindfulness and depression can be seen via the MAAS and KIMS, two measures of mindfulness. Both the MAAS and KIMS have been correlated with increased affect regulation abilities, involving greater awareness, understanding, and acceptance of emotions, and increased ability to repair or correct unpleasant moods (Brown & Ryan, 2003; Baer, Smith, & Allen, 2004). A study by Erisman, Salters-Pedneault, and Roemer (2005) examined the relationship between mindfulness skills and emotion regulation by administering self-report measures to 404 undergraduates. Findings demonstrated a significant, unique correlation between mindfulness and emotion regulation while controlling for depression, anxiety, and stress.

**Treatment Outcome Research.** Carmody, Baer, Lykins, and Olendzk (2009) conducted a pre-post test study with 309 adult participants who had completed MBSR training in order to better understand the relationship between mindfulness and beneficial outcomes. Results indicated that participation in MBSR was associated with increases in emotional regulation and participants’ levels of symptoms and stress decreased (Carmody et al., 2009). Arke and Craske (2006) conducted a study to examine 60 participants’ emotional reactions to neutral and negative picture slides following a 15 minute breathing exercise, adopted from MBSR, compared to participants engaging in either an unfocused attention exercise or a worry exercise for 15 minutes. Results indicated that the group who engaged in a brief breathing exercise experienced more positive emotional responses in response to the neutral stimuli, less overall negative affect, lower emotional volatility, and were more able to remain in contact with the aversive picture slides compared to the groups who engaged in 15 minutes of unfocused attention or worry prior to viewing the slides (Arke & Craske, 2006). These results highlight the effectiveness of mindfulness in fostering adaptive emotion regulation in response to stress or negative stimuli.
These results are consistent with a prior finding by Davidson et al. (2003) demonstrating that training in mindfulness meditation is associated with greater left–sided anterior brain activation which has been linked with more “adaptive responding to negative and/or stressful events.”

Erisman and Roemer (2010) conducted an RCT to determine the effects of a brief mindfulness intervention on 30 participants’ emotional experiences and emotional regulation abilities following distressing, positive, and affectively mixed film clips. Participants in the mindfulness condition reported increased positive affect in response to the positive film compared to controls. In addition, those in the mindfulness condition reported increased adaptive regulation following the affectively mixed clip relative to the control group (Erisman & Roemer, 2010). Robins, Keng, Ekblad, and Brantley (2011) conducted a RCT with 56 adults to examine mindfulness’ effect on several processes related to emotion regulation. Results indicated that those in the MBSR group demonstrated decreases in difficulty regulating emotions, which included decreases in fear of emotions and suppression of anger (Robins et al, 2011). A study conducted by Tull, Schultzinger, Schmidt, Zvolensky, and Lejeuz (2007) lends further support for the relationship between mindfulness and emotion regulation. Following the completion of a six-week mindfulness and acceptance based intervention for heightened anxiety sensitivity among heroin dependent patients in an inpatient facility, results demonstrated decreases in emotion regulation difficulties from pre to post treatment.

**Neurocognitive Research.** Modinos, Ormel, and Aleman (2010) conducted a study with 18 participants to examine individual differences in dispositional mindfulness as evidenced by brain activity involved in reappraisal of emotion. Participants engaged in a FMRI task that involved attending to or reappraising negative stimuli and providing emotion experience ratings after each trial. Dispositional mindfulness was assessed with the KIMS. Findings indicated that
individual differences in dispositional mindfulness may alter activity in neural systems involved in the effective cognitive control of negative emotion. Crewswell, Way, Eisenberger, & Lieberman (2007) conducted a study with 27 participants to determine whether affect labeling, a component of emotion regulation, is one mechanism by which mindfulness alleviates negative affect --- a trademark of depression. Results demonstrated that during the affect labeling task those participants with higher dispositional mindfulness displayed decreased bilateral amygdala response and increased widespread prefrontal cortical activation, a neural area shown to activate during self-relevant tasks such as monitoring one’s emotional state. In addition, those higher in mindfulness demonstrated a significant negative association between areas of prefrontal cortex and right amygdala response. Further, according to Farb et al. (2012) neuropsychological evidence demonstrates that mindfulness training promotes changes in the lateral prefrontal cortex (PFC), which facilitates the ability to attend to moment-to-moment experience, an emotion regulation strategy that reduces negative self-evaluation, increases tolerance for negative affect, and helps facilitate self-compassion in individuals with affective disorders. These results provide neurocognitive support that adaptive emotion regulation is associated with decreased negative affect.

**Emotion Regulation and Depression**

Emotion regulation is considered a core deficit in MDD, so much so that MDD has been termed a “disorder of impaired emotion regulation” (Joorman & Gotlib, 2010, p. 281; Kober & Ochsner, 2011). To date, many researchers have sought to explore and understand this relationship, as it is critical in helping inform treatments for MDD. Two of the most researched maladaptive emotion regulation strategies are rumination and emotional suppression, which are trademarks of depression (Liverant, Kamholz, Sloan, & Brown, 2011). Some consider
rumination an ineffective form of emotional suppression used by depressed individuals to avoid intense negative emotions (Liverant et al., 2011).

