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# Healing PTSD with Mindfulness: Exploring Mindfulness' Mechanism of Change

Sara Klco

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## ACCEPTANCE

This dissertation, HEALING PTSD WITH MINDFULNESS: EXPLORING MINDFULNESS'S MECHANISM OF CHANGE, by SARA ELIZABETH KLČO, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the College of Education and Human Development, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

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Sara Elizabeth Klčo

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# HEALING PTSD WITH MINDFULNESS: EXPLORING MINDFULNESS' MECHANISM OF CHANGE

by

Sara Elizabeth Klčo

Under the Direction of Greg Brack, PhD

## ABSTRACT

Trauma has the capacity to produce a wide range of symptoms that have a damaging impact on psychological, biological, and social functioning (van der Kolk & McFarlane, 1996; Briere & Scott, 2013). Though several empirically-supported treatments for trauma exist and are used widely, the literature has identified concerns with some of the leading treatments, such as increased suicidality, panic attacks, alcoholic relapse (Pitman, et al., 1991), high nonresponse rates, and high dropout rates (Jeffreys, et al., 2013). Others have observed that cognitive-behavioral interventions, while often effective in decreasing specific PTSD symptoms, often do not address other common reactions to trauma such as emotion dysregulation, interpersonal problems, Borderline Personality Disorder, existential impacts of trauma, and complex PTSD (Follette et al., 2015). It is therefore our ethical duty as researchers and clinicians to explore

additional, modified, or adjunctive treatments for trauma symptoms. Mindfulness is emerging as one such possibility, and has a growing base of empirical and theoretical support (Kimbrough et al., 2010; Smith, 2011; Kearney et al., 2012, 2013; Follette et al., 2006; Steil et al., 2011; Lang et al., 2012). In this paper the existing literature on mindfulness and trauma is reviewed, and the clinical application of mindfulness skills is illustrated through a case example. Though there is considerable support showing that mindfulness is effective in treating trauma, gaps in the research literature exist that examine how and why mindfulness is effective (Coffey & Hartman, 2008). The current study examined one potential mechanism behind mindfulness' efficacy in treating trauma, experiential avoidance. The study's hypothesis is that for survivors of trauma, experiential avoidance will partially mediate the relationship between mindfulness and trauma symptoms. The hypothesis was tested via regression-based mediation analyses with bootstrapping. The results revealed a significant indirect effect of mindfulness on trauma symptoms via experiential avoidance. The hope of this project is that by conducting mindfulness-based research and informing clinicians of the research on mindfulness, clinicians can learn to apply these techniques in safe, ethical, and effective ways, leading their clients towards health, empowerment, and resiliency.

INDEX WORDS: Mindfulness, Meditation, Contemplative practice, Trauma, PTSD, Avoidance, Bootstrapping

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## DEDICATION

This dissertation is dedicated to my late Aunt Ann.

You were a role model for what it means to be a strong woman. You went to college in a time where you were told you were wasting a seat where a man could be sitting. You continued to sit, to learn, to defy expectations. You became the thriving professional woman I was privileged to know. When I was growing up, you encouraged me to defy expectations, to pursue my dreams, to attend university. And above all else, you told me to never listen to the people who said I can't. I made it to the end, Aunt Ann. Thank you for your strength and inspiration. It has kept me going.

Love you always.

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# CHAPTER 1

## CLINICAL GUIDE TO THE REAEARCH AND PRACTICE OF MINDFULNESS-BASED TRAUMA TREATMENT

The purpose of this paper is to briefly review the existing literature on mindfulness for treatment of traumatic experiences, and to illustrate the clinical application of this technique in work with survivors. The goal is to address the gap between the research and practice of mindfulness-based trauma treatment (Follette, Briere, Rozelle, Hopper, & Rome, 2015) and to serve as a general guide to clinicians wishing to apply mindfulness to trauma work. As mindfulness-based approaches to treatment grow in popularity (Follette, Palm, & Pearson, 2006) it is important for clinicians to stay rooted in the relevant literature to ensure they are applying mindfulness in safe, ethical, and effective ways.

### **Defining Trauma and Its Effects**

The term “trauma” is used throughout the research in different ways, most commonly referring to physical injury, psychological injury, or to the event that caused the injury (Ford & Courtois, 2009). Due to comparisons across research studies, it is important to operationalize the definition of trauma to ensure continuity in research and care. The current paper defines trauma in congruence with the DSM-V - as an event in which actual or threatened death, serious injury, or sexual violence is experienced either directly or vicariously (American Psychiatric Association, 2013, section 309.81). This definition is also consistent with the operationalized definition used in many research studies (Friedman, Resick, & Keane, 2007; Norris & Slone, 2007).

Though we would like to think that trauma is a rare exception to the human experience, research has revealed that this is not the case. It is estimated that between 39% and 70% of the American population has experienced one or more traumatic events (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Traumatic events vary in nature, with some common events including abuse, war, robbery, accidents, and natural disasters. These events can be subdivided into two categories: non-interpersonal and interpersonal trauma (Briere & Elliott, 2000; Briere & Scott, 2013; Forbes, et al., 2012). Non-interpersonal trauma refers to events such as natural disasters and war, whereas interpersonal trauma refers to physical, emotional, or sexual abuse (Forbes et al., 2012). These two types of traumas tend to produce distinct patterns of symptomology, with interpersonal trauma often producing more severe or complex symptoms than non-interpersonal trauma (Forbes et al., 2012; Herman, 1992, van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005;). Trauma that is repeated or ongoing also has the tendency to produce more severe and complex symptoms than a single-incident trauma (Briere & Scott, 2013).

Trauma has the capacity to produce a wide range of symptoms that have a damaging impact on psychological, biological, and social functioning (Briere & Scott, 2013; van der Kolk & McFarlane, 1996). The DSM-V includes a category of diagnoses entitled “Trauma and Stressor Related Disorders,” which outlines common responses to traumatic events, including Posttraumatic Stress Disorder (PTSD) and Acute Stress Disorder (ASD) (American Psychiatric Association, 2013, Section 309.81, 308.3). Criteria for PTSD diagnosis include experiencing a Criterion A stressor (as defined above) via direct experience, witnessing the event occur to another person, indirectly learning that a close friend or relative was exposed, or through repeated/extreme indirect exposure to aversive details of a traumatic event (e.g. professionals repeatedly exposed to details of child abuse) (American Psychiatric Association, 2013 Section

309.81). Other criteria include the presence of intrusive symptoms (e.g. memories, flashbacks, nightmares), avoidant symptoms (e.g. avoiding or suppression trauma-related thoughts, emotions, people, or situations), negative alternations in mood or cognition (e.g. inability to recall traumatic details, negative mood, restricted affect, alienation, or persistent negative beliefs about oneself), hyperarousal (e.g. anger/irritability, hypervigilance, problems concentrating, increased startle response), and significant distress or impairment due to the above-mentioned symptoms (American Psychiatric Association, 2013, Section 309.81).

ASD primarily differs from PTSD in that symptoms may be less numerous or severe, and symptoms occur within one month of the trauma (in PTSD symptoms persist after one month post-trauma) (American Psychiatric Association, 2013, Section 308.3). Another major difference is the emphasis on dissociation-ASD diagnosis requires that one experience dissociative symptoms post-trauma, such as numbing, amnesia, depersonalization, or derealization (American Psychiatric Association, 2013, Section 308.3). PTSD diagnosis does not require the survivor experience dissociation, although clinicians can specify if the diagnosis includes dissociative symptoms or not.

The DSM-V revisions mark a substantial improvement in the diagnostic criteria of trauma-related problems, including the addition of mood symptoms and explicit reference to sexual violence (American Psychiatric Association, 2013b) However, many clinicians and researchers site additional symptoms that are not included within the DSM-V definition (Briere & Scott, 2013; Courtois & Ford, 2009; van de Kolk et al., 2005). Other common posttraumatic responses that can develop in addition to PTSD include emotion regulation issues, social isolation, heightened suicide potential, anxiety, alcohol and other drug abuse, disordered eating, somatoform disorders, borderline personality disorder, and psychosis (Briere & Scott, 2013;

Gabert-Quillen, et al., 2012). It is important to note that not all psychological effects of trauma can be readily assessed and organized into neat lists of symptoms or diagnoses (Briere & Scott, 2006). For example, Judith Herman (1992) described existential effects like feelings of emptiness, disconnection from one's spirituality, and a disruption in one's ability to hope, trust, and care about oneself and others. Trauma can additionally produce a range of intra and interpersonal problems that are not captured by a PTSD diagnosis (Follette, Palm, & Pearson, 2006). The result is that some survivors may experience trauma-related suffering but not qualify for PTSD diagnosis. Or, they may qualify for PTSD diagnosis but have additional symptomology that is overlooked and untreated.

The impact of trauma varies by individuals and depends largely on the severity and frequency of the trauma, with higher frequencies of trauma often resulting in higher levels of symptomology (Keane, Weathers, & Foa, 2000). A single incident of trauma (such as natural disasters or an isolated instance of abuse) are referred to as Type I traumas, and Type II traumas are complex or repetitive (e.g. ongoing abuse or living in a war zone). Type II traumas, often referred to as complex trauma (Herman, 1992) tend to produce higher levels of symptomology which may not be accurately described by a PTSD diagnosis. Some have suggested the addition of another diagnosis to capture the impact of ongoing trauma to the DSM called complex PTSD (Ford & Courtois, 2009). This diagnosis would refer more to the emotion dysregulation, suicidality, and impaired interpersonal functioning that is so often seen in survivors of repeated trauma. It is therefore crucial that clinicians assess not only the presence or absence of trauma, but the frequency, severity, and duration.



