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The Effects of Mindfulness and Distress Disclosure on Emotional Expression

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The Effects of Mindfulness and Distress Disclosure on Emotional Expression

A Thesis

Presented to

the Faculty of the Department of Psychology

University of South Carolina Aiken

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

By

Kelsey E. Eitel

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Abstract

The purpose of this study was to investigate the effect of a mindfulness exercise on participants' distress disclosure (as measured by the Linguistic Inquiry and Word Count). I employed a trauma written disclosure paradigm as an analogue to a therapy session in regard to disclosure. It was predicted that participants who were asked to engage in a 15-minute mindfulness exercise prior to writing about a personally traumatic event would use more emotion and cognitive processing words in their writing samples (i.e., increased distress disclosure), as compared to the participants who simply listened to a neutrally valenced audio clip. Participants were 96 undergraduates from a small Southern university who received course credit for their participation. In comparison to the Control Group, participants in the Mindfulness Group reported greater state mindfulness after the mindfulness exercise. However, the Mindfulness Group experienced a marginally significant decrease in Curiosity while the Control Group experienced a significant increase in Decentering from pre- to post-writing exercise. With regards disclosure, the Mindfulness Group used significantly more Insight words (e.g., think, know, consider) in their writing samples. It is suggested that the use of insight words reflect participants' desire to better understand their thoughts and feelings surrounding the traumatic experience about which they were writing. However, there were no group differences in the use of positive emotion words, negative emotion words, or causation words. Lastly, three specific facets of trait mindfulness (e.g., describe, act with awareness, and non-judging) were found to be significantly and positively correlated with trait distress disclosure. These results suggest that clients who begin a therapy session by engaging in a mindfulness exercise may be more likely to proceed in a curious and accepting manner, especially when it comes to talking about upsetting personal experiences.

The Effects of Mindfulness and Distress Disclosure on Emotional Expression

It comes as no surprise that client self-disclosure is considered an important component of psychotherapy (Stiles, 1995; Farber, 2006). However, some clients may experience difficulty expressing their inner most thoughts and feelings to a therapist due to the discomfort that undoubtedly accompanies this process. A client's general tendency to disclose distressing information to others may also have an impact on what the client shares in a therapy session (Kahn, Lamb, Champion, Eberle & Schoen, 2002). Kahn and Hessling (2001) make an important distinction between distress disclosure and self-disclosure. Specifically, they explain that distress disclosure involves a focus on self-referential unpleasant thoughts and/or feelings, whereas self-disclosure may involve more trivial disclosures such as one's interests or hobbies (Kahn & Hessling, 2001). Kahn, Achter, and Shambaugh (2001) therefore contend that research investigating client disclosure and its relationship to therapy outcomes should focus more specifically on the disclosure of personally distressing information. As such, the current study is an analogue study designed to shed light on whether specific interventions may be employed at the outset of a therapy session to facilitate beneficial client-disclosure of emotions, thoughts, memories, sensations, urges, etc. (i.e., distressing internal experiences).

Given that the current study looked at participants' emotional disclosure, it is important to consider the benefits of such disclosure. Theory and research suggest that emotional disclosure (i.e., talking or writing about one's emotional experiences) is a frequently encouraged and effective process of reducing distress (Kennedy-Moor & Watson, 2001), improving physical health (Pennebaker, 1997), lessening the emotional intensity of an event (Zech & Rime, 2005), decreasing intrusive thoughts about an emotional event (Lepore, Ragan, & Jones, 2000), increasing self-understanding (Sloan & Kahn, 2005; Farber, 2003), positively influencing interpersonal relationships (Kennedy-Moore & Watson, 2001), and facilitating insight into the

meaning of the disclosed material and providing an increased sense of “personal mastery” (Pennebaker, 1997). Furthermore, individuals with a penchant to discuss their aversive emotions with others appear to benefit more from therapy (Kahn, Achter, & Shambaugh, 2001), have a more positive attitude with regards to participating in therapy (Vogel & Wester, 2003), and seem to experience greater well-being in general (Kahn & Hessling, 2001).