**Correlational Research.** Nolen-Hoeksema (2000) conducted a study to examine the role of rumination, a maladaptive form of emotion regulation, in depressive disorders and mixed anxiety/depressive symptoms. A group of 1,032 adult participants were given measures to assess depression, anxiety, and rumination coping at Time 1 and then a year later at Time 2. Results indicated that rumination at Time 1 was predictive of severity of depression at Time 2, after accounting for levels of depressive symptoms at Time 1. In addition, results demonstrated that rumination to some degree was predictive of the chronicity of depression. These results suggest the use of maladaptive emotional regulation strategies, such as rumination, is associated with the course of depression, specifically severity and chronicity. Gross and John (2003) conducted a study with 210 undergraduates to examine the differential effects of re-appraisal and suppression on emotional well-being, particularly depression. To conduct this study Gross and John (2003) first measured individual differences in the use of reappraisal and suppression and then analyzed the longer-term effects of using these emotion regulation strategies day to day. Results indicated that those participants who habitually use re-appraisal, an adaptive emotion regulation strategy, showed less symptoms of depression. Further, participants who frequently utilize suppression to manage emotions demonstrated increased symptoms of depression (Gross & John, 2003). These results provide evidence that suppression is a maladaptive emotion regulation strategy that is predictive of depression, whereas re-appraisal is an adaptive emotion regulation strategy that is negatively correlated with depressive symptoms. Beblo, Fernando, Klocke, Griepenstroch, Aschenbrenner, and Driessen (2012) examined whether individuals diagnosed with MDD show increased suppression of both negative and positive emotions and also whether fear of emotion
might be responsible for emotional suppression in depressed individuals. Participants included 39 individuals diagnosed with MDD and 41 matched healthy controls. Findings demonstrated that participants diagnosed with MDD showed increase emotional suppression of both positive and negative emotions. Participants with MDD also displayed more fear of emotions than the control participants and this fear was associated with emotional suppression in both samples. Ultimately, the aforementioned studies suggest that emotion dysregulation contributes to depression due to the use of avoidance and suppression strategies.

**Treatment Outcome Research.** Joorman and Gotlib (2010) used a negative affective priming task to determine whether different emotion regulation strategies are utilized in depressed patients, non-depressed patients, and formerly depressed patients. Their findings indicated that depressed patients use maladaptive emotion-regulation strategies such as reduced inhibition of negative material, rumination, and expressive suppression. In contrast, non-depressed patients exhibited more adaptive emotional regulation strategies such as reappraisal (Joorman & Gotlib, 2010). This study provides evidence that depression is associated with emotion dysregulation or maladaptive emotion regulation. Rottenberg, Kasch, Gross, and Gotlib (2002) sought to better understand the pattern of emotional dysregulation in depression using a multimethod standardized laboratory procedure comparing 72 depressed and non-depressed individuals’ experiential, behavioral, and physiological responses to neutral, sad, fear, and amusing films. Findings demonstrated that depressed participants reported sadness and amusement in a flattened, context-insensitive manner compared with non-depressed controls. Depressed individuals with the greatest impairment reported the least reactivity to the sad film and the participants least likely to recover from depression showed the least behavioral and heart rate reactivity to the amusing film. These results suggest that a core feature of emotion
dysregulation in depression is loss of context-appropriate modulation of emotion. Results also contribute evidence to the relationship between lack of emotional responding and poorer psychosocial functioning.

Campbell-Sills, Barlow, Brown, and Hofmann (2006) conducted a study examining acceptability and suppression of negative emotions in individuals with anxiety and mood disorders. Sixty participants with the aforementioned disorders, along with 30 control participants watched an emotion-provoking film and were administered assessments measuring emotion regulation and their experience. Although results indicated that both the clinical and control group demonstrated increases in negative emotion, the clinical group displayed less acceptance of their emotions and increased suppression. Results also found that the relationship between negative emotion intensity and suppression in the clinical group was mediated by deeming emotions unacceptable (Campbell-Sills et al., 2006). This study provides support for the relationship between maladaptive emotion regulation strategies, such as suppression and non-acceptance of emotions, and depression. Berking et al. (2008) sought to determine the importance of various emotion regulation skills in a six-week inpatient Cognitive Behavior Therapy (CBT) program. Participants included 289 individuals in an inpatient unit who were diagnosed with a variety of disorders. Berking et al. (2008) administered self-report measures assessing use of emotion regulation skills and psychological outcome variables to participants’ pre and post treatment, as well as to a non-clinical control group consisting of 246 individuals. In addition, a control trial evaluated the effectiveness of adding brief, general emotion regulation training to the CBT program. Results indicated that the inpatient group reported less emotion regulation skills than the non-clinical group. Pre-treatment and post-treatment both groups showed an increase in their emotion regulation skills and also a decrease in symptomatology,
which included symptoms of depression. However, the largest decreases in depression and negative affect were found in the group that engaged in CBT plus emotion regulation training.

**Emotion Regulation as Mediator Between Mindfulness and Depression**

Only a handful of studies have specifically looked at emotion regulation as a mechanism of action underlying the relationship between mindfulness and depression. Because the number of studies on this matter is so limited, below I will review studies that have examined emotion regulation as a mediator of the relationship between mindfulness and psychological distress or well-being, thus broader constructs than depression but still potentially relevant. In addition, it should be noted that across studies different terms for emotion regulation are used and in some cases emotion regulation is examined in combination with other constructs. However, due to the minimal research on emotion regulation as a mediator of the relationship between mindfulness and depression, these studies are included as well.

**Correlational Research.** Jimenez, Niles, and Park (2010) conducted a cross-sectional study of 514 college students using self-report measures to examine the nature of the relationship between dispositional mindfulness, as measured by the Freiburg Mindfulness Inventory (FMI; Bucheld, Grossman, & Walach, 2002) and depression, as measured by the CES-D. They specifically explored this relationship by looking at three types of affect regulation: emotion regulation, mood regulation, and self-regulation. Emotion regulation was measured with the Negative Mood Regulation Expectancies scale (Catanzaro & Mears, 1990). Structural equation modeling demonstrated that the relationship between mindfulness and depressive symptoms was fully mediated by the aforementioned regulatory processes. This finding provides evidence that an important mechanism of action underlying the relationship between mindfulness and depression is emotion regulation and the related constructs of mood regulation and self-
regulation. Coffey and Hartman (2008) examined several mediators of the relationship between mindfulness and its beneficial effects on psychological distress. They conducted a study, using correlational self-report data from 446 participants, which comprised two independent non-clinical samples of undergraduates. Structural equation modeling revealed that emotion regulation, as measured by the Repairs Subscale of the Trait Meta Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), was an important mediator of the relationship between mindfulness, as measured by the MAAS, and psychological distress, as measured by the depression and anxiety subscales of the Brief Symptom Inventory (BSI; Derogotis, 1983). Results were unclear regarding whether emotion regulation was a full or partial mediator (Coffey & Hartman, 2008). These findings add further support that emotion regulation is an important mechanism of action underlying the relationship between mindfulness and depression.