## **Popular Treatments for Trauma**

Cognitive-behavioral therapies are currently the treatment of choice for trauma, with Prolonged Exposure (PE) and Cognitive Processing Therapy (CP) being the most frequently used and most highly recommended treatment for PTSD within the U.S. Department of Defense and the U.S. Department of Veteran's Affairs (Ruzek, Karlin, & Zeiss, 2012). These cognitive-behavioral interventions have a substantial volume of empirical support in the reduction of PTSD symptoms for some individuals (Cahill, Rothbaum, Resick, & Follette, 2009; Eftekhari, et al., 2013; Hembree & Foa, 2003), yet other studies have indicated that PE and other cognitive-behavioral interventions are not effective for some others (Belleville, Guay, & Marchand, 2011; Bradley, Green, Russ, Dutra, & Westen, 2005; Kar, 2011; Schottenbauer, Glass, Arnkoff, Tendick & Grey, 2008). Researchers have identified several troubling complications associated with PE, including increased depressive symptoms, suicidal ideation, panic attacks, and relapse of alcoholism while undergoing treatment (Pitman, et al., 1991). High nonresponse rates ranging from 28%-67% of survivors treated with PE were reported in a metaanalysis of empirically-supported treatments for PTSD (Schottenbauer, et al., 2008). Other critics point to the high dropout rates amongst those undergoing PE treatment. Recently published reports of VA patient chart reviews found dropout rates of 27% to 44% of veterans receiving PE (Goodson, Lefkowitz, Helstrom & Gawrysiak, 2013; Jeffreys, et al., 2013; Tuerk, et al, 2011). Cognitive Processing (CP) dropout rates range from 17%-22%, and nonresponse rates range from 9%-32% (Schottenbauer et al., 2008). Although cognitive-behavioral interventions can be effective in decreasing specific PTSD symptoms, they often do not address other common reactions to trauma such as emotion regulation difficulties, interpersonal problems, Borderline Personality

Disorder, existential impacts of trauma, and complex PTSD (Follette, Briere, Rozelle, Hopper, & Rome, 2015).

In 2013, the New Haven Competencies Conference was held at the Yale School of Medicine, where sixty leading trauma experts gathered to create a set of competencies for trauma work with adults and children (see Cook & Newman, 2014 for more information on the New Haven Competencies Conference). Five broad categories of competencies were established, including trauma-informed scientific knowledge, psychosocial trauma-focused assessment, psychosocial trauma-focused interventions, trauma-focused professionalism, and trauma-informed relational and systems. Eight cross-cutting competencies were also established, including the need to tailor trauma-focused interventions individually to the survivor and the imperativeness of maintaining psychological and physical safety (Cook & Newman, 2014). Given the manualized nature of many CBT interventions (e.g. PE and CP), high dropout rates, and safety concerns associated with some of these interventions (Pitman, et al, 1991), the leading treatments for trauma may not conform to all of the New Haven Competencies. Given these issues, it is an ethical imperative to seek new, improved, or adjunctive treatments for PTSD and other trauma-related problems (Briere, 2015). Mindfulness is one promising emergent trauma treatment.

### **Mindfulness-Based Treatments for Trauma**

Mindfulness is defined as “the awareness that emerges through paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p.145). This construct is generally cultivated through the use of meditation or other exercises which help practitioners learn to fully immerse themselves in the present moment (Kabat-Zinn, 2005). Mindfulness is often classified

as a cognitive-behavioral intervention, and has been combined with CBT to effectively treat depression and depressive relapse (Segal, Williams, & Teasdale, 2002). Others, however, identify mindfulness-based approaches as distinct from CBT approaches, labeling them as *contemplative practices* defined as the “repetitive act of turning inward, of examining one’s thoughts, feelings, and other internal experiences in order to reach deepened conceptual and nonconceptual understandings” (Follette et al., 2015, p. 2). Contemplative practices also differ from CBT in their origins, stemming from Buddhist practices as opposed to Western-derived CBT (Briere, 2015). These practices can be used on their own or in conjunction with other treatments (Follette et al., 2015).

Though the precise mechanisms of change explaining how mindfulness heals trauma still remain unclear, research has uncovered the power of mindfulness to change the practitioner on a neurological level. Davidson et al. (2003) conducted a randomized, controlled study assessing the effects of an eight week Mindfulness-Based Stress Reduction (MBSR) intervention. Results found an increase in left anterior brain activity in the mindfulness group as compared to the control group, an area that is associated with greater positive affect and better coping with adverse experiences. The mindfulness group also showed an increased immune response compared to controls, with the amount of increased left anterior brain activity directly predicting the amount of increased immune response. This study demonstrates that mindfulness meditation is physiologically changing the way the brain works, creating a happier and healthier functioning person.

Research is amassing that supports mindfulness as a powerful and effective treatment for trauma-related issues (Briere, J., 2012; Kimbrough, Magyari, Langenberg, Chesney & Berman, 2010; Smith, et al., 2011; Thomas, C., 2011). A survey conducted by the International Society

for Traumatic Stress Studies (ISTSS) found that mindfulness practices were amongst the top intervention methods recommended by a group of 50 PTSD and complex PTSD experts (Cloitre, et al., 2011). The National Center for PTSD, a branch of the U.S. Department of Veteran Affairs, issued a statement which concluded “Research findings show that mindfulness can help with problems and symptoms often experienced by survivors. Mindfulness could be used by itself or together with standard treatments proven effective for PTSD” (U.S. Department of Veteran Affairs, 2011, para. 9).

These recommendations are supported by a growing body of empirical evidence. A study of urban firefighters (Smith, et al., 2011) revealed that mindfulness was significantly associated with decreases in PTSD symptoms, depressive symptoms, somatic symptoms, and alcohol problems. In a longitudinal study, the efficacy of an eight week mindfulness based stress reduction (MBSR) program for child abuse survivors was assessed (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010). At eight weeks, symptoms of PTSD, depression, and anxiety had significantly improved. These clinical improvements were largely sustained at the follow-up assessment 24 weeks later.

Much of the research supporting mindfulness as an effective treatment for trauma has been conducted on veterans. One repeated measures study assessing the outcome of a Mindfulness Based Stress Reduction (MBSR) program for veterans with PTSD found that by six weeks post-enrollment, participants showed significant improvement in all outcomes including reductions in PTSD and depressive symptoms (Kearney, McDermott, Malte, Martinez, & Simpson, 2012). In response to demand for randomized controlled trials in this area of research, the same research group conducted a study with this type of design showing promising results

that mindfulness is effective in improving PTSD symptoms and quality of life (Kearney, McDermott, Malte, Martinez, & Simpson, 2013).

Mindfulness is used to treat trauma for a variety of theoretical and clinically-based reasons that, although not yet validated by empirical studies, have been experienced as effective by therapists and their clients. Victoria Follette and associates (2006) hypothesized that mindfulness is effective in increasing acceptance. They stated, “Mindfulness allows a sense of calm abiding with our current experiences” (Follette, Palm, & Pearson, 2006, p. 47.). Therefore, they argued mindfulness skills may help the client make psychological contact with trauma-related material through increasing one’s ability to attend to and identify memories, emotions, and cognitions as opposed to suppressing or altering them. In this way mindfulness may facilitate exposure therapy and address problems with exposure-based treatments (Briere, 2015; Follette et al., 2006;)

Given these clinical and research findings, it is clear that mindfulness has strong potential as an intervention for PTSD and trauma-related issues. Mindfulness has shown effective in decreasing various measures of psychological distress, including PTSD. Research indicates that mindfulness operates via several key mediators, including emotion regulation, rumination, detachment, and experiential avoidance (Arch & Craske 2006; Coffey & Hartman, 2008; Weinrib, 2011). Though more research is needed, these studies give clinicians good preliminary evidence that mindfulness-based interventions are effective for use with trauma survivors.

### **Ensuring Appropriate and Safe Interventions**

Though mindfulness-based interventions for trauma are becoming increasingly popular, clinicians must deliver these interventions in safe, efficient, and ethical ways. It is therefore

essential that before incorporating mindfulness into treatment, the clinician a) assess the appropriateness of mindfulness training, and b) obtain consent from the client. Though the latter may be self-explanatory, the former deserves more in-depth consideration (Briere & Scott, 2013).

The first step in assessing appropriateness of mindfulness training is to obtain consent from the client. Mindfulness practice should always be an invitation, not a statement or demand. The clinician can then move to assessing for risk factors and contraindications. Without taking this crucial step, clinicians can harm their clients through the use of mindfulness interventions. Risk factors that clients need to be screened for include but are not limited to: severe depression/suicidality, psychosis, mania, dissociation, low emotion regulation ability, high levels of trauma-related intrusions, and some instances of substance dependence (Briere & Scott, 2013; Klčo & Brack, 2014). Think, for example, of the severely depressed client with frequent suicidal ideations. Asking this client to meditate on such thoughts and feelings without having strong pre-existing mindfulness skills could potentially exacerbate the depression, leading to increased risk of suicide. The paradox is that many clients who suffer from trauma have these clinical issues, and are precisely the people who could benefit most from mindfulness. It is advisable to focus on stabilizing these symptoms before engaging in mindfulness practice, and this can be done through the application of existing interventions (e.g. safety planning, exploring and addressing the drivers of suicidal thoughts, psychiatric medication, introducing emotion regulation skills, or treating addiction). The use of solid clinical judgment is therefore advised when working with clients exhibiting these possible contraindications. (See Germer, 2005, for additional recommendations regarding mindfulness use with highly symptomatic trauma clients.)

The second step to mindfulness-based trauma treatment is to determine whether an individual or group-based format is most appropriate (Klčo & Brack, 2014). The most commonly employed and widely researched modality of mindfulness instruction is in group format. Several well-known mindfulness-based group programs exist, including Jon Kabat-Zinn's Mindfulness-Based Stress Reduction program (MBSR; Kabat-Zinn, 1982; 1990), Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), Marsha Linehan's Dialectic Behavioral Therapy (DBT; Linehan, 1993), and Steven Hayes's acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999). Though each of these is a unique program, there are many commonalities including a group based format and the teaching of mindfulness skills through both didactic and experiential approaches.

Mindfulness-Based Stress Reduction (MBSR) is the best known and most widely used mindfulness training program in the West (Baer, 2003). It was originally developed at the University of Massachusetts Medical Center by Dr. Jon Kabat Zinn (1982; 1990), and has been used to successfully treat a wide variety of physical and psychological disorders including chronic pain, fibromyalgia, cancer, depression, anxiety, sleep disturbance, and binge eating (Grossman, Niemann, Schmidt, & Walach, 2004). As described above, MBSR is typically an eight-week course with weekly meetings lasting two and a half hours each, plus an intensive day-long retreat. Mindfulness skills are taught by participating in several practices such as seated meditation, walking meditation, hatha yoga poses, and the body scan. The body scan is a 45 minute exercise where the participants lie on their backs with eyes closed and bring the attention to various parts of the body, noticing sensations that may be present without judgment (Baer, 2003). MBSR also includes psychoeducation, group discussion about mindfulness, stress, and coping, and homework assignments for at-home practice.