On the other hand, being reluctant to express one’s emotions has been associated with increased psychological symptoms (e.g., symptoms of depression, anxiety; Barr, Kahn, & Schneider, 2008). Pennebaker (1989; 1997) theorized that actively concealing and inhibiting the disclosure of distress from others increases “psychological strain,” which leads to negative health effects. Self-concealment is conceptualized as a form of nondisclosure in that it involves the active avoidance of sharing personally distressing information. An individual’s tendency to self-conceal uncomfortable thoughts, feelings, and information about him-or-herself has been linked to negative health effects, such as increased depression, anxiety, headaches, and backaches (Larson & Chastain, 1990). Conversely, engaging in self-disclosure facilitates the “confrontation” of previously avoided and personally distressing information, which, in turn, reduces this “psychological strain,” resulting in positive health effects (Pennebaker, 1989; Pennebaker, 1997). Thus, distress disclosure appears to be noteworthy topic of study and further exploration, especially with regards to ways in which distress disclosure may be increased.

Research investigating the relationship between distress disclosure and therapeutic outcome is limited; however, Kahn, Hucke, Bradley, Glinski, and Malak (2012) point out that it does support the theory of distress disclosure being a beneficial aspect of the therapy process. For example, Sloan and Kahn (2005) found that, among clients at a university counseling center, self-reported trait distress disclosure was significantly and negatively related to symptom distress

at follow-up, and a decrease in symptom distress was predicted by participants' high disclosure tendencies. With that said, the purpose of the current study was to determine if a mindfulness exercise will increase emotional disclosure during an expressive writing task. The expressive writing task is being used as an analogue individual therapy session. By extension, engaging in a mindfulness exercise at the outset of a therapy session is being proposed as an intervention that may be employed to facilitate such disclosure. This is consistent with Roemer and Orsillo (2009), who explain that engaging in mindfulness practice and cultivating mindfulness is therapeutic because it facilitates one's acceptance of internal experiences as well as decreases the avoidance of such experiences (e.g., thoughts, emotions, images, sensations). As will later be discussed, this form of experiential avoidance can perpetuate various clinical problems and difficulties; whereas acceptance may help to decrease these difficulties.

Various mindfulness-based therapies utilize mindfulness exercises at the outset of each session (Linehan, 1993b; Roemer & Orsillo, 2009; Segal, Williams, & Teasdale, 2002; Walser & Westrup, 2007;). The purpose of this can be twofold: that is, in-session practice is encouraged 1) so the client can further develop their mindfulness practice, and 2) so that the therapist and client can "become centered and focused for the session" (Walser & Westrup, 2007, p. 37). There are numerous exercises described throughout the literature that facilitate the development of mindfulness skills; however, most encourage participants to attend to present moment internal experiences, such as bodily sensations, thoughts, and emotions; while others also encourage participants to pay attention to sights and sounds in the environment (Kabat-zinn, 1990; Linehan, 1993b). For example, mindfulness skills may be developed through sitting meditation, practicing mindfulness of the breath, engaging in the body scan exercise, and also thorough everyday activities such as bringing mindful awareness to walking, eating, bathing, etc. (as cited in Baer,

2003). As such, this study is designed to better understand if engaging in a mindfulness/acceptance exercise at the outset of a therapy session aids in subsequent client-disclosure (i.e., increases the clients distress disclosure). Given that emotionally vocative self-disclosure may be inhibited in response to aversive emotions and/or thoughts and that mindfulness has been shown to reduce experiential avoidance and increase an individual's behavioral willingness to come into contact with such aversive stimuli, a mindfulness intervention may thus promote increased emotional disclosure during a therapy session, and by extension, facilitate the beneficial effects of therapy.

Disclosure in Therapy

Studies have shown that what clients most often and commonly discuss in therapy revolves around aspects of one's self and personality they do not like, feelings of self-worth, relationship difficulties, anger towards their partner, spouse, or parents, and their own feelings of desperation, despair, and/or depression (Hall & Farber, 2001; Hill et al., 1993). However, the topics that seem most difficult for clients to discuss include sexual and "body-oriented" experiences (e.g., sexual fantasies and sexual feelings toward the therapist, interest in pornography; Hall & Farber, 2001). Additionally, men and women appear to disclose information in therapy to a similar extent and regarding similar topics (Farber & Hall, 2002; Farber, 2003).