In a later, somewhat similar study with 413 participants Coffey, Hartman, & Frederickson (2010) sought to examine several potential mediators of the relationship between mindfulness, as measured by the FFMQ, and psychological distress, as well as life satisfaction and well-being. Two facets of emotion regulation, as measured with the DERS, were examined as potential mediators, specifically clarity about one’s internal life and the ability to manage negative emotions. Results indicated that clarity about one’s inner experience and the ability to manage negative emotions, two components of emotion regulation as measured by the DERS, were important mediators of the relationship between mindfulness and psychological distress, life satisfaction, and well-being. Although this study doesn’t examine depression but instead the more general constructs of psychological distress, life satisfaction, and well-being, it nevertheless provides support for the role of emotion regulation as a mediator of the relationship
between mindfulness and a broad assessment of psychological health, of which depression is a part.

**Treatment Outcome Research.** Carmody, Baer, Lykins, & Olendzki (2009) conducted a study with a large sample of MBSR participants to examine how mindfulness practice leads to beneficial outcomes. Participants were administered measures pre and post treatment, some of which included the FFMQ to assess mindfulness, the Experiences Questionnaire (Fresco, Segal, Buis, & Kennedy, 2007) to measure re-perceiving, the BSI to assess psychological symptoms, and the Environmental Mastery Scale (Ryff, 1989) to assess cognitive, emotional, and behavioral flexibility. Data from 309 participants was included in analysis. Findings demonstrated that cognitive, emotional, and behavioral flexibility, as well as values clarification, acted as partial mediators of the relationship between mindfulness and psychological distress (Carmody et al., 2009). The finding of particular interest for the purpose of this dissertation was that emotional flexibility acted as a partial mediator of the relationship between mindfulness and psychological distress. However, it should be noted that the mediating effect was found when mindfulness was combined with a re-perceiving variable, therefore it is unclear if similar findings would have resulted would be if mindfulness was in the model on its own. In addition, depression was not measured on its own but rather as part of the larger construct of psychological distress, which included both anxiety and depression items. Nevertheless, this study provides a degree of support for the role of emotion regulation as an important mechanism of action underlying mindfulness and depression given that re-perceiving is tied to mindfulness and that depression is one component of psychological distress. Paul, Stanton, Greeson, Smoski, and Wang (2012) conducted a study providing support for the role of emotion regulation as an active ingredient in mindfulness. Paul et al. (2012) sought to uncover which facets of trait mindfulness serve as
protection against two risk factors for depression, rumination and negative bias, using functional magnetic resonance imagining. Paul et al. (2012) examined associations between mindfulness, rumination, and negative bias as the participants engaged in several tasks. Results showed that non-reactivity to inner experience, as evidenced by insula activation seen during inhibition to negative stimuli following a mindful breathing task, was the most significant component of mindfulness that protected against risk factors for depression. This study provides further support for the role of emotion regulatory processes underlying the link between mindfulness and depression. The aforementioned studies all suggest that mindfulness is associated with the ability to effectively regulate emotions, which in turn is related to decreased depression. Ultimately, the extant literature suggests that emotion regulation may be an important mechanism of action underlying the relationship between mindfulness and depression.
Purpose of Present Study

While there is a plethora of research on the beneficial outcomes associated with increased dispositional mindfulness and mindfulness based treatment, there have not been nearly as many studies on the mechanisms of action underlying mindfulness’ positive effects. This research is critical, as mindfulness-based therapies are becoming increasingly prevalent and it is paramount that psychologists understand why this treatment is helpful in order to ethically and confidently chose to utilize mindfulness-based treatments with clients. Considering MDD is one of the most common psychological conditions and mindfulness based treatments are increasingly being used to treat this disorder, it is crucial that the field better understand how exactly mindfulness treats symptoms of depression. Based on the limited research to date on this matter, emotion regulation has been found to be one potential mediator of the relationship between mindfulness and depression, suggesting that mindfulness decrease emotion dysregulation, which in turn decreases depression. This seems logical when considering the previously reviewed research demonstrating the relationship between mindfulness and adaptive emotion regulation, as well as the relationship between depression and emotion dysregulation. Although there are already a few studies suggesting that emotion regulation serves as a mediator of the relationship between mindfulness and depression, it is necessary that these findings be replicated repeatedly to increase the strength of their validity, reliability, and power. In addition, the majority of studies discussed above examine either emotion regulation or dysregulation, depression, mindfulness, or all three variables as part of broader constructs or in combination with other variables, therefore failing to parse out their unique contribution. For example, many of the current studies examine depression as part of broader constructs such as psychological distress. Thus, the purpose of this dissertation
is to further and more precisely examine the role of emotion regulation as a mediator of the relationship between mindfulness-based attention and depression. It should be noted that the present study uses a measure of emotion regulation that assesses difficulties in emotion regulation. Given this, results will be discussed in terms of emotion dysregulation rather than emotion regulation.

**Statement of the Hypotheses**

**Hypothesis 1.** Mindfulness-based attention, as measured by the Mindful Attention Awareness Scale (MAAS), was expected to negatively correlate with depression, as measured by the Center for Epidemiologic Studies Depression Scale (CES-D).

**Hypothesis 2.** Mindfulness-based attention was expected to negatively correlate with emotion dysregulation, as measured by the Difficulties of Emotion Regulation Scale (DERS).

**Hypothesis 3.** Emotion dysregulation was expected to positively correlate with depression, while controlling for mindfulness.