Benefits to receiving mindfulness instruction in a group format such as Mindfulness-Based Stress Reduction, or other popular treatments such as Dialectical Behavior Therapy (DBT: Linehan, 1993) or Acceptance and Commitment Therapy (ACT: Hayes, Strosahl, & Wilson, 2012) include the well-researched effects of such groups, (typically) lower cost, and the unique benefits of group therapy in general (Yalom, 2005). Having mindfulness skills taught separately from individual therapy allows the individual therapist to concentrate on symptom stabilization, safety, and other immediate needs of the client. This format may also be preferable due to the lack of expertise in mindfulness instruction amongst most individual therapists. If the clinician has not been trained in teaching mindfulness and does not have extensive personal experience with mindfulness practice, it is ethical to refer clients to a qualified meditation instructor (APA Ethics Code, Standard 2.01).

If the clinician has training in teaching mindfulness, has personal meditation practice, and is well acquainted with the nuances of contemplative practice, it is an option to train clients in an individual therapy format. It is important to note, however, that mindfulness training can take a considerable portion of time, and some authors have expressed concern that trauma work may have to take a backseat during this period (Briere & Scott, 2013). However, if the clinician is sufficiently experienced and the client does not have high levels of risk factors needing immediate attention (i.e. suicidality, self-harm, addiction), it is possible to engage in trauma therapy and mindfulness training simultaneously (Briere & Scott, 2013).

One way in which individual format may be superior to group format is the interpersonal skills and connection that can develop between the client and therapist from practicing mindfulness together (Follette et al., 2006). The current author has experienced countless moments of connection in session simply from sitting together in meditation. By sharing this



space with clients, their ability to remain emotionally present and connected to the therapist during even the hardest parts of therapy increases. This mindfulness-facilitated connection between client and therapist may generalize and enhance other areas of the client's interpersonal functioning (Follette et al., 2006). For example, experiencing a safe, encouraging relationship in therapy may help the client to recognize and seek out safe, encouraging relationships outside of the therapy room (Follette et al., 2006). This may even have implications for preventing revictimization. As the client is increasingly able to remain present during frightening or difficult interpersonal reactions, they may be better able to identify risk factors and respond effectively (Follette et al., 2006). The relationship is therefore a crucial part of the mindful healing process. For more information on teaching mindfulness in individual therapy, see Germer (2005).

The most effective modality of mindfulness training is likely a hybrid approach (Briere & Scott, 2013; Follette et al., 2015; Klčo & Brack, 2014), where mindfulness skills are learned in a dedicated group context, but called upon during individual trauma-focused therapy. This too requires the trauma clinician to be well versed in mindfulness practice. Mindfulness skills can facilitate trauma work in multiple ways. For example, mindfulness can equip the client with a toolbox of grounding skills to be called upon in times of heightened anxiety, stress, or hyperarousal. These skills can also be used to cope with intrusive memories, cognitions, sensations, or emotions. Examples include breath focus, anchoring into the present moment, and observing intrusions instead of being consumed by them (Briere & Scott, 2013).

## **Mindfulness-Based Trauma Therapy Illustrated**

The integration of mindfulness skills into trauma-focused therapy is a highly impactful, yet a highly nuanced practice. In order to best describe these practices, a case study of complex PTSD is presented below. Identifying information has been altered in order to protect the confidentiality of the client, though the therapeutic details remain accurate to exemplify the real-life application of mindfulness-based trauma therapy. This example illustrates how mindfulness was taught in an individual context and integrated into phase-based trauma therapy.

Phased-based trauma treatment was selected based on the competency recommendations emerging from the International Society for Traumatic Stress Studies' Complex Trauma Task Force (Cloitre et al., 2012), and the New Haven Trauma Competencies (Cook & Newman, 2014).

According to Herman (1992), there are three phases of trauma therapy. This metamodel is used widely to treat traumatic stress and the specific needs and symptoms of the client (Herman, 1992). The stages include: establishing safety, processing traumatic memories, and reintegration.

The case study below will be presented in stages. First the assessment period will be reviewed, then we will move on to the treatment portion where the first, second, and third stages will be illustrated. Each section will begin with a description of the tasks of each stage of mindfulness-based trauma treatment followed by a clinical illustration.

### **Assessment**

The New Haven Competencies state that trauma assessment is crucial, so before beginning therapy, the clinician must perform a thorough assessment of the trauma and the

resulting symptomology (Cook & Newman, 2014; Keane et al., 2007). This can often be accomplished through a careful clinical interview, with several structured interviews available like the Clinician Administered PTSD Scale (CAPS; Blake, et al., 1995). It is worth noting, however, that many of these assessments only cover core PTSD symptoms, and that other trauma symptoms such as dysregulation, interpersonal difficulties, and existential impacts should also be assessed. It is also critical to assess frequency, duration, and severity of trauma, as the presenting symptomology will largely depend on these variables (Keane, Weathers, & Foa, 2000; Briere & Scott, 2013). For example, it is at this stage that the clinician determines if the trauma is Type 1 (single incident) or Type 2 (multiple or ongoing trauma), and if the trauma was of an interpersonal nature such as sexual assault or a non-interpersonal nature such as a natural disaster.

*Carolina was 21 years old, a college senior on a pre-law track. She identifies as a Latina, Catholic, single, heterosexual, cis-gender female. Carolina did not attend church regularly, but shared that her religion played a large role in her life. Originally born in Brazil, the student came to America at age 11 in order to pursue her education. Carolina's first language was Portuguese, and she learned English at a young age in Brazil as she attended a bilingual school. She is the oldest of four sisters. Her father and one sister were still living in Brazil, and two sisters and two of her paternal uncles and their families lived close by in the United States.*

*Carolina presented to counseling after the death of her cousin, who was shot by a friend. Her cousin was her same age, and there were suspicions that the shooting was not accidental. She disclosed at her intake session that this was not her*

*first traumatic loss-Carolina had also lost her mother to a long struggle with cancer at age 10. During the assessment she reported symptoms including avoidance, anxiety, fearfulness, panic attacks, anger, irritability, guilt, interpersonal difficulty, and problems sleeping and studying. She shared the sleep and concentration issues were due to intrusive thoughts and memories about her cousin and death in general. After the trauma assessment concluded it was determined that Carolina was a type II, non-interpersonal trauma survivor.*

*Previous to her cousin's shooting, Carolina was very connected to friends and family. Recently, however, she had begun to isolate herself. She shared that "I started spending time alone because I kept snapping on my friends. I used to be so patient, and now I'm angry and irritated all the time." The client also started to avoid picking up the phone when her aunts or sisters would call after learning of her cousin's death in a phone call from one of her aunts. Phone calls were not the only thing Carolina had been avoiding; she was avoiding anything that reminded her of the loss-violent TV, pictures of guns, philosophy assignments that referenced death, and most of all, thoughts about her cousin. She was trapped in a cycle of suppressing these thoughts and images, only to be bombarded by them when she was trying to sleep at night, in class, or attempting to complete assignments. This pattern exemplifies the paradox of suppression; the more we try not to think of something, the more we end up thinking about it (Wegner & Zanakos, 1994). As a result of these intrusive thoughts, emotions, and memories, Carolina began to struggle academically. Previously a strong and motivated student, she was now missing classes, skipping assignments, and failing exams. "I used to have a purpose," she*

*said, "it was to get my education and make a difference in people's lives. Now I just don't care." It became clear that the trauma was having a deep existential impact on the client, leaving her feeling purposeless and obsessively contemplating death. She became fearful that she or her family members would also die suddenly, and that every incoming phone call could be the source of devastating news.*

### **Stage One**

The first stage of phase-based trauma therapy is termed safety and stability, and it is the most important stage (Courtois et al., 2009; Herman 1992). Some survivors will only complete the first stage, either because they are not at a place where they can process the traumatic memories or because the therapy is too time-limited. Just the first stage, however, can provide immense relief. If clients express a desire to stay in stage one, this is a decision to be supported by the clinician in an effort to respect and promote a sense of empowerment over their own healing. Here, a therapeutic alliance is built and the focus becomes stabilizing the client's symptoms. It is important to give the client a sense of control in this stage, and much of this can be accomplished through the use of active mindfulness techniques such as grounding, object mindfulness, mindful walking, eating, or driving. Most clients cannot tolerate mindfulness meditation (or passive mindfulness) in these early stages, as their symptomology is too high (Klco & Brack, 2014). Instead of beginning with formal meditation instructions, this stage includes teaching the client relaxation and grounding skills (Klco & Brack, 2014). This includes deep breathing exercises, guided visualizations, progressive muscle relaxation, and other relaxation exercises. The rationale behind beginning with these practices instead of formal meditation lies in the distinction between relaxation and mindfulness-though relaxation may be a pleasant side effect of mindfulness meditation, it is not the goal. Many times mindfulness is not

relaxing for survivors of trauma, as it asks them to make psychological contact with intensely emotional or otherwise disturbing content. For example, clients may come into contact with trauma-related memories during formal mindfulness meditation, and without the prerequisite grounding skills, they may find these practices overwhelming. As such, this stage aims to give clients the tools they need to gain a sense of stability and control over their symptoms.

Psychoeducation on trauma can also promote a sense of empowerment at this time.

*After conducting the assessment and building rapport, the clinician began to introduce Carolina to the concept mindfulness and the impact of trauma through psychoeducation. The client found this information to be relieving, as she had been feeling “crazy” and “out of control.” Her new understanding helped her acknowledge that she was experiencing a normal reaction to the traumatic death of her cousin, and her newly acquired mindfulness-based skills allowed her to get a sense of control over these symptoms. She was taught how to ground herself when she experienced panic attacks and traumatic intrusions by focusing on her senses—rubbing textured fabric, smelling lavender essential oil, and naming various colors she saw in the room. Carolina began to practice mindful walking during her 15-minute walks to and from campus, honing her ability to be present instead of consumed by her thoughts. Her ability to regulate her symptoms became a source of strength for Carolina, and with practice she began to feel less overwhelmed.*

*With her symptoms becoming increasingly less intrusive, Carolina’s ability to concentrate on schoolwork began to return. For a while she used her work as a distraction, as a means to avoid thinking of her cousin. She would often feel like*

*crying, but refused. The clinician provided validation and acceptance around the client's emotions in session, slowly making room for the client to feel her pain within a context of mindful non-judgment. Since her symptoms were stabilizing and her mindfulness skills had begun to grow, Carolina and the clinician began to practice mindfulness meditation. This was done together in session so that the clinician could be there to support the client should she have adverse reactions, and so they could process the experience together afterwards.*

## **Stage Two**

The second stage of trauma work is remembrance and mourning, and involves processing the traumatic memories (Herman, 1992). During this phase, clients tell their story in detail and experience the corresponding emotions that may have been suppressed up until this point. This stage is similar to exposure-based therapies, in that the goal is to expose the client to traumatic memories and therefore increase their tolerance to the associated distress. In prolonged exposure however, the client is asked to recount the story again and again, often re-living the experience. Herein lies the differences between traditional exposure and mindfulness-based trauma therapy—during mindful exposure, the client is never asked to re-live the experience. The client remains mindful and fully present during the entire session, with the clinician calling on the client's mindfulness skills to help anchor her or him in the here-and-now. Thusly, the client stays, with the help of the clinician, in the “therapeutic window”, a balance point between overstimulation and understimulation wherein trauma is most effectively processed (Briere & Scott, 2013).