Overall, it seems as though most clients do feel that therapy is a safe place to discuss the important issues in their lives (e.g., feelings of depression, frustration, anger, and inadequacy) and clients typically come to therapy aware of the areas in which they struggle most (Farber & Hall, 2002). In fact, Farber and colleagues (2004) found that most clients believe it is "always better" to share their thoughts and feelings with the therapist rather than withhold them, despite

the potential for negative emotional experiences. Clients also seem to believe that “keeping secrets” from their therapist hinders the work they “signed up for.” The results of the Farber et al (2004) study further revealed that, although clients typically experience anxiety before and during the disclosure of intimate information to their therapist and often feel vulnerable after the disclosure, they also experience a sense of relief from emotional and physical tension and a feeling of “authenticity” (both regarded as positive emotions).

On the contrary, research has shown that clients may choose not to disclose important information for a variety of reasons, such as fear of embarrassment, fear of feeling overwhelmed by their emotions or fear of addressing certain thoughts, fear that the therapist will not understand or will not be interested in the disclosure, thoughts that the therapist will not be able to handle the disclosure, concerns related to self-presentation, beliefs that the disclosure would be hurtful to the therapist, and feelings of shame, apprehension, and/or insecurity with regards to the disclosure (Hill, Thompson, Cogar, & Denman III, 1993; Kelly, 1998; Farber, 2003). In fact, studies have found that nearly half of long-term psychotherapy clients (40-46%) acknowledge having secrets within the therapy context, and nearly two-thirds (65%) report leaving some things unsaid during sessions (Hill et al., 1993; Kelly, 1998). Research also has shown that clients hide their negative reactions in therapy more often than they hide their positive reactions (Regan & Hill, 1992; Hill et al., 1993); and when clients feel stuck, lacking in direction, confused, misunderstood, scared, or worse, they do not want their therapist to know about it and therefore inhibit disclosure (Hill et al., 1993). This information is important to the current study as it sheds light on common trends seen with clients in regards to patterns of disclosure in therapy.

Disclosure and Therapeutic Outcome Relationship

Much of the research on self-disclosure has been driven by the notion that an individual's ability and willingness to disclose information about themselves openly and honestly to others aids in the maintenance of good mental health (Jourard, 1971). What is more, self-disclosure seems to be most emphasized, valued, and expected within a therapist's office, and has long been considered a vital component of psychotherapy (e.g., Freud's "fundamental rule" that a client must disclose everything that comes to mind; Farber, Berano, & Capobianco, 2004).

Correspondingly, Pennebaker (1997) stated, "the mere act of disclosure is a powerful therapeutic agent that may account for a substantial percentage of variance in the healing process" (p. 162).

It is assumed that the more a client shares and is open with his or her thoughts and feelings, the more a therapist will be able to help him or her (Stiles, 1987; Farber, 2003). Moreover, the more a client discloses in therapy, the better the therapeutic outcome (Farber, 2006; Hill, Gelson, Mohr, 2000; Regan & Hill, 1992). There is evidence to suggest that when a client disengages from or resists emotional experiences in session, beneficial emotional processing becomes very difficult and can thus negatively affect the client's therapeutic gain (Greenberg & Pascaul-Leone, 2006; Donnelly & Murray, 1991). For example, Hunt (1998) found that, after a dysphoric mood induction, participants who were instructed to attend to their painful or distressing emotions via writing about them (i.e., did not resist or disengage from their emotional experiences) experienced less distress in the long term when compared to participants who were instructed to use a distraction coping strategy (e.g., write about their favorite television show). This is important to the current study as the author intended to provide evidence for the use of a mindfulness exercise as a means to increase distress disclosure, and therefore increase therapeutic benefit to the individual.