**Hypothesis 4.** It was expected that emotion dysregulation would partially mediate the relationship between mindfulness-based attention and depression, such that the relationship between mindfulness-based attention and depression would decrease in strength but remain significant when including emotion dysregulation in the model.
Method

Participants

Data was used from an archival data set previously collected as part of the author’s master’s thesis (Jacobs, 2011). Participants were recruited from psychology undergraduate departments throughout the United States. Table 1 provides demographic data on the sample. A total of 214 students agreed to participate in the study and 185 students completed all three measures included in this study; of the 185 participants, 139 identified as being female and 45 identified as being male. Average participant age was 21 (SD = 4.5). The majority of participants identified as being Caucasian (71.4%), while 18.9% reported being Asian or Pacific Islander, 3.2% Latino or Hispanic, 3.8% Other, 1.6% African American or Black, and 1.1% American Indian or Alaskan Native.
Table 1

Demographic Information of the Sample (N = 185)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>M (SD)</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>185 (100.0)</td>
<td>21 (4.5)</td>
<td>20</td>
<td>18–46</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45 (24.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>139 (75.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American/Black</td>
<td>3 (1.6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>35 (18.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>6 (3.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native Amer/Alaska Native</td>
<td>2 (1.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/European Origin</td>
<td>132 (71.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>7 (3.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td>178 (96.2)</td>
<td>3.80 (5.76)</td>
<td>3.5</td>
<td>1.4–4</td>
</tr>
</tbody>
</table>
Measures

**Demographic Questionnaire.** The demographic questionnaire used in this study asked participants to provide the following demographic information: gender, age, employment status, occupation, grade point average (GPA), and ethnicity. This questionnaire was developed by the principal investigator and faculty advisor. The questionnaire also included questions about participant’s use of ADHD medications, however, these items were not pertinent to this dissertation but rather gathered for the prior study from this author’s master’s thesis. This questionnaire was developed by the principal investigator and faculty advisor. (see Appendix A).

**The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003).** The MAAS is a 15-item questionnaire in which respondents indicate their degree of awareness and attention to the present moment on a 6-point Likert-type scale (1 = almost always to 6 = almost never). Although the MAAS is a measure of mindfulness, the actual items are designed to assess mindlessness (Brown & Ryan, 2003). Sample items include “I could be experiencing some emotion and not be conscious of it until some time later” and “I rush through activities without being really attentive to them.” Responses are calculated into a mean rating score and higher scores indicate greater levels of mindfulness. The MAAS not only taps into dispositional mindfulness but is also sensitive to state changes occurring through meditation experience (Michalak, Heidenreich, Meibert, & Schulte, 2008; Shapiro et al., 2008). The MAAS demonstrates sound psychometric properties with high internal consistency ($\alpha = 0.80-0.87$) and test re-test reliability ($r = 0.81$) over a 1-month time period (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003). The MAAS has been found to correlate positively with measures of positive affect, life-satisfaction, vitality, self-esteem, and well-being, attesting to its
convergent validity. Further, the MAAS has been found to correlate negatively with measures of depressive symptoms, anxiety, negative affect, neuroticism, psychological distress, and rumination, evidencing its discriminant validity (Brown & Ryan, 2003; Zvolensky et al., 2006). Criterion related validity has been established, given that the MAAS has been shown to be a good predictor of well-being (Brown & Ryan, 2003). MAAS scores have been found to be higher in mindfulness practitioners than in matched community controls (Baer et al., 2006). Further, Carlson & Brown (2004) found evidence of criterion related validity for the MAAS in a cancer population; increases in MAAS scores were associated with decreases in mood disturbance and symptoms of stress (Carlson & Brown, 2004) (Appendix B).

**Center for Epidemiologic Studies Depression Scale (CES–D; Radloff, 1977).** The CES-D is a 20-item questionnaire measuring participants’ level of depressive symptoms over the past week. Items are rated based on the previous week and are scored on a 4 point Likert-type scale (0 = rarely or none of the time to 3 = most or all of the time). The CES-D is designed to cover numerous facets of depressive symptomatology and contains four factors (Depressed Affect, Positive Affect, Somatic and Retarded Activity, and Interpersonal). The CES-D evidences sound internal consistency in the general population (α = .85) (Zimmerman & Coryell, 1994). An even stronger internal consistency (α = .89) was found in a study examining the use of the CES-D with a homeless population (Wong, 2000) and across several community volunteer samples alpha coefficients have ranged from .8 to .9 (Devins et al., 1988). Adequate test-retest reliability has also been demonstrated, ranging from $r = 0.45$ to $r = 0.70$ (Radloff, 1977). The CES-D has been correlated with self-report and clinician ratings of depressive symptoms, demonstrating convergent validity. The CES-D also shows sensitivity to life events experienced and associated mood states (Wong, 2000; Radloff, 1977). The CES-D discriminates well
between the general population and psychiatric inpatient populations, as well as between depressed and non-depressed individuals according to the Research Diagnostic Criteria (Devins et al., 1988). The CES-D is also highly correlated with other measures of depression, such as the Hamilton Psychiatric Rating Scale for Depression and the Raskin Depression Scale, demonstrating convergent validity (Devins & Orme, 1985; Radloff, 1977). The CES-D has adequate factorial, as the CES-D items were found to correlate more highly with the CES-D total score than with total scores for self-esteem, state anxiety, or trait anxiety (Orme, Reis, & Herz; 1986) (Appendix C).

**Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004).** The DERS is a 36-item self-report measure designed to assess clinically relevant problems related to emotion dysregulation. The DERS asks the respondent to rate how often each item applies to himself/herself ranging from 1 = “almost never, 0-10% of the time” to 5 = “almost always, 91-100% of the time.” Scores for each question are summed for a total score. Total scores range from 36-180 and can be broken down into six separate sub-scales: Non-Acceptance (non-acceptance of emotional responses), Goals (difficulty engaging in goal-directed behavior when experiencing negative emotions), Impulse (impulse control difficulties when experiencing strong emotions), Awareness (lack of emotional awareness), Strategies (limited access to emotional regulation strategies), and Clarity (lack of emotional clarity). Higher scores on the DERS indicate greater difficulties in emotion regulation. Initial evaluations of the measure indicate that the DERS has high internal consistency (α = .93) (Gratz & Roemer, 2004). All of the DERS subscales also demonstrate adequate internal consistency (Nonacceptance, α = .85; Goals, α = .89; Impulse, α = .86; Awareness, α = .80; Strategies, α = .88; Clarity, α = .84). The DERS has been found to have a test-retest reliability of r = .88 during a four to eight week interval and a clear
factor structure (Gratz & Roemer, 2004). The DERS has been found to correlate with a
commonly used measure of emotion regulation, The Generalized Expectancy for Negative Mood
Repair (NMR), providing support for adequate construct validity. The DERS also demonstrated
significant positive correlations with measures of experiential avoidance, chronic worry and
negative correlations with emotional expressivity and processing, providing further evidence for
convergent and discriminant validity (Gratz & Roemer, 2004; Johnson, Zvolensky, Marshall,
Gonzalez, Abrams, & Vujanovic, 2008; Salters-Pedneault et al., 2006; Vujanovic, Zvolensky, &
Bernstein, 2008). Further support for the convergent and discriminant validity of the DERS is
evidenced in its significant associations with measures of depression and anxiety and negative
associations with measures of mindfulness and self-compassion (Baer et al., 2006; Roemer et al.,
2009; Tull et al., 2009; Vujanovic et al., 2008). In addition, individuals with psychiatric disorders
marked by emotion regulation difficulties have been shown to score higher on the DERS (Gratz,
Rosenthal et al., 2006; Gratz, Tull, Baruch, Bornovalova, & Lejuez, 2008; Tull et al., 2007). The
DERE has also been found to be correlated with several criterion variables including frequency
of deliberate self-harm for both genders, and frequency of intimate partner violence for men,
providing support for its predictive validity (Gratz & Chapman, 2007; Gratz & Roemer, 2004;
Gratz & Roemer, 2008;) (Appendix D).