*On the 8-month anniversary of her cousin's death, Carolina came into session bordering on tears. The clinician offered to talk about her cousin and honor his memory on this day. Initially the client refused, saying it would be too intense and too private of an experience to share. The clinician respected this, and continued to support the client in other areas of her life. The second half of the session included a mindfulness meditation. During the practice, Carolina again became tearful. When she opened her eyes, she asked if she could show the clinician a picture of her cousin. The clinician asked if she could join the client on the couch, and Selam agreed. Together they sat, looking at her cousin's pictures and hearing details of his death, the funeral, and Carolina's process of mourning. The mindfulness meditation had allowed the client to connect with her present emotional experience instead of avoiding the feelings as she had done for so long. Having the clinician sit next to her offered a sense of support and grounding that kept her from feeling overwhelmed despite the emotionally charged nature of the session.*

*The next week Carolina brought up the death of her mother. She began to tell the story of her long illness and eventual death, recalling details so vividly that at times she began to feel like she was back in Brazil, a small girl of 10 years being asked to "be strong" for her younger siblings and take care of them while the rest of the family was busy making funeral arrangements. The clinician encouraged Carolina's detailed recounting of the colors, sounds, and emotions she experienced that day, but paused when the client stopped making eye contact and her breath became shallow. It became clear that the client was losing contact with the present, so the clinician asked if she could again come and sit next to the client and try one of*



*the breathing exercises they had practiced so many times before. Slowly, the client began to lengthen her breathing, became re-anchored in the present, and was able to finish her story. At the end of the session, the clinician guided Carolina through a grounding meditation, and processed what today's experience had been like. Carolina shared that this was the first time she had told the story to anyone, and that new emotions and meaning had emerged through verbalizing her trauma. The clinician thanked Carolina for her bravery, and encouraged her to practice a good deal of self-care post-session.*

### **Stage Three**

The last stage of this metamodel is reintegration and reconnection (Herman, 1992). Here, the clients integrate the lessons of trauma and begin to forge new meaning in life (Herman, 1992). This is a time for reconnecting with the client's core identity and values, as well as with other trusted people in their environment. Proponents of mindfulness cite its ability to assist in existential issues and meaning-making (Follette et al., 2015), rendering it an ideal tool for this stage. Through the resulting increases in awareness and self-regulation, survivors are able to use mindfulness to aid in interpersonal connection and effectiveness (Linehan, 1993; Follette et al., 2006). As they simultaneously reclaim and forge new identities at this stage, clients may find that they are more resilient than they once thought. One such resiliency-related construct is termed posttraumatic growth (PTG; Tedeschi & Calhoun, 1996) and describes the personal strength, interpersonal connection, and spiritual growth that can emerge in the wake of trauma. Recent studies are beginning to connect mindfulness practice to the development of PTG

(Hanley, Peterson, Canto, & Garland, 2014; Klčo & Brack, 2014), further supporting the notion that mindfulness can serve as a resiliency-inducing intervention during this stage.

*After telling the narrative of her traumatic losses, Carolina's symptoms began to wane. She reported that, although she still had frequent thoughts and memories of her cousin, she was no longer experiencing extreme anxiety in reaction to them. She was sleeping regularly again, and with her improved concentration Carolina was able to pass her classes with A's and B's. She was reaching out to friends and sharing dinners with her nearby family. Carolina's therapy turned to focusing on decreasing perfectionism and planning for life post-graduation. Realizing that she never did really want to be a lawyer, she began to explore careers in social work and women's advocacy. Carolina was slowly reclaiming her life from trauma, using her own passions and values as her guide.*

## **Conclusions**

The above story exemplifies how an actual client transformed from leading a life dictated by pain and trauma to a happy and value-driven existence. Had this person not been presented with mindfulness-based tools and interventions, she may not have continued the difficult process of trauma therapy, and may not be the successful and satisfied professional she is today.

While cognitive-behavioral therapies have substantial research supporting their efficacy in treating PTSD (Eftekhari, et al., 2013; Cahill, Rothbaum, Resick, & Follette, 2009; Hembree & Foa, 2003), they are not always effective in treating all survivors or all symptomatic presentations (Belleville, Guay, & Marchand, 2011; Bradley, Green, Russ, Dutra, & Westen,

2005; Kar, 2011; Schottenbauer, Glass, Arnkoff, Tendick & Grey, 2008). The gaps in the research and practice of treating trauma leave room for new or adjunctive treatments, and mindfulness shows strong promise as one such treatment. Mindfulness, which can be used on its own or integrated into existing treatments, is amassing growing empirical and theoretical support as an evidence-based treatment for trauma (Kimbrough et al., 2010; Smith, 2011; Kearney et al., 2012, 2013; Follette et al., 2006; Steil, Dyer, Priebe, Kleindienst, & Bohus, 2011; Lang, Schnurr, Jain, Raman, Walser, Bolton, Chabot, Benedek, 2012). By staying informed regarding the emerging research on mindfulness, clinicians can learn to apply these techniques in safe, ethical, and effective ways, leading their clients towards health, empowerment, and resiliency.

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## Chapter 2 Abstract

Trauma has the capacity to produce a wide range of symptoms that have a damaging impact on psychological, biological, and social functioning (van der Kolk & McFarlane, 1996; Briere & Scott, 2013). Though several empirically-supported treatments for trauma exist and are used widely, the literature has identified concerns with some of the leading treatments, such as increased suicidality, panic attacks, alcoholic relapse (Pitman, et al., 1991), high nonresponse rates, and high dropout rates (Jeffreys, et al., 2013). Others have observed that cognitive-behavioral interventions, while often effective in decreasing specific PTSD symptoms, often do not address other common reactions to trauma such as emotion dysregulation, interpersonal problems, Borderline Personality Disorder, existential impacts of trauma, and complex PTSD (Follette et al., 2015). It is therefore our ethical duty as researchers and clinicians to explore additional, modified, or adjunctive treatments for trauma symptoms. Mindfulness is emerging as one such possibility, and has a growing base of empirical and theoretical support (Kimbrough et al., 2010; Smith, 2011; Kearney et al., 2012, 2013; Follette et al., 2006; Steil et al., 2011; Lang et al., 2012). Though there is considerable support showing that mindfulness is effective in treating trauma, gaps in the research literature exist that examine how and why mindfulness is effective (Coffey & Hartman, 2008). The current study examined one potential mechanism behind mindfulness's efficacy in treating trauma symptoms, experiential avoidance. The study's hypothesis is that for survivors of trauma, experiential avoidance will mediate the relationship between mindfulness and trauma symptoms. The hypothesis was tested via regression-based mediation analysis with bootstrapping. The results revealed a significant indirect effect of mindfulness on trauma symptoms via experiential avoidance. Results also indicated a significant direct effect of mindfulness on trauma symptoms. This confirms the hypothesis that mindfulness



is indeed effective in decreasing trauma symptoms, and that one of the ways in which mindfulness works may be via decreasing experiential avoidance. The hope of this project is that by conducting mindfulness-based research clinicians can learn to apply these techniques in ethical, and effective ways, leading their clients towards health, empowerment, and resiliency.

## Introduction

Trauma has the capacity to produce a wide range of symptoms that have a damaging impact on psychological, biological, and social functioning (van der Kolk & McFarlane, 1996). The word trauma is used in a variety of contexts, but for the sake of this paper we will define it in accordance with the most current Diagnostic and Statistical Manual as an event in which actual or threatened death, serious injury, or sexual violence is experienced either directly or vicariously (DSM V; American Psychiatric Association, 2013, section 309.81). Trauma can also be of an interpersonal nature (e.g. sexual, physical, or verbal abuse) or a noninterpersonal nature (e.g. accidents, war, natural disasters).

Cognitive-behavioral therapies are currently the treatment of choice for trauma (Ruzek, Karlin, & Zeiss, 2012), and have a substantial volume of empirical support (Cahill, Rothbaum, Resick, & Follette, 2009; Eftekhari, et al., 2013; Hembree & Foa, 2003). However, research has identified several complications associated with cognitive-behavioral interventions. Prolonged Exposure (PE), for example, has been associated with increased symptomology during treatment including depression, suicidality, and panic attacks (Pitman, et al., 1991), high dropout rates which range from 27%-44% (Goodson, Lefkowitz, Helstrom & Gawrysiak, 2013; Jeffreys, et al., 2013; Tuerk, et al., 2011), and high nonresponse rates ranging from 28%-67% (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008). Cognitive Processing (CP) Therapy has been found to be equally as efficacious as PE, but involves far less direct recounting of the traumatic experience and was more effective than PE at treating dysfunctional trauma-related cognitions such as guilt in sexual assault survivors (Resick, Nishith, Weaver, Astin, & Feuer, (2002). CP dropout rates range from 17%-22%, and nonresponse rates range from 9%-32%

(Schottenbauer et al., 2008). Although cognitive-behavioral interventions can be effective in decreasing specific PTSD symptoms, they have received criticism that they fail to address common reactions to trauma such as emotion regulation difficulties, interpersonal problems, Borderline Personality Disorder, existential impacts of trauma, or complex PTSD (Follette, Briere, Rozelle, Hopper, & Rome, 2015).