Lutgendorf and Antoni (1999) provided further evidence for the facilitation of client emotional involvement during disclosure. They utilized a three-session verbal disclosure paradigm in order to investigate the relationship between disclosure and changes in affect, cognitive processing, and “resolution of the stressor.” Seventy-six “healthy” college undergraduates were randomly assigned to either a verbal disclosure condition or an assessment only condition. Participants in the verbal disclosure condition engaged in three twenty-minute disclosure sessions over the course of three weeks; they were asked to discuss with the experimenter (an advanced psychology graduate student) a stressful, traumatic, or guilt-inducing event they experienced and have not heavily discussed with others. During the first disclosure session, the experimenter engaged in reflective listening for the first 6 minutes, and then utilized responses designed to foster the participant’s involvement in disclosure for the remainder of the session. At the outset of the second and third disclosure sessions, participants were given an experiential exercise to increase their level of involvement in the disclosure process. This exercise asked participants to recall the topic they discussed the previous week and to describe the feelings and bodily sensations they were experiencing at that moment of bringing the topic to mind. Then, they were asked to return to discussing that topic or to select another stressful or traumatic topic if the original topic seemed “resolved.”

In order to evaluate participants “resolution” of the event, Lutgendorf and Antoni (1999) used a self-report measure that assessed symptoms of cognitive intrusions and avoidance related to the trauma or stressor within the past week. “Insight” was assessed using a Likert-rated question in which participants were asked the extent that they were able to see “new facets” of the original stressful/traumatic topic. Involvement in disclosure was evaluated by two trained independent raters using the Experiencing Scale. Low scores on this scale indicate “emotional

distance” from the topic being discussed, and high scores indicate “intense affective and cognitive involvement in the disclosure process as well as active engagement in trying to conceptualize issues in a new way” (Lutgendorf & Antoni, 1999, p. 428).

Lutgendorf and Antoni (1999) found that greater involvement during the verbal disclosure paradigm significantly predicted greater mood recovery and insight by the end of the study. In other words, it was not just the act of talking per se, but the act of talking with involvement in the disclosure process that produced beneficial cognitive and affective change. Interestingly, the disclosure group increased in session involvement from session 1 to session 3, while their quantity of expression (i.e., total words) decreased over the study (Lutgendorf & Antoni, 1999). This suggests that the participants were able to deepen their experiential involvement as they became more comfortable with the disclosure process. Lutgendorf and Antoni (1999) note that experiential involvement in the disclosure process is defined as involving emotional contact with the topic being discussed, as well as “thoughtful exploration” of the issue. They indicate that this finding is consistent with the idea that therapeutic involvement and quantity of expression are two independent constructs. This study further revealed that quantity of expression was related to higher levels of negative mood and higher levels of intrusive thoughts by the last session; whereas greater involvement and greater negative mood arousal during the disclosure process contributed marginally to lower intrusion levels post-disclosure. Lastly, greater involvement was related to greater insight and greater negative mood reduction by the last session (Lutgendorf & Antoni, 1999). Simply stated, this research points to the importance of experientially engaging and “deepening” participants disclosure experience, so as to increase the therapeutic benefits of such disclosure.

Sloan and Kahn (2005) suggest that clients with the tendency to self-disclose may experience greater improvement due to greater in-session self-disclosure. They go on to suggest that increasing a client's tendency to self-disclose, possibly via therapeutic interventions, may be a useful way of reducing distress and increasing the benefits of therapy. However there is also the possibility of client disclosures reflecting more "trivial experiences" (as opposed to more intense emotional experiences) and functioning as a way to avoid or protect themselves from deeper, more emotional disclosures (Garrison & Kahn, 2010). Farber (2003) also suggests the possibility of clients engaging in a high amount of disclosure across a wide variety of topics as a form of resistance and/or as a means to avoid focusing on issues that are most critical. Similarly, clients may deliberately choose to not disclose certain information as a way to reduce their anxiety (Farber, 2003). It seems then, given the information outlined above, it is important to examine interventions used by therapists to increase client self-disclosure and facilitate the emotional involvement in that disclosure, and to determine if they are indeed effective.