Procedure

The investigator received Pacific University’s institutional review board approval prior to
data analysis. To collect the data, directors of undergraduate psychology programs at 88
universities throughout the country were contacted via a brief email message providing
information about the study and inviting their students to participate. In recruiting participants at
Pacific University, this researcher directly emailed Pacific University professors teaching undergraduate psychology courses about the present study and invited their students to participate. Those who were willing to allow their students to be recruited informed their students through class announcements or email messages. All participants completed an online self-administered questionnaire. Upon completion of an informed consent form and all items, participants were given the option to either exit the survey or if interested, provide contact information to enter a drawing for a $25 gift card to Amazon.com. All participant data was coded numerically and stored separately from this optional contact information, which was the only identifying information gathered. Internal Protocol (IP) addresses were not collected. Participants who were enrolled in a course that offered extra credit for research participation received such credit.

**Statistical Analysis**

A mediation analysis was used to determine whether emotion dysregulation mediates the relationship between mindfulness and depression. Mediation explores the mechanisms underlying the relationships between an independent and dependent variable. Mediation can also be described as an analysis which estimates and tests the significance of direct effects (mindfulness -> depression) and indirect effects (mindfulness -> emotional dysregulation -> depression). The goal of mediation analysis is to determine the impact of the mediator (emotion regulation) on the direct effect between the predictor (mindfulness) and outcome (depression). In this study, Baron and Kenney’s (1986) steps for mediation were followed to help uncover what happens to the direct effect (mindfulness -> depression) when the mediator (emotion dysregulation) is entered into the model. The numerical value associated with the amount of mediation is called the indirect effect. Full mediation, although rare, states that the relationship
between the predictor and outcome variable is no longer significant when the mediator is introduced into the model. Partial mediation occurs when the path from the predictor to the outcome is reduced in absolute size, but is still greater than zero, when the mediator is introduced. To conduct the mediation analysis, data was entered into SPSS version 16.01 and analyzed using bootstrapping with a SPSS macro developed by Preacher and Hayes (2004). Bootstrapping is a non-parametric statistical procedure that utilizes a re-sampling method to make inferences from a sample about the larger population and allows for an examination of the direct and indirect effects.
Results

Data Screening

Before testing the hypotheses associated with this study, the data was assessed using SPSS 16.0.1 (SPSS Inc, 2007) to determine if univariate and multivariate assumptions were met. Only those subjects that completed all three measures (MAAS, CES-D, DERS) were retained for analysis. Twenty-nine participants did not meet these criteria and were therefore removed from the data set. This resulted in a final sample size of 185. Internal consistency estimates for each measure were adequate and ranged from .88 to .94 (see Table 2). No univariate outliers were identified across the total scores of the MAAS and DERS. That is, $z$ scores did not exceed +/- 3.29 (Tabachnick & Fidell, 2001). Data screening revealed that for the CES-D only two participants had $z$ scores above the suggested criterion; that is, both had $z$ scores of 3.45. Based on an examination of these two participants’ data no response errors were apparent therefore these two outliers were retained in the subsequent analyses. Ultimately, these two negligible univariate outliers did not impact the model as a whole based on Cook’s Distance, which is the statistic that considers the effect of a single case on the model. The criteria for Cook’s Distance indicates that values greater than one may be cause for concern, however in this case there were no values greater than one (Cook & Weisberg, 1982). Further assessment revealed no multivariate outliers, as Mahalanobis distance values did not exceed the critical value of 13.82 with two degrees of freedom (Tabachnick & Fidell, 2001).

The normality of the distribution was tested by examining skewness and kurtosis values. Normality of a distribution of scores is demonstrated by skewness and kurtosis values that approach zero (Mertler & Vannatta, 2005). Skewness and kurtosis values that fall between +/-1 are considered normal (Tabachnick & Fidell, 2001). In the present analysis, all skewness and
kurtosis values fell well within this range, suggesting that the data for all variables approximate a normal distribution. To test the assumption of homoscedasticity a regression plot was examined. On the x-axis were the standardized predicted values of dependent variable based on the model and on the y-axis were the standardized differences between the observed data and values that the model predicts. A moderate violation of homoscedasticity was found, indicating that the error variances were not equal across values of the dependent variable. However, while this was the case, Tabachnik and Fidell (2001) indicate that slight heteroscedasticity has little effect on significance tests. Further, Pedhazur (1997) indicates that regression analysis is generally robust to violations of the homoscedasticity assumption.