In 2013, the New Haven Competencies Conference was held at the Yale School of Medicine, where sixty leading trauma experts gathered to create a set of competencies for trauma work with adults and children (see Cook & Newman, 2014 for more information on the New Haven Competencies Conference). Five broad categories of competencies were established, including trauma-informed scientific knowledge, psychosocial assessment, psychosocial interventions, professionalism, and relational and systems. Eight cross-cutting competencies were also established, including the need to tailor trauma-focused interventions individually to the survivor and the imperativeness of maintaining psychological and physical safety (Cook & Newman, 2014). Given that the New Haven Competencies state that trauma treatment should be individualized and that it should not do harm to the client, the leading interventions for trauma (e.g. PE and CP), may not conform to these ethical guidelines due to the manualized nature of these interventions, high dropout rates, and safety concerns that can be associated with these interventions.

Given these issues, it is an ethical imperative to seek new, improved, or adjunctive treatments for PTSD and other trauma-related problems. Mindfulness is a promising emergent treatment for trauma. It is defined as “the awareness that emerges through paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p.145). This construct is generally

cultivated through the use of meditation or other exercises which help practitioners learn to fully immerse themselves in the present moment (Kabat-Zinn, 2005). Mindfulness is often classified as a cognitive-behavioral intervention, and has been combined with CBT to effectively treat depression and depressive relapse (MBCT; Segal, Williams, & Teasdale, 2002). Others, however, identify mindfulness-based approaches as distinct from CBT approaches, labeling them as *contemplative practices* instead. Contemplative practice is defined as the “repetitive act of turning inward, of examining one’s thoughts, feelings, and other internal experiences in order to reach deepened conceptual and nonconceptual understandings” (Follette et al., 2015, p. 2). Contemplative practices also differ from CBT in their origins, stemming from Buddhist practices instead of Western-derived CBT (Briere, 2015). Due to the emphasis on contemplation, introspection, and insight development, some psychologists see mindfulness as being more closely related to psychodynamic and other insight-based therapies.

Researchers and clinicians are beginning to view mindfulness as a powerful and effective treatment for trauma-related issues (Kimbrough, Magyari, Langenberg, Chesney & Berman, 2010; Thomas, C., 2011; Smith, Ortiz, Steffen, Tooley, Wiggins, Yeater & Bernard, 2011; Briere, J., 2012). Leading traumatologist, Victoria Follette and colleagues, recommend that mindfulness skills be integrated into trauma work to enhance treatment acceptability and efficacy (Follette, Palm, & Pearson, 2006). A survey conducted by the International Society for Traumatic Stress Studies (ISTSS) likewise found that mindfulness practices were amongst the top intervention methods recommended by a group of fifty PTSD experts (Cloitre, et al., 2011), indicating that more trauma-focused clinicians should integrate mindfulness-based approaches into their practices.

These recommendations are supported by a growing body of empirical evidence. For example, a study of urban firefighters (Smith, et al., 2011) examined the relationships between mindfulness and a variety of physical and psychological health outcomes. One hundred and twenty-seven active fire fighters participated and were administered a variety of self-report questionnaires. The results of a regression analysis revealed that trait mindfulness was significantly associated with decreases in PTSD symptoms, depressive symptoms, somatic symptoms, and alcohol problems.

In a longitudinal study, the efficacy of an eight week mindfulness based stress reduction (MBSR) program for child abuse survivors was assessed (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010). Twenty-eight adult survivors participated, and were assessed for depressive symptoms, PTSD, anxiety, and mindfulness. At eight weeks all outcomes had statistically significant improvements, with depressive symptoms reduced by 65%. These clinical improvements were largely sustained at the follow-up assessment 24 weeks later.

Kearney, McDermott, Malte, Martinez, and Simpson (2012) conducted a repeated measures study to assess the outcome of a Mindfulness Based Stress Reduction (MBSR) program for veterans with PTSD. Ninety-two veterans participated in eight-week MBSR programs conducted at a large urban VA Hospital. Results found that by six weeks post-enrollment, participants showed significant improvement in all outcomes, and 47.4% of veterans showed clinically significant improvements in PTSD scores.

These studies demonstrate good initial evidence for the efficacy of mindfulness-based interventions for the treatment of multiple types of interpersonal and noninterpersonal trauma. Though these interventions hold strong promise as an intervention for PTSD, more studies are

needed, particularly well-designed, randomized controlled trials and interventions that use mindfulness as a stand-alone treatment (Baer, 2003)

In response to this need, Kearney, McDermott, Malte, Martinez, and Simpson (2013) conducted a pilot study which implemented a randomized controlled design. Forty-seven veterans diagnosed with PTSD were randomly assigned to either a treatment as usual (TAU) group or to a MBSR plus TAU group. Self-report questionnaires were completed to assess PTSD, depression, and mental health related quality of life (mental HRQOL). Though intent-to-treat analyses revealed no reliable differences between the groups, completer analyses (using the subset of the sample that attended 4 or more MBSR sessions) showed medium to large between group effect sizes for depression, mental HRQOL, and mindfulness. Though no statistically significant effects were demonstrated for PTSD symptoms, the study did find that more veterans in the MBSR group had improvements in both PTSD and mental HRQOL at the four month follow-up period than veterans in the TAU group (27.4% versus 0%). Kearney et al. (2013) concluded that although the small number of participants in this pilot study limited the statistical power needed to detect significant effects, the results demonstrated that veterans with PTSD can learn mindfulness, and that mindfulness holds promise as an intervention that can improve mental health quality of life for veterans with PTSD. Studies with a randomized controlled design and a larger sample size are needed to buttress this initial evidence pointing to mindfulness as an effective PTSD intervention.

Another gap in the literature on mindfulness is the explanation of why and how mindfulness is effective in the treatment of PTSD and other trauma-related outcomes. There is a need for mechanism of action research, a field of research which explains how behavioral treatments work. Such research has been called for by the NIMH (National Institutes of Mental

Health, 2003). This type of research is important to clinicians as it will undoubtedly improve understanding of and ability to implement mindfulness-based interventions (Weinrib, 2011).

Several studies examined mindfulness' mechanism of change (the explanation of how the treatment is effective) on a variety of related mental health outcomes. For example, Arch and Craske (2006) conducted a study wherein sixty participants were randomly assigned to three groups: a mindfulness-based focused breathing condition, an unfocused attention condition, and a worry condition. Each of the three conditions listened to 15 minutes of recorded guided mindful breathing, unfocused attention, or worry instructions (respectfully), and then were asked to view a series of affectively valenced picture slides from the International Affective Picture System. Results demonstrated that participants in the mindful breathing condition reported significantly lower levels of negative affect after viewing negatively valenced slides when compared to the worry condition, and were more willing to view the 25 optional negative slides than the other two groups. Arch & Craske conclude that these initial data are consistent with theories that postulate enhanced emotion regulation capacities as the mechanism of action in mindfulness.

Another study examined the relationship between mindfulness and psychological distress, as measured by indexes of anxiety and depression (Coffey & Hartman, 2008). They proposed three potential mechanisms of action for mindfulness, including emotion regulation, nonattachment, and reduced rumination. These potential mechanisms were then tested for mediation using structural equation modeling (SEM) in two independent, non-clinical samples of undergraduates. The SEM analysis revealed that all three potential mechanisms of action significantly mediated the relationship between mindfulness and decreased psychological distress.

Another proposed mechanism of action behind mindfulness' efficacy in healing trauma symptoms is decreased avoidance (Weinrib, 2011; Follette et al., 2006). The DSM V identifies avoidance as one of the primary hallmarks PTSD, and describes this as “persistent effortful avoidance of distressing trauma-related stimuli after the [traumatic] event (American Psychiatric Association, 2013). Common examples of avoidance in trauma survivors include the suppression of intrusive thoughts, images, or emotions, removing oneself from situations that elicit negative internal responses, dissociation, substance use, and emotional numbing (Follette, Briere, Rozello, Hopper, & Rome, 2015; Follette et al., 2006).

Avoidance has a paradoxical effect wherein attempts to avoid and suppress actually *increase* the frequency of the intrusive thoughts, memories, or emotions that are being avoided (Clark, Ball, & Pape, 1991; Wegner, Shortt, Blake, & Page, 1990; Wegner & Zanakos, 1994). It is therefore hypothesized that avoidance plays a role in producing and maintaining trauma-related symptomology (Follette et al., 2015).

Mindfulness skills have been conceptualized as the opposite of avoidance and speculated to significantly reduce avoidance in trauma treatment (Briere, 2015; Follette et al., 2006). Some cite mindfulness' potential for enhancing the effectiveness of exposure treatments (Follette et al., 2006) through increasing the client's ability to make psychological contact with painful memories and emotions. Research indicating that individuals who are able to experience distress directly are more likely to report distress reduction than those who avoid supports this theory (Foa, Huppert, & Cahill, 2006; Hayes, Strosahl, & Wilson, 2011; Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010).

A dissertation by Aliza Weinrib (2011) examined avoidance as a possible mechanism of action in mindfulness. She hypothesized that increases in mindfulness over the course of



participation in an eight-week MBSR course would result in lower levels of negative affect, and that these changes would be mediated by decreases in experiential avoidance. Participants included 108 subjects. Results found that levels of mindfulness had significantly increased and levels of experiential avoidance and negative affect had significantly decreased by the end of the eight-week program. A regression analysis revealed that experiential avoidance significantly mediated the relationship between mindfulness and negative affect. The author therefore concluded that decreased experiential avoidance is one mechanism of action behind mindfulness-based interventions.

The current study wishes to respond to the NIMH's call for research investigating how specific behavioral treatments work (National Institute of Mental Health, 2003) by directly examining the role that avoidance plays in mindfulness and trauma symptoms. Specifically, this study will examine experiential avoidance as a mechanism of action that helps explain how mindfulness plays a role in decreasing trauma symptoms. It is hypothesized that experiential avoidance will mediate the relationship between mindfulness and trauma symptoms, with increases in mindfulness producing decreases in avoidance, and decreases in avoidance producing decreases in symptomology.

## **Method**

### **Participants**

Subjects for the current study were drawn from a population of undergraduate students at a large urban university in the southeastern United States. This population is highly diverse in terms of gender, ethnicity, age, sexual identity, and socioeconomic background. Participants were recruited through the Counseling and Psychological Services' undergraduate subject pool

(SONA). Inclusion criteria for participation were limited to being a student 18 years of age or older who is enrolled in undergraduate courses and consents to participation. However, only the data of participants reporting a history of one or more traumatic events will be used in the final analysis.

## **Procedure**

Participants voluntarily recruited from undergraduate classes were invited to complete a one-time online survey. Recruitment occurred via the CPS online subject pool (SONA). Undergraduates enrolled in CPS online classes are required to complete research credits as part of their final class grade. An alternative assignment was provided for students who did not wish to participate in research (specifically, a paper reviewing a peer-reviewed research article). The current study was one of several research studies students could choose from in order to satisfy their research requirement.