Disclosure and Expressive Writing

The expressive writing paradigm is used to investigate the beneficial effects of writing about one's deepest thoughts and feelings with regards to a specific topic, and reflecting upon those experiences. This paradigm typically consists of having participants come to a lab for three to five sessions of 15-20 minutes each. During each session, participants either write expressively about a personally distressing or traumatic event (i.e., experimental condition), or they write about a trivial or neutral topic that does not involve any emotion per se (i.e., control condition). Overall, disclosing about past traumatic or distressing experiences results in positive outcomes for psychological health, physical health, and well-being (Frattaroli, 2006). Although his meta-analysis revealed a small overall effect size for experimental disclosure (Cohen's $d =$

.15), Frattaroli noted, “When one considers that the act of disclosing has virtually no costs – it is a free, noninvasive, independent activity and is perceived by participants to be helpful – it seems that any effect that is nonzero and in the positive direction is worth noting,” (p. 851).

By extension, expressive writing may be considered somewhat analogous to self-disclosure in therapy such that participants/clients are asked to share private and often unpleasant or aversive information about themselves using both descriptive and emotional words (e.g., facts about the event, thoughts and feelings related to the event). Thus, research utilizing expressive writing is thought to provide indirect support for the usefulness of disclosure in a clinical setting (Farber, 2006). Pennebaker and Beall (1986) first employed an experimental expressive writing paradigm in which participants were asked to write about either personally traumatic life events or trivial topics on 4 consecutive days. It was suggested that participants who routinely avoid or inhibit their aversive emotions would benefit the most from expressive writing tasks because of the reduction in stress related to the inhibition of such internal processes. Pennebaker and Beall found that writing about traumatic experiences (including both the emotions and facts surrounding a traumatic event) was related to increased physiological arousal in the short-term (immediately following the writing sessions) and a decrease in health problems in the long-term (i.e., fewer health center visits in the 6 months following the study). Furthermore, participants who were asked to write only about the facts of the traumatic event (i.e., without referring to their emotions about the event) were similar to the control participants (who wrote about trivial topics) on most physiological, health, and self-report measures. Pennebaker and Beall suggested their results indicate the importance of attending to the emotions evoked by past traumatic experiences.

Overtime, researchers have continued to examine the process of expressive writing in order to better understand and determine the essential mechanisms and active ingredients involved in its effects. For example, Pennebaker and Francis (1996) studied the effects of expressive writing in a sample of 72 first year college students who were randomly assigned to write for three consecutive days, either about their thoughts and feelings associated with coming to college or about superficial topics. The results of this study indicated that participants in the experimental condition evidenced a decrease in visits to the health center in the two months following the experiment (medium effect size). Furthermore, increased use of positive emotion (e.g., joyful, happy, elegant), insight (e.g., realize, see, understand) and causal (e.g., because, infer, thus,) words was associated with improved health (i.e., reduced illness related health center visits) among participants in the experimental expressive writing group.

Pennebaker, Mayne, and Francis (1997) replicated the above findings and also revealed that the more positive emotion words a participant used in their expressive writing the better their subsequent health. Additionally, using a moderate number of negative emotion words (e.g., angry, sad, wrong) also was related to better health; however, both very low levels and very high levels of negative emotion words was related to poorer health outcome. The authors also found that participants whose expressive writing was poorly organized at the beginning of the study and then progressed to a more coherent story by the end of the study benefited the most from the writing procedure. In summary, research examining expressive writing has found that improved physical health is reliably predicted by three linguistic factors: (1) the use of more positive emotion words, (2) the use of a moderate number of negative emotions words, and (3) the increase in causal and insight words over the course of writing (Pennebaker, 1997).