**Distribution Characteristics and Descriptive Statistics**

The means, standard deviations, standard error of the mean, skewness and kurtosis values for all variables are provided in Table 3. The means and the standard deviations for the MAAS, DERS, and CES-D were similar to those in normative samples: MAAS (M = 3.97, SD = 0.64; Brown & Ryan, 2003), DERS (women: M = 77.99, SD = 20.72; men: M = 88.66, SD = 18.79; Gratz & Roemer, 2004), and CES-D (M = 14.31, SD = 10.26; Orme, Reis, & Herz, 1986).
Table 2

*Reliability Estimates by Measure*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAS</td>
<td>.88</td>
</tr>
<tr>
<td>CES-D</td>
<td>.91</td>
</tr>
<tr>
<td>DERS</td>
<td>.94</td>
</tr>
</tbody>
</table>

*Note.* MAAS = Mindful Attention Awareness Scale, CES-D = Center for Epidemiologic Studies Depression Scale, DERS = Difficulties in Emotion Regulation Scale
Table 3

Means, Standard Deviations, Standard Error of the Mean, Skewness, and Kurtosis by Variable (N=185)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>SE Mean</th>
<th>Skewness(SE)</th>
<th>Kurtosis(SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAS</td>
<td>3.78</td>
<td>.74</td>
<td>.05</td>
<td>-.01(.17)</td>
<td>-.18(.34)</td>
</tr>
<tr>
<td>CES-D</td>
<td>16.98</td>
<td>10.15</td>
<td>.72</td>
<td>.80(.17)</td>
<td>.46(.34)</td>
</tr>
<tr>
<td>DERS</td>
<td>81.75</td>
<td>21.57</td>
<td>1.59</td>
<td>-.53(.18)</td>
<td>-.35 (.36)</td>
</tr>
</tbody>
</table>

Note. MAAS = Mindful Attention Awareness Scale, CES-D= Center for Epidemiologic Studies Depression Scale, DERS= Difficulties in Emotion Regulation Scale
Table 4

*Intercorrelations between Variables*

<table>
<thead>
<tr>
<th></th>
<th>MAAS</th>
<th>CES-D</th>
<th>DERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAS</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>CES-D</td>
<td>-.55**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>DERS</td>
<td>-.53**</td>
<td>.73**</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note.* **p < .001. MAAS = Mindful Attention Awareness Scale, CES-D= Center for Epidemiologic Studies Depression Scale, DERS= Difficulties in Emotion Regulation Scale
**Preliminary Analysis**

Prior to conducting the meditation analyses, the correlations between all variables were examined using Pearson’s $r$. The correlations between the three variables involved in the model are shown in Table 4. Consistent with hypothesis 1, mindfulness evinced a moderate negative relationship with depression ($r = -0.55$, $p < .001$). Consistent with hypothesis 2, mindfulness evinced a moderate negative relationship with emotion dysregulation ($r = -0.53$, $p < .001$). Finally, emotion dysregulation evinced a strong positive relationship with depression ($r = 0.73$, $p < .001$).

**Main Analysis**

In order to establish that emotion dysregulation is a mediator of the relationship between mindfulness and depression specific relationships must be demonstrated. First, there must be a statistically significant relationship between mindfulness (predictor) and depression (outcome). Second, the relationship between mindfulness and emotion dysregulation (mediator) must be significant. Finally, there must be a relationship between emotion dysregulation and depression, when mindfulness is controlled for in the model. Consistent with hypotheses 1, 2, and 3, results indicated that mindfulness evinced a statistically significant negative relationship to depression ($\beta = -7.54$, $p < .001$, $pr = -.55$), mindfulness evinced a statistically significant negative relationship to emotion dysregulation regulation ($\beta = -15.40$, $p < .001$, $pr = -.53$), and emotion dysregulation evinced a statistically significant positive relationship to depression ($\beta = .283$, $p < .001$, $pr = .61$), when the predictor (mindfulness) was controlled for in the model. When the mediator, emotion dysregulation, was included in the model, the direct effect between mindfulness and depression was still significant ($\beta = -3.19$, $p < .001$), however the correlation was decreased (from $pr = -.55$ to $pr = -.287$). These results in combination with the finding that
mindfulness had statistically significant indirect effect on depression ($ab = -4.35$, 95% CI -5.76 to -3.10, $p < .001$), suggests that emotion dysregulation partially mediated the relationship between mindfulness and depression. For partial mediation to occur the direct effect is still significant when the mediator is included in the model, however the indirect effect is also significant. In addition, to demonstrate partial mediation there must be a decrease in the strength of the relationship of the direct effect when the mediator is in the model. In contrast, in full mediation the direct effect is no longer significant when the mediator is entered in the model.
Discussion

The purpose of this dissertation was to examine the role of emotion dysregulation as a mediator of the relationship between mindfulness-based attention and depression. The hypotheses of the present study are fourfold. First, it was expected that mindfulness would evince a negative relationship with depression. Second, it was expected that mindfulness would evince a negative relationship with emotion dysregulation. Third, it was expected that emotion dysregulation would evince a positive relationship with depression. Fourth, it was expected that emotion dysregulation would partially mediate the relationship between mindfulness and depression, such that the relationship between mindfulness-based attention and depression will decrease in strength but remain significant when including emotion dysregulation in the model. Therefore, it was expected that mindfulness would be negatively related to emotion dysregulation, and in turn emotion dysregulation would be positively related to depression. By better understanding how mindfulness leads to decreased depression psychologists can more effectively utilize mindfulness based treatments for individuals struggling with depression.

In interpreting correlation coefficients, .1 to .3 represents a weak correlation, .3 to .7 represents a moderate correlation, and .7 to 1.0 represents a strong correlation (Mendenhall, Beaver, & Beaver, 2012). Consistent with hypothesis 1, a significant moderate negative relationship was found between mindfulness and depression. Students who scored higher in dispositional mindfulness also endorsed less symptoms of depression. Previous research supports this finding, including correlational studies (Argus & Thompson, 2007; Bowlin & Baer, 2012; Brown & Ryan, 2003; Desrosiers et al., 2013; Cash & Wittingham, 2010; Frewen, Evans, Maraj, Dozois, & Partridge, 2008; Masuda & Tully, 2012; Song, 2011); treatment outcome studies (Finucane & Mercer, 2006; Kabat-Zinn et al., 1992; Ma & Teasdale, 2004; Miller, Fletcher, & Kabat-Zinn, 1995; Shapiro, Schwartz, & Bonner, 1998); and meta-analyses (Chiesa & Serretti,
2011; Hofmann, Sawyer, Witt & Oh, 2010; Klainin-Yobas, Cho, & Creedy, 2011; Piet & Hougaard, 2011). By proving a statistically significant relationship between mindfulness and depression, the study proved a direct effect of the predictor (mindfulness) on the outcome (depression), without controlling for the mediation of a third variable (emotion dysregulation). This regression analysis still leaves a gap for the processes underlying this relationship. Several mechanisms have been suggested for how mindfulness may facilitate decreased depressive symptomatology, one commonly proposed being that increased mindfulness may be associated with reduced ruminative thinking, a maladaptive form of emotion regulation common among people with MDD (Frewen et al., 2008; Ramel, Goldin, Carmona, & McQuaid, 2004).