Those who volunteer signed a consent form electronically and completed quantitative online questionnaires on a secure web-based survey host (Qualtrics). Participants can complete them at any time of the day on any computer, but were instructed to complete the items in one sitting. The questionnaires took approximately 30-60 minutes to complete. Responses were confidential, were not linked to the participants' names, and no IP addresses were recorded.

Ethical consideration has been given to the potential distress that may arise from asking survivors of trauma about their painful pasts. Research has indicated that participants in studies inquiring about trauma history largely report that they derived benefit from research participation (Ruzek & Zatzick, 2000; Walker, Newman, Koss, & Bernstein, 1997). However, due to the

sensitive nature of some of the questions asked (e.g. inquiries regarding trauma history and symptoms), students were informed before and after completing the questionnaires of the potential risk involved, including the potentially upsetting nature of some of the questions in the study. They were instructed to discontinue the questionnaire and seek psychological support should they experience distress such as increases in trauma symptoms or depression.

Information regarding free counseling services at the University's Counseling Center will be provided, as well as a list of crisis support and other low-cost therapy options.

## Measures

**Demographics Form.** A self-designed demographics form asked participants to report basic demographic information. Responses were requested but not mandatory. Information assessed included age, gender, ethnicity, sexual identity, and family income.

**Mindful Attention Awareness Scale.** The Mindful Attention and Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item scale designed to measure mindfulness as present centered awareness in everyday experience, including both general awareness and specific awareness of actions, thoughts, emotions, interpersonal communication, and physical states. Brown and Ryan (2003) conceptualized this as a quality for which levels vary from person to person, and can be cultivated through practice, such as seated or walking mindfulness meditation. The measure is intended for the general population regardless of experience with meditation. The MAAS measures mindfulness as a single construct, with several studies confirming its one-factor structure (Carlson & Brown, 2005; MacKillop & Anderson, 2007; Van Dam, Earleywine & Borders, 2010) The 15 items are rated on a 6 point Likert scale (1= almost

always, 2=very frequently, 3=somewhat frequently, 4=somewhat infrequently, 5= very infrequently, 6=almost never) and are summed to form a total score, with higher scores representing higher levels of mindfulness. Examples of items include “I find it difficult to stay focused on what’s happening in the present” and “It seems that I am running on automatic, without much awareness of what I am doing.”

Brown and Ryan (2003) reported the MAAS is a valid and reliable measure of mindfulness, as evidenced by significant relationships between this measure and other measures of mindfulness (Freiberg Mindfulness Inventory, Kentucky Inventory of Mindfulness Skills, Mindfulness/Mindlessness Scale). The authors reported good internal consistency (Cronbach’s alpha ranging from .80-.87) and high test-retest reliability ( $r = .81$ ). The MAAS has also been cross-validated in both college student and general adult populations, as well as culturally cross-validated in French (Jermann, Billieux, Larøi, d’Argembeau, Bondolfi, Zermatten, & Van der Linden, 2009), Spanish (Calvete, Sampedro, & Orue, 2014), Italian (Setti, Piccoli, Bellotto, & Argentero, 2014), Turkish (Catak, 2012), Greek (Mantzios, Wilson, & Giannou, 2013), German (Michalak, Heidenreich, Ströhle, & Nachtigall, 2008), Argentine (Montes, Ledesma, García, & Poó, 2014) and Chinese (Deng, Li, Tang, Zhu, Ryan, & Brown, 2012) samples. A systematic review comparing ten popular measures of mindfulness (using a strict inclusion criteria to analyze only studies with high levels of methodological soundness) concluded that the MAAS has been evaluated by more studies than any other measure ( $n = 27$ ), has “positive overall quality ratings” and was included in their list of mindfulness measures “preferred on psychometric grounds over the other instruments” (Park, Reilly-Spong, & Gross, ps. 2639, 2654).

**Stressful Life Events Screening Questionnaire.** The Stressful Life Events Screening Questionnaire (SLESQ; Goodman, Corcoran, Turner, Yuan, & Green, 1998) is a 13-item self-

report inventory designed to assess for history of traumatic event exposure, as defined by Criterion A of the Diagnostic and Statistical Manual V (American Psychiatric Association, 2013). It was used to screen for history of trauma in order to assess if the participants meet inclusion criteria (i.e. one or more traumatic events endorsed). The questionnaire assesses interpersonal and non-interpersonal traumatic events (example items include “Were you ever in a life-threatening accident?” and “At any time, has anyone ever physically forced you to have intercourse, or to have oral or anal sex against your wishes, or when you were helpless, such as being asleep or intoxicated?”), plus two open-ended items to assess additional traumas not covered by previous items on the questionnaire. Each item is scored dichotomously (yes or no), then followed up by a series of prompts to determine frequency, age of occurrence, life threat, etc. Event endorsements are summed to create a total score, with higher values representing higher levels of trauma exposure. Overall interpersonal (ex: rape, combat) and non-interpersonal (ex: accident) trauma scores will be calculated for each participant, as these two types of trauma have differential effects on mental health (Briere & Scott, 2013). Interpersonal and non-interpersonal trauma will be treated as continuous variables. Treating trauma scores as continuous variables (i.e. sum scores) is an accurate and psychometrically sound measure of trauma based on research suggesting frequency of traumatic exposure is a highly important aspect of trauma exposure assessment (Keane, Weathers, & Foa, 2000, as cited in Keane, Brief, Pratt, & Miller, 2007; Ruscio, Ruscio, & Keane, 2002).

The SLESQ is a reliable and valid instrument for the assessment of Criterion 1 traumatic events, with comparable levels of trauma prevalence assessed by the SLESQ and in the general population (Norris & Hamblen, 2004). Goodman et al. (1998) reporting good test-retest reliability ( $r = .89$ ), and good convergent validity between number of traumatic events reported

on the SLESQ and in a subsequent clinical interview ( $r = .77$ ). Validity cannot be assessed by some traditional statistical methods for this measure because it is not technically a scale, but an inventory of independent events. Therefore, internal consistency (using alpha), confirmatory factor analysis, exploratory factor analysis, etc. cannot be reported here.

The SLESQ has been identified in the literature as a “brief, carefully researched measure of trauma that would be useful in many situations” (Norris & Hamblen, 2004, p.70), and is especially useful when assessing interpersonal trauma “as it provides an exceptional amount of information about sexual trauma and interpersonal violence” (p.76). It provides unique advantages over other trauma inventories, as it is the first to be subjected to multiple forms of validation (Goodman et al, 1998), and is a brief, yet comprehensive measure of trauma history (Norris & Hamblen, 2004).

**Trauma Symptom Checklist.** The Trauma Symptom Checklist (TSC; Briere & Runtz, 1989) is a 40-item scale used to assess posttraumatic symptomology. It contains six clinical scales, including Anxiety, Depression, Dissociation, Sexual Abuse Trauma Index (SATI), Sexual Problems, and Sleep Disturbance, and also a total score. Participants were asked to rate items using a 4-point Likert scale ranging from 0 (never) to 3 (often) over the previous two months. Example items include “How often have you experienced flashbacks (sudden, vivid, distracting memories) in the last two months?” and “How often have you experienced anxiety attacks in the last two months?”

The authors and several other researchers report sound psychometric properties (Briere, 1996). Internal consistency is high, with Cronbach’s alpha averaging between .89-.91 (Briere,

1996). The TSI demonstrates good predictive validity with reference to a wide variety of traumas.

**Multidimensional Experiential Avoidance Questionnaire.** The Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011) is a 62-item instrument designed to assess experiential avoidance. Items load on 6 subscales: Behavioral Avoidance, Distress Aversion, Procrastination, Distraction/Suppression, Repression/Denial, and Distress Endurance. Example items include “I go out of my way to avoid uncomfortable situations” and “I am able to turn off my emotions when I don’t want to feel.” The MEAQ was designed in response to psychometric flaws in other measures of experiential avoidance such as the Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl, & Wilson, 2004) and the newer, revised version, the Acceptance and Action Questionnaire 2 (AAQ-2; Bond & Hayes, 2005).

Gámez et al. (2011) reported the MEAQ is a reliable measure of experiential avoidance which demonstrates high internal consistency across clinical, community, and college student samples (mean Cronbach’s alpha = .85). These authors also stated that the MEAQ demonstrated high convergent and discriminant validity, as evidenced by significant associations with related constructs (e.g. positively correlated with neuroticism, negative affect and negatively correlated with extraversion, openness, agreeableness, and conscientiousness) and evidenced by significant association with other measures of experiential avoidance (e.g. AAQ, AAQ-2, White Bear Suppression Inventory). Gámez et al. (2011) additionally noted that all subscales of the MEAQ provided unique explanatory power above and beyond the AAQ and AAQ-2.

## **Analysis**

The main objective of this study is to investigate a potential mechanism of mindfulness' therapeutic change (experiential avoidance) on the presence of trauma symptoms. Studies examining mechanisms of action require mediation analyses (Kazdin & Nock, 2003); therefore mediation analyses was used in the current study. Multiple regression analysis was selected as the method of analysis for this project, as it is the most common statistical procedure for determining statistical mediation (Kazdin & Nock, 2003). In their seminal article, Baron and Kenny (1986) identified a variable as a mediator "to the extent that it accounts for the relation between the predictor and the criterion...mediators speak to how or why such effects occur" (p.1176). The three statistical conditions a variable must meet to be classified as a mediator are as follows, as outlined by Baron and Kenny (1986) in their causal steps method:

1. Variations in the level of the independent variable significantly account for variations in the presumed mediator (path a)
2. Variations in the presumed mediator significantly account for variations in the dependent variable (path b)
3. When paths a and b are controlled, a previous significant relation between the independent and dependent variables (path c) is no longer significant.

Baron and Kenny (1986) clarified that mediation does not need to be full (i.e. the correlation between the independent and dependent variable drops to 0) to qualify as mediation. They stated that because there are usually multiple causes for an effect in the psychological disciplines, a more realistic goal is to "seek mediators that significantly decrease path c rather



than eliminating the relationship between the independent and dependent variable all together” (p.1176).

One criticism that the causal steps method has received is that it has low statistical power (Fritz & MacKinnon, 2007). To address this limitation, the current study employed the widely used bootstrapping method, a nonparametric resampling technique that increases the statistical power of mediation analyses (Preacher & Hayes, 2004; 2008).