In 1999, Pennebaker and Seagal posited that once an experience is structured into a coherent “story” with related thoughts and feelings also being integrated (as is often done in psychotherapy), the emotions resulting from that experience will become more “manageable” to the individual. Additionally, converting images and emotions into words may change the way an individual thinks about or organizes a distressing event, and may give alternative “meaning” to the event (Pennebaker & Seagal, 1999). Similarly, Esterling, L’Abate, Murray, and Pennebaker (1999) suggested that writing or talking about traumatic experiences helps an individual label their emotions, better understand his/her emotions, and “let go” of the emotions. However, this process may only be possible if the individual is willing and able to disclose such information, as well as come into greater experiential contact with it via such disclosure. Thus, research investigating therapeutic interventions that promote this behavior seems warranted.

One of the highly relevant proposed mechanisms of action within the expressive writing paradigm comes from Bootzin (1997). It is suggested that the expressive writing task produces its effects through repeated exposure (via writing) to thoughts and feelings associated with a traumatic or stressful event, thus leading to habituation of the negative emotions originally associated with the event. This suggests that the expressive writing procedure may be analogous to exposure therapy. For example, Frattaroli (2006) completed a meta-analysis that also supports this exposure theory. She found that studies with at least three writing sessions had marginally larger effect sizes than studies with fewer than three sessions, and studies with sessions that lasted at least 15 minutes each had significantly larger effect sizes than studies with shorter sessions.

The theory behind successful exposure treatment also involves the individual experiencing intense negative affect when initially exposed to the highly aversive stimulus,

which would then be followed by a gradual decrease in affect upon repeated exposures (Foa & Kozak, 1986). Consistent with Bootzin's theory, Guastella and Dadds (2006) found that participants in an expressive writing group that focused on exposure (i.e., participants were asked to describe the traumatic or stressful event in great detail as well as describe their reactions to the event and any perceptual images they had about the event) reported experiencing the greatest somatic and physiological arousal during the intervention when compared to all other groups (i.e., standard writing procedure, devaluation instructions, benefit finding instructions, and a control writing group that wrote perceptual details about 3 neutral environments). Furthermore, over the course of the study, the exposure writing participants also experienced a reduction in their somatic and physiological arousal, which is suggestive of habituation (Guastella & Dadds, 2006).

Sloan and Marx (2004) also employed the written disclosure paradigm to investigate its beneficial effects related to therapeutic exposure. Participants were randomly assigned to a written emotional disclosure or control writing condition. Both subjective and physiological measures were used to examine participant's reactivity to the writing sessions (3 writing sessions across 3 consecutive days, lasting 20 minutes each). Sloan and Marx (2004) found that participants in the trauma disclosure group experienced greater physiological activation than the control group during the first session of expressive writing. Moreover, those participants that experienced greater initial activation were more likely to experience a greater decrease in psychological symptoms at follow-up.

Sloan and Marx (2004) note that, in a standard expressive writing protocol, the participant is not required to write about the same traumatic or distressing event at each session. They suggest that this is somewhat inconsistent with the theory of exposure as stated above, such

that repeated exposure to the same aversive experience or memory is necessary for a successful outcome. Rather, Sloan and Marx (2004) suggest that it is the exposure to any stimulus that produces the targeted affective response (i.e., fear, sadness) that is critical to successful exposure-based treatment, as opposed to repeated exposure to the same stimulus (i.e., trauma memory). This suggestion was made in response to their findings in which the standard expressive writing protocol (i.e., participants were not required to write about the same traumatic event during the expressive writing sessions) resulted in beneficial outcomes for participants in the trauma disclosure condition.

As will be discussed further below, mindfulness exercises are considered analogous to exposure exercises (Baer, 2003). For example, according to Acceptance and Commitment Therapy (ACT), which incorporates mindfulness exercises to target present-moment awareness and experiential acceptance, “exposure is the organized presentation of previously repertoire-narrowing stimuli in a context designed to ensure repertoire expansion” (Hayes, Strosahl, & Wilson, 2012, p. 284). The authors go on to explain that within the ACT model, acceptance exercises (e.g., mindfulness exercises) are not intended to reduce the practitioners experience of emotions (i.e., reduce symptoms or arousal). Rather, acceptance exercises encourage the practitioner to “learn to stand in the presence of private experiences while functioning in a more free, flexible, and values-based way” (Hayes et al., 2012, p. 284). Linehan (1993a, 1993b) also suggests that, without employing avoidance or escape strategies, observation of present-moment emotions and thoughts in a prolonged and nonjudgmental/accepting fashion should facilitate a decrease in the practitioner’s avoidance behaviors and reactions that were previously elicited by such uncomfortable emotional states.