Consistent with hypothesis 2, a significant negative moderate relationship was found between mindfulness and emotion dysregulation. This demonstrates the strength of one path of the indirect relationship between mindfulness and depression. Students who scored higher in dispositional mindfulness also endorsed less emotion dysregulation. This finding is consistent with previous correlational research (Carmody et al., 2009; Davidson et al., 2003; Erisman & Roemer, 2010; Goodal et al., 2012; Hill & Updegraff, 2011; Vujanovic et al., 2010) and treatment outcome studies (Arke & Craske, 2006; Modinos et al., 2010) demonstrating that mindfulness is inversely related to emotion dysregulation. In understanding this relationship, research has found that mindfulness facilitates non-judgmental awareness of present moment experience, experiential acceptance of thoughts and moods, increased self-efficacy of mood repair, a de-centered stance towards the self, and the understanding that distressing thoughts aren’t necessarily reality based, all of which play a role in increasing one’s ability to adaptively regulate emotions and is consistent with this study (Coffey & Hartman, 2008; Creswell, Way, Eisenberger, & Lieberman, 2007; Davidson et al., 2003; Farb, Anderson, & Segal, 2012; Feldman et al., 2007; Jimenez, Niles, & Park, 2010; Linehan, 1993; Nielsen & Kaszniak, 2006;
Teasdale, 1999; Teasdale, Segal, & Williams, 1995 in Coffey & Hartman, 2008). In addition, mindfulness also facilitates the ability to effectively manage emotions through exposure and desensitization (Kabat-Zin, 1992; Linehan, 1993; Lynch & Bronner, 2006).

Consistent with hypothesis 3, a significant moderate positive correlation was found between emotion dysregulation and depression, while controlling for the effects of mindfulness. This statistically significant correlation suggests that the relationship between emotion dysregulation and depression does not only exist because both are caused by mindfulness. Students who scored higher in emotion dysregulation also reported more symptoms of depression. Support for this finding can be seen in previous correlational research (Nolen-Hoeksema, 2000; Gross & John, 2003; Beblo et al., 2012) and treatment outcome studies (Joorman & Gotlib, 2010; Rottenberg et al., 2002; Campbell-Sills et al., 2006; Berking et al., 2008). For example, a positive correlation between emotion dysregulation and depression was demonstrated in studies conducted by Joorman and Gotlib (2010), Nolen-Hoeksema (2000), and Beblo et al. (2013). Based on the present research it is evident that difficulty regulating emotions through the use of maladaptive emotion regulation strategies play an important role in depression. More specifically, it appears that emotion regulation strategies focused on suppression or avoidance of emotion, such as rumination, are associated with depression.

Consistent with hypothesis 4, emotion dysregulation partially mediated the relationship between depression and mindfulness. The relationship between mindfulness and depression remained significant but decreased in strength when emotion dysregulation was included in the model. This finding demonstrates that emotion dysregulation accounts for some but not all of the relationship between mindfulness and depression, as there remains a direct relationship between mindfulness and depression. Further, the finding that emotion dysregulation partially mediated
the relationship between depression and mindfulness signifies that students who scored lower in dispositional mindfulness also endorsed higher levels of emotion dysregulation, and in turn these students with increased emotion dysregulation reported more symptoms of depression. This finding is consistent with prior correlational studies (Coffey & Hartman, 2008, 2010; Jimenez et al., 2008) and treatment outcome research (Carmody et al., 2009) which demonstrate that difficulties with emotion regulation plays a role in mediating the relationship between mindfulness and depression, or broader constructs related to psychological distress. For example, consistent with the present study’s finding, Jimenez et al. (2010) found that emotion regulation partially mediated the relationship between mindfulness and depression. Further, Carmody et al. (2009) found that cognitive, emotional, and behavioral flexibility, acted as partial mediators of the relationship between mindfulness and psychological distress. Ultimately, the role of emotion dysregulation in partially mediating the relationship between mindfulness and depression can be understood by reviewing the relationships between mindfulness, emotion dysregulation, and depression. Increased awareness and attention to the present moment inherent in dispositional mindfulness fosters the cultivation of a non-judgmental, de-centered, and non-reactive relationship with inner experience that allows individuals to remain in contact with both pleasant and distressing feelings and ultimately attune to the range of human of emotions with a stance of acceptance. As a result, individuals are more able to flexibly respond to emotions as they arise in a present, conscious manner that precludes avoidance, suppression, rumination, and other forms of emotion dysregulation, which serve to create or maintain depression.

This dissertation has several notable limitations. First, causality cannot be interpreted from the present study given that no treatment was provided and instead data was gathered with a survey. Further research should be conducted to determine whether mindfulness training leads to
an increase in adaptive emotion regulation and decreased depression. Second, all of the findings are based on self-report measures, which can be affected by inaccurate recall and social desirability bias, leading to both intentional and unintentional misrepresentation. Despite efforts to lessen such error, such as assurance of confidentiality, there is no way to eliminate the possibility of misrepresentation. Third, all participants were gathered from undergraduate psychology departments and being as such, this sample lacked ethnic diversity and had a larger proportion of women. This issue of range restriction limits the generalizability of findings. Research should be conducted with broader samples to ensure that the present findings can be generalized beyond a college population. Furthermore, it is possible that by using different measures tapping into other characteristics of the constructs being studied, a different pattern of results would be found. It will be important to conduct further research with other measures to determine whether or not results are replicated.