A regression-based mediation analysis was used via the Hayes’ PROCESS macro (Preacher & Hayes, 2004), a free add-on for SPSS. This macro computed the regression-based analyses with the bootstrapping method.

The current study examined mindfulness as the independent variable, trauma symptoms as the dependent variable, and experiential avoidance as the moderator (a.k.a. the potential mechanism of action in mindfulness). Our hypotheses are as follows:

- 1) As mindfulness scores increase, experiential avoidance total scores will decrease, which will create a decrease in trauma symptom total scores. This hypothesis will be tested with a regression-based mediation model with bootstrapping analyses, using the total scores of all three variables.
- 2) As mindfulness scores increase, experiential avoidance subscale scores (Behavioral Avoidance, Distress Aversion, Procrastination, Distraction/Suppression, Repression/Denial, and Distress Endurance) will each decrease, which will create a decrease in trauma symptom total scores. This hypothesis will be tested with six regression analyses, one per subscale, using the total scores of mindfulness and

trauma symptoms, and each of the six experiential avoidance subscales as a moderator.

## Results

A total of 837 participants responded. Of these, 70.3% reported experiencing one or more traumatic events in their lifetime, and only these participants were used in the analysis. A final sample consisted of 588 participants ( $n=588$ ) who endorsed a history of at least one traumatic event. Mean age of the final sample was 24.7 years (standard deviation = 6.9 years, range 18-68). The sample self-reported being 64.6% female, 72.3% non-Caucasian, and 19.9% non-heterosexual, revealing a high level of diversity. Participants had mean scores (see Table 1 for all mean scores) of 39.8 on the TSC. In order to evaluate discriminant validity, an independent t-test was performed to compare means on the TSC between those reporting trauma and those who were not reporting trauma. The results of the t-test were significant ( $t(835) = -8.14, p < .001$ ). The mean TSC score of those reporting trauma ( $M = 39.8, SD = 20.7$ ) was significantly different from the mean TSC score of those not reporting trauma ( $M = 27.2, SD = 20.0$ ), confirming the discriminant validity of this measure. The mean TSC score of trauma survivors in this population was greater than the average score from a sample of professional women reporting trauma histories ( $M = 26.02, SD = 12.1$ ; Elliot & Briere, 1992), but lower than a sample of inpatient women reporting trauma histories ( $M = 71.8, SD = 35.3$ ; Zlotnick, et al., 1996). High internal consistency was found on the TSC within our sample ( $\alpha = .95$ ). Most frequent traumas reported include traumatic bereavement (42.9% of trauma-reporting sample),

verbal/emotional abuse (41.3% of trauma-reporting sample), and experiencing a life-threatening accident (37.6% of trauma-reporting sample). See Table 2 for all trauma frequencies.

The mean score of the MAAS was 3.8 with a standard deviation of 1.0. This mean appears to be a little lower than a psychometric analysis of the MAAS revealed ( $M = 4.35$ ,  $SD = .90$ ) where mindfulness levels were measured within a large southeaster university population. The current study's sample mean was also lower than the mean score on the MAAS amongst survivors of trauma ( $M = 4.25$ ,  $SD = .64$ ; Thieleman & Cacciatore, 2014). High internal consistency was found on the MAAS within our sample ( $\alpha = .91$ ).

The mean score of the MEAQ was 205.6 with a standard deviation of 38.1. Means of the MEAQ subscales were as follows: 30.6 on the MEAQ-distress endurance subscale, 38.4 on the MEAQ-behavioral avoidance subscale, 47.3 on the MEAQ-distress aversion subscale, 24.1 on the MEAQ-procrastination subscale, 28.5 on the MEAQ-distraction & suppression subscale, and 36.7 on the MEAQ-repression & denial subscale. The MEAQ total score mean of the current study was higher than the mean total score reported by Gamez et al. (2011) in the initial validation of this measure in a sample of college students ( $M = 195.1$ ,  $SD = 34.5$ ) but lower than the mean total score in a sample of psychiatric patients ( $M = 219.8$ ,  $SD = 39.5$ ). High internal consistency was found on the MEAQ within our sample ( $\alpha = .95$ ).

The results revealed a host of significant correlations. Trauma symptoms were significantly negatively correlated with mindfulness ( $r(588) = -.50$ ,  $p < .01$ ), indicating that participants who reported higher levels of mindfulness tend to also report fewer trauma symptoms. This correlation was highly statistically significant. Mindfulness significantly negatively correlated with experiential avoidance ( $r(588) = -.45$ ,  $p < .01$ ), indicating that those

who reported high levels of mindfulness also tended to report less avoidance. This relationship was also highly significant. Experiential avoidance, however, was significantly positively correlated with trauma symptoms ( $r(588) = .51, p < .01$ ), which indicates that as avoidance increases, so does the negative impact of trauma. This relationship was highly statistically significant. The directionality and the significance of these correlations were all congruent with the proposed hypothesis. See Table 3 for full list of correlations.

The mediation analysis indicated that mindfulness indirectly influenced trauma through its effect on experiential avoidance. As Figure 1 illustrates, the unstandardized regression coefficient between mindfulness and experiential avoidance was statistically significant. Likewise, the unstandardized regression coefficient between experiential avoidance and trauma symptoms was also significant. The unstandardized indirect effect was  $-3.30$ . Significance for the indirect effect was tested via bootstrapping procedures. Indirect effects were computed for each of 1,000 bootstrapped samples. The 95% confidence interval for the indirect effect did not contain zero ( $-4.22$  to  $-2.59$ ). Thus, the indirect effect was statistically significant. The relationship between mindfulness and trauma symptoms was also mediated by each of the experiential avoidance subscales with the exception of distress endurance (significant indirect effect of mindfulness on trauma symptoms via the mediators of behavioral avoidance, distress aversion, procrastination, distraction & suppression, and repression & denial).

In terms of effect size, the standardized indirect effect of mindfulness on trauma symptoms via experiential avoidance ( $-.16$ ) had a small to medium effect size (Cohen, 1992), indicating that avoidance explains some, but certainly not all of the variance of trauma symptoms. These results show that as mindfulness scores increase, there is a small or medium decrease in trauma symptoms. The standardized direct effect of mindfulness on trauma

symptoms yielded a significant effect size of  $-.34$ , which, according to Cohen (1992) is a medium size effect. This indicates that mindfulness operates not only via decreasing avoidance, but has a direct impact in terms of a medium-sized reduction of trauma symptoms. The standardized total effect of mindfulness on trauma was also significant and yielded an effect of  $-.50$ , which is a large effect size (Cohen, 1992). This indicates that mindfulness tends to produce a large reduction in trauma symptoms.

### **Discussion**

This study revealed that 70.3% of our sample reported a trauma history, defined as reporting one or more traumatic events across the lifetime. This prevalence rate is at the high end of estimates for the national prevalence rate, with researchers estimating between 39% and 70% of the population has experienced trauma (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). It is interesting to note that, despite the fact that this sample was relatively young and participants still have much of their lives to experience (average age of 24.7), they are already reporting trauma at the high end of the current prevalence estimates. Furthermore, the amount of trauma symptoms reported from participants endorsing a trauma history is higher than the average level of trauma symptoms in an outpatient sample of trauma survivors (yet lower than the average for an inpatient sample of survivors). This provides further evidence that this college student sample has experienced trauma and trauma symptoms to a greater extent than is typical. The explanation for this result is likely to be complex, but one hypothesis about this greater-than expected rate of trauma points to race. The current sample is highly diverse, with 72.3% of participants identifying as non-white. Given the knowledge that PTSD tends to have a

higher prevalence rate amongst African-Americans, U.S. Latinos, and American Indians (as compared to U.S. whites; American Psychiatric Association, 2013), we may therefore expect a higher level of prevalence within our highly diverse sample.

The current study confirmed that mindfulness is related to decreased symptoms of trauma. This was supported by the host of correlations which were both large and statistically significant. For example, mindfulness was significantly correlated with both avoidance and trauma symptoms in a negative direction, indicating that as mindfulness levels increase, the level of avoidance and trauma symptoms tend to decrease. This pattern is in agreement with the mindfulness literature (Kearney et al., 2012, 2013; Weinrib, 2011; Kimbrough et al., 2010; Follette et al., 2006) and with our current hypothesis.

The observation that mindfulness tends to decrease trauma symptoms was also supported by the meditation analysis. The results produced a significant direct effect that was rather large, especially for behavioral research (effect size of .50). This agrees with the literature on mindfulness and trauma that mindfulness is an effective treatment for PTSD and other trauma-related issues.

The present study suggests that the relationship between mindfulness and trauma symptoms was mediated by experiential avoidance, as indicated by the significant indirect effect of mindfulness on trauma symptoms via avoidance. This confirmed our hypothesis that one of the mechanisms by which mindfulness exerts its effect on trauma symptoms is by reversing avoidance. The mediation analyses using the individual subscales of avoidance as mediators indicate that mindfulness helps to reverse several types of avoidance, including behavioral avoidance and procrastination as well as reversing avoidance of internal stimuli by decreasing

distress aversion, distraction, suppression, repression, and denial, This finding supports the literature indicating many of the symptoms of trauma are created, maintained, and exacerbated by avoidance (Weinrib, 2011; Follette et al., 2006, 2015).

It is worth noting that experiential avoidance did not account for the full effect of mindfulness on trauma symptoms. The indirect effect of mindfulness on trauma symptoms via avoidance was less than the total effect, indicating that the meditation was partial. This means that, although reversing avoidance is one aspect through which mindfulness exerts its effect, it is not the only reason why mindfulness helps with trauma. Although these results leave us with only part of the picture explaining how and why mindfulness is effective, it helps to enhance the current understanding of why mindfulness works for addressing trauma symptoms. That avoidance explains only a part of mindfulness' efficacy is to be expected. Mindfulness is such a complex and multifaceted practice that it does not make sense that it would only exert power through one avenue. It will likely take years or even decades of scientific inquiry to determine the entire scope of how mindfulness functions. Even then, it is unlikely that science would be able to distill and isolate its efficacy into a simple explanation. We are not aiming to dismantle mindfulness into its components of efficacy. Given the Gestalt principle that states that the whole is worth more than the sum of its parts (Mann, 2010), the interrelationships of mindfulness to trauma symptoms is likely complex and related to many factors. This would likely undermine the efficacy of mindfulness. Furthermore, this would dishonor the ancient practice of meditation, and would dishonor the survivors whom we strive to support with the most effective means possible.