Overall, experimental disclosure (i.e., talking or writing expressively) is beneficial for one's physical health, psychological health, and overall functioning (Frattaroli, 2006). More specifically, research has shown that it is of greater benefit to write about facts, emotions, and cognitions related to a traumatic event, as compared to writing solely about facts or solely about emotions (Pennebaker & Beall, 1986). Research also has shown that increased use of positive emotion words, insight words, and causal words is associated with improved health.

Additionally, there appears to be a curvilinear relationship between the use of negative emotions words and improved health, as well as a significant positive relationship between increased coherency in participants' narratives and improved health (Pennebaker, 1997). Lastly, and of particular importance to the current study, the literature suggests that expressive writing may be analogous to the disclosure that occurs in a therapeutic setting, and that a possible mechanism of action in expressive writing may be its similarities with exposure therapy and therapeutic strategies (Sloan & Marx, 2004 ;Guastella & Dadds, 2006). As such, finding a way to incorporate and facilitate the type of disclosure that occurs in expressive writing into an individual therapy session may prove beneficial in facilitating the therapeutic process and thereby resulting in positive therapeutic outcomes.

Distress Disclosure

Another important aspect of client disclosure, and one that has recently gained increasing attention, is the concept of distress disclosure. Coates and Winston (1987) suggest that distress disclosure "reflects one's open expression of unpleasant feelings." More recently, Kahn and Hessling (2001) conceptualize distress disclosure as a behavioral tendency and as a unidimensional construct that may affect one's psychological health, with concealment of distress on one end and disclosure of distress on the other. Kahn and Hessling (2001) developed

the Distress Disclosure Index (DDI) to assess individual differences in the self-reported tendency to conceal versus disclose distress (i.e., talk to others about their distress) across multiple situations and across time. The DDI contains items pertaining to disclosure behaviors as well as concealment behaviors. Furthermore, because the DDI focuses on the verbal expression of distress, it is thought to be useful in examining individual differences in emotional self-disclosure and expression that are pertinent to the therapeutic change process (Kahn, Hucke, Bradley, Glinski, & Malak, 2012).

Kahn and Hessling's (2001) research using the DDI demonstrated that disclosers (i.e., high scorers) report higher self-esteem and greater life satisfaction than concealers (i.e., low scorers). Their research also revealed that the construct of distress disclosure is temporally stable among undergraduate students, which supports the idea of it being a trait-like quality. Lastly, they found a positive correlation between distress disclosure and perceived social support, suggesting that individuals who have a tendency to disclose their distress to others have support networks that offer them additional strengths.

Researchers have also examined the DDI's predictive ability in different contexts, such as differing mood states. For example, Kahn, Lamb, Champion, Eberle, and Schoen (2002) examined whether one's self-reported disclosure tendency could predict their disclosure during a structured interview following a mood manipulation procedure. Participants viewed either a distressing or non-distressing film after being pretested with the DDI; participant's reactions to the film then were assessed via a structured interview. Three trained observers independently counted the participant statements made during the interview that reflected their experience of distress (e.g., "that made me upset") as well as the denial of distress (e.g., "I was not bothered by the film"). Results indicated that participant's DDI scores significantly predicted the number of

distressing emotional statements they disclosed during the interview. Specifically, participants who at pretest indicated a greater tendency to disclose distress acknowledged experiencing more distress to the interviewer following the film presentation. Scores on the DDI also significantly predicted observer's ratings of how much distress was expressed by participants during the interview (i.e., independent ratings made by the observers using the negative affect scale of the PANAS). Although they were blind to participants DDI scores, observers rated high distress disclosers as expressing more distress during the structured interview than low distress disclosers. This research supports the predictive validity of the DDI as well as its ability to predict observable outcomes in an experimental situation (Kahn et al., 2002).