Given that MDD is a major public health concern and mindfulness based treatments are increasingly being shown to be efficacious in treating this disorder, it is imperative to understand why mindfulness training is associated with decreases in symptoms of depression. In comparison to the plethora of research on the beneficial effects of mindfulness, there is much less research on what underlies mindfulness’ beneficial effects. This dissertation contributes to this existing body of research examining the processes that explain the relationship between mindfulness and depression and to the even smaller body of research on emotion dysregulation as a potential mediator of this relationship. In addition, this dissertation adds to the extant research on mindfulness and depression, emotion dysregulation and depression, and mindfulness and adaptive emotion regulation. By better understanding the relationship between mindfulness and depression more effective mindfulness based treatments can be created and current treatments can be enhanced. With the knowledge that emotion dysregulation serves as partial mediator of
the relationship between mindfulness and depression, mindfulness-based treatments can be developed that specifically target difficulties with emotion regulation to maximize increases in adaptive emotion regulation, leading to greater decreases in depression. In addition, it is the hope that the present dissertation will provide impetus for more empirical studies examining mechanisms of action underlying the link between mindfulness and depression. By deepening our understanding of how MBTs exert their beneficial effects we can provide even more powerful outcomes for individuals.

References


Development and initial examination of a brief intervention for heightened anxiety sensitivity among heroin user. *Behavior Modification, 31*-220.


Appendix A

Demographic Questionnaire

1. Are you currently taking medication to treat ADHD symptoms? _____________
   If so:
   Which medication? _____________
   What dosage? _____________
   How long have been taking this medication? _____________
   Do you find this medication helpful? _____________

2. Please indicate your gender.
   Male           Female           Other

3. What is your current age? _____________

4. Are you employed? _____________ If so, what is your occupation? _____________

5. What is your GPA (if a student)? ________

6. Which group best describes your ethnicity?
   ___African American or Black
   ___Asian or Pacific Islander
   ___Latino or Hispanic
   ___American Indian or Alaskan Native
   ___White or of European Origin
   ___Other (write in)_____________________


Appendix B

Mindful Attention Awareness Scale

Below is a collection of statements about your everyday experience. Using the 1–6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Always</td>
<td>Very Frequently</td>
<td>Somewhat Frequently</td>
<td>Somewhat Infrequently</td>
<td>Very Infrequently</td>
<td>Almost Never</td>
</tr>
</tbody>
</table>

_____1. I could be experiencing some emotion and not be conscious of it until some time later.

_____2. I break or spill things because of carelessness, not paying attention, or thinking of something else.

_____3. I find it difficult to stay focused on what’s happening in the present.

_____4. I tend to walk quickly to get where I’m going without paying attention to what I experience along the way.

_____5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

_____6. I forget a person’s name almost as soon as I’ve been told it for the first time.

_____7. It seems I am “running on automatic” without much awareness of what I’m doing.

_____8. I rush through activities without being really attentive to them.

_____9. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.

_____10. I do jobs or tasks automatically, without being aware of what I’m doing.

_____11. I find myself listening to someone with one ear, doing something else at the same time.

_____12. I drive places on “automatic pilot” and then wonder why I went there.

_____13. I find myself preoccupied with the future or the past.

15. I snack without being aware that I’m eating.
Appendix C

Center for Epidemiologic Studies Depression Scale

Below is a list of some of the ways you may have felt or behaved. Using the 1-4 scale below, please indicate how often you have felt this way during the past week.

During the past week...

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rarely or none of the time (less than 1 day)</td>
<td>Some or a little of the time (1-2 days)</td>
<td>Occasionally or a moderate amount of time (3-4 days)</td>
<td>Most or all of the time (5-7 days)</td>
</tr>
</tbody>
</table>

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt that I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people disliked me.
20. I could not get "going."
Appendix D

Difficulties in Emotion Regulation Scale

Please indicate how often the following statements apply to you by checking the appropriate number from the scale below:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>almost</td>
<td>sometimes</td>
<td>about half</td>
<td>most of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>never</td>
<td>(11-35%)</td>
<td>the time</td>
<td>time (66-90%)</td>
</tr>
</tbody>
</table>

1. I am always clear about my feelings.
2. I pay attention to how I feel.
3. I experience my emotions as overwhelming and out of control.
4. I have no idea how I am feeling.
5. I have difficulty making sense out of my feelings
6. I am attentive to my feelings
7. I know exactly how I am feelings
8. I care about what I am feeling
9. I am confused about how I feel.
10. When I’m upset, I acknowledge my emotions.
11. When I’m upset, I become angry with myself for feeling that way.
12. When I’m upset, I become embarrassed for feeling that way.
13. When I’m upset, I have difficulty getting work done.
14. When I’m upset, I become out of control.
15. When I’m upset, I believe that I will remain that way for a long time.
16. When I’m upset, I believe that I’ll end up feeling that way for a long time.
17. When I’m upset, I believe that my feelings are valid and important.
18. When I’m upset, I have difficulty focusing on other things.
19. When I’m upset, I feel out of control.
20. When I’m upset, I can still get things done.
21. When I’m upset, I feel ashamed with myself for feeling that way.
22. When I’m upset, I know that I can find a way to eventually feel better.
23. When I’m upset, I feel like I am weak.
24. When I’m upset, I feel like I can remain in control of my behaviors.
25. When I’m upset, I feel guilty for feeling that way.
26. When I’m upset, I have difficulty concentrating.
27. When I’m upset, I have difficulty controlling by behaviors.
28. When I’m upset, I believe that there is nothing I can do to make myself feel better.
29. When I’m upset, I become irritated with myself for feeling that way.
30. When I’m upset, I start to feel very bad about myself.
31. When I’m upset, I believe that wallowing in it is all I can do.
32. When I’m upset, I lose control over my behaviors.
33. When I’m upset, I have difficulty thinking about anything else.
34. When I’m upset, it take time to figure out what I am really feeling.
35. When I’m upset, it takes me a long time to feel better.
36. When I'm upset, my emotions feel overwhelming.