### *Clinical Implications*

The current study enhances our understanding of mindfulness within the context of trauma work, and, as evidence-based practitioners, enhances our ability to intervene in effective ways. This study bolsters the recommendation of leading trauma experts that mindfulness can and perhaps should be integrated into the treatment of trauma-related issues (Cloitre et al., 2011; Follette et al., 2006). If it is effective, safe, and recommended, why would we not share this intervention with consenting clients? Mindfulness is effective and relatively simple to teach. It requires no convoluted equipment or expensive manuals, only a teacher who is knowledgeable and willing to share. It is not an instant cure, but for the survivors who are willing to cultivate their own practices, it can be a powerful ally on their path to healing.

One of the barriers to healing from trauma is avoidance, as this factor often maintains and exacerbates the symptoms of trauma (Follette et al., 2006, 2015). This barrier can complicate treatment, as we so often see clients who do not want to discuss their trauma, change the topic when it is brought up in session, or go as far as to stop returning to therapy all together when the waters become too warm. We see avoidance playing a role in developing risk factors in our trauma clients; they form an addiction to avoid the pain. They begin to dissociate because they do not know how to cope with traumatic memories in any other way. They avoid the people, places, and objects which remind them of their traumas, creating an ever more restrictive prison in which they live. Our study provides evidence that mindfulness may have the power to reverse these trends. This would make our clients safer, and would enhance the power of clinicians to help survivors reclaim life from trauma.

Avoidance takes many forms, and can be seen operating internally as well as externally. For example, a survivor may try to cope with intrusive memories by consciously suppressing or unconsciously repressing them. The literature shows that these types of suppressive coping techniques are not only ineffective, but they in fact increase the frequency of the targeted thought, memory, or emotion occurring (Wegner & Zanakos, 1994). The literature also reveals that suppression tends to correlate with negative mental health outcomes such as negative affect and depression, social isolation, decreased well-being, decreased self-esteem, and low reports of life-satisfaction, autonomy, and purpose in life (Gross & John, 2003). This study revealed that mindfulness may help to reverse the use of suppression/repression-based coping. Therefore, the use of mindfulness as a trauma intervention may help to buffer against the negative mental health outcomes associated with these coping styles.

As discussed earlier in this paper, mindfulness is not intended to entirely replace the existing forms of trauma therapy such as Prolonged Exposure or Cognitive Processing Therapy. Although these forms of intervention are not without their problems, they also have substantial empirical support behind them. Instead of “throwing the baby out with the bathwater”, these authors suggest an integrative approach to treatment. As indicated by the current study, mindfulness has the potential to reverse avoidance. This reversal is precisely what is needed for a client to engage in exposure therapy. Therefore, it seems appropriate that mindfulness be integrated into traditional exposure or cognitive processing therapy. This has the potential to enhance exposure through several means. Firstly, the gradual and varied nature of mindfulness training and interventions has the effect of slowly building a toolbox for clients to learn emotion regulation, grounding, and relaxation skills. This is consistent with Herman’s recommendation (1992) that trauma therapy occur in stages, with the first stage focusing largely on acquisition of

coping skills. Based on the current study's results, if the client first builds mastery over mindfulness skills, it is likely that they will have an enhanced ability to reverse avoidance and therefore engage in exposure or narrative-based therapy. This may also enhance the client's ability to remain anchored in the present moment while sharing their trauma story. This would improve their ability to make psychological contact with the associated memories and emotions without prompting abreaction, flashback, or the feeling of being "back in the trauma." Through remaining anchored in the present moment, the client remains with the clinician, safe and within a context of healing.

#### *Limitations and Future Directions*

As with any study, the current research has limitations. Firstly, it was conducted on a sample of urban college students. While the current sample was highly diverse, it is also true that results found within this type of population do not always generalize to other populations. It would benefit this field of research to conduct similar studies on a clinical population. It would also behoove future research to work with a sample that had been officially diagnosed with PTSD by a mental health professional.

Another limitation is that this study certainly does not explain how and why mindfulness is effective in its entirety. It provides only a piece of the puzzle that mindfulness operates partially through reversing avoidance, not the complete picture. Future studies that examine other proposed mechanisms by which mindfulness exerts its effect on trauma symptoms would help to further elucidate the full picture of how this intervention operates. Multiple regression or a Structural Equation Modeling approach may be helpful for such research.

Thirdly, this study is limited in the fact that it is a correlational design. Regression is, by its nature, a correlational statistical technique (Hayes, 2013). In lieu of a true experimental design, it is difficult to make conclusive statements about causality. Though a correlational design embedded within a strong theoretical framework can provide important information about the factors at hand, the field requires additional studies of an experimental design in order to confirm this. As such, future studies which use a randomized-control design should be implemented in order to further examine the impact of mindfulness on trauma symptoms.

### *Conclusions*

The current study revealed that mindfulness does indeed have a significant effect on trauma symptoms, and tends to decrease trauma symptoms when mindfulness skills are increased. This direct effect is accompanied by an indirect effect wherein the relationship between mindfulness and trauma symptoms is mediated by a decrease in experiential avoidance. Therefore, a partial explanation of mindfulness' efficacy in reducing the impact of trauma is that mindfulness operates via reducing avoidance, which we know is a major hallmark of trauma. These results have many clinical implications and bolster the existing recommendations of trauma experts that mindfulness be incorporated into trauma therapy as a safe and effective intervention for treating PTSD and other trauma-related issues. The hope of this project is that by conducting mindfulness-based research clinicians can learn to apply these techniques in ethical and effective ways, leading their clients towards health, empowerment, and resiliency.

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## Appendix

Table 1.

*Descriptive Statistics of Measures*

	n	Mean	SD
TSC	588	39.79	20.70
MAAS	588	3.82	1.00
MEAQ total	588	205.61	38.06
MEAQ distress endurance	588	30.60	9.56
MEAQ behavioral avoidance	588	38.45	9.85
MEAQ distress aversion	588	47.33	12.26
MEAQ procrastination	588	24.11	7.21
MEAQ distract/suppress	588	28.47	7.39
MEAQ repress/deny	588	36.66	11.74

\*Amongst the sample of participants reporting trauma histories

Table 2.

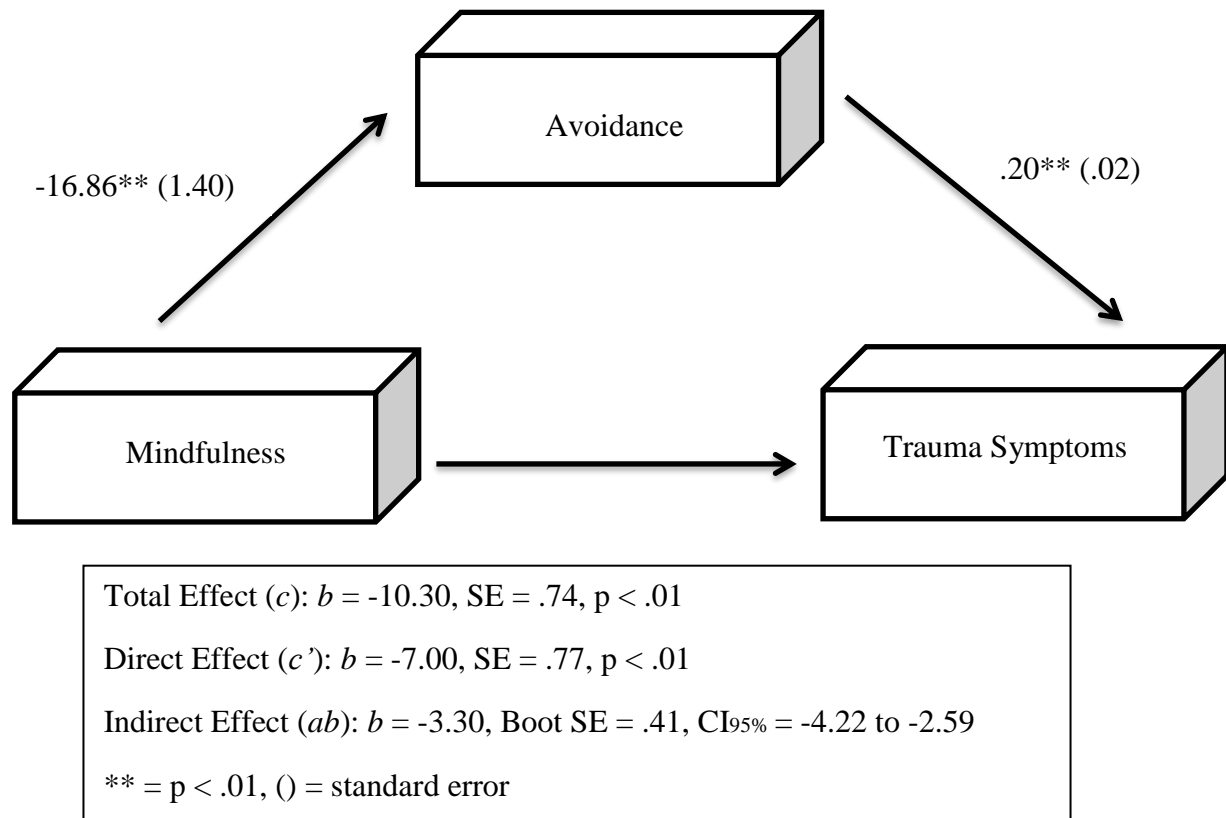
*Frequency of traumas reported by trauma survivors*

	n	Frequency	%
Life-threatening illness	588	105	17.9
Life-threatening accident	588	221	37.6
Robbery or mugging	588	81	13.8
Traumatic Bereavement	588	252	42.9
Sexual assault (intercourse)	588	111	18.9
Sexual assault (touching)	588	143	24.3
Childhood physical abuse	588	110	18.7
Adult physical abuse	588	135	23.0
Emotional/verbal abuse	588	243	41.3
Threatened with weapon	588	79	13.4
Witnessed murder/sexual assault	588	122	20.7
Combat/other threat to life	588	30	5.1
Other	588	81	13.8

Table 3.

*Correlations among predictor, outcome, and mediating variables*

	TSC	MAAS	MEAQ
TSC	1.0	-	-
MAAS	-.50**	1.0	-
MEAQ	.51**	-.45**	1.0
* p < .05	**p < .01		



**Figure 1. Mediation of mindfulness and trauma symptoms by avoidance**