Research using the DDI also has found that distress disclosure is negatively correlated with depressive symptoms. This suggests that clients who are experiencing the most distress are also those who tend to conceal that distress from others (Kahn et al., 2001; Kahn & Hessling, 2001; Kahn & Garrison, 2009; Garrison & Kahn, 2010). Furthermore, Campbell-Sills and Barlow (2007) indicate that individuals with mood and anxiety disorders tend to inhibit and avoid emotional experiences as well as the behavioral expression of negative emotions. Their research also indicates that individuals with anxiety and mood disorders judge their emotions as being less acceptable and tend to engage in suppression of their emotions to a greater extent (Campbell-Sills, Barlow, Brown, & Hofmann, 2006). By extension, these individuals may also be more likely to avoid the disclosure of such emotional content as a means to avoid experiencing aversive and distressing emotions.

Rude and McCarthy (2003) examined the emotional functioning (i.e., attitudes about and ways of reacting to negative emotion) of college students who were classified as depressed, depression-vulnerable, or nondepressed. They found that participants who were classified as

depressed (i.e., currently experiencing at least mild symptoms of depression; score of 14 or higher on Beck Depression Inventory) reported being less willing (and thus less likely) to disclose their unpleasant emotions to others. Their research also revealed that depressed and depression-vulnerable (i.e., have a history of depression) participants engaged in significantly more thought suppression than nondepressed participants (Rude & McCarthy, 2003). This avoidance of negative emotions may therefore impact the emotional content of disclosures, such that these individuals talk less about negative emotions/thoughts with others as a means to avoid them (Campbell-Sills & Barlow, 2007; Kahn et al., 2008; Kahn & Garrison, 2009). Garrison and Kahn (2010) found similar results, such that participants with even subclinical levels of depression share their emotions about daily events to a lesser degree than less-depressed participants; this pattern was seen particularly with emotionally intense daily events, as depression was unrelated to the disclosure of low-intensity daily events. The authors suggest that highly intense events are “most threatening” for individuals, and thus the level of emotional avoidance is likely “maximized” for these events, which results in lower levels of disclosure.

More recently, Kahn and Garrison (2009) designed a study to determine whether emotional avoidance mediates the relationship between emotional self-disclosure and symptoms of anxiety and depression. The authors restricted their research to the process of talking with others about personal information and they describe emotional self-disclosure as “a verbal form of emotional expression whereby an emotional experience is articulated into words and then communicated to another person via written or spoken channels” (p. 573). More specifically, in their first study, they looked at participants’ mood and anxiety symptoms, their general tendency to disclose distressing emotions, and their general tendency to engage in expressive suppression (i.e., “attempts to mask observable signs of what one is feeling from others” p. 574); as previous

research, such as that of Campbell-Sills and Barlow (2007), has found that individuals with mood and anxiety disorders tend to avoid the behavioral expression of emotions. The results of this study indicated that symptoms of anxiety and depression were significantly and positively related to participant's tendency to engage in expressive suppression, and significantly and negatively related to participants' typical distress disclosure (Kahn & Garrison, 2009). Furthermore, expressive suppression was significantly and negatively related to participants' general tendency to disclose distress and was found to be a "strong and significant" predictor of this. In other words, the relationship between symptoms of depression/anxiety and participants' typical self-disclosure of distress was fully mediated by participant's tendency to avoid the expression of emotion (i.e., expressive suppression).

In their second study, Kahn and Garrison (2009) looked at participants' symptoms of depression and anxiety, disclosure of a specific emotional event, and participants' avoidance of the emotional experiences related to that event (i.e., subjective feeling states such as sadness, joy, anger). Emotional avoidance was measured using a rating scale developed by the authors in which participants were asked to rate on a 5-point scale how much they have distracted themselves from thinking about the event, ignored their feelings related to the event, or thought over and over about the event. Kahn and Garrison found that higher symptoms of depression were associated with diminished self-disclosure of a specific emotional event and predicted the avoidance of emotional experiences related to that event; symptoms of anxiety were not related to event self-disclosure and did not predict emotional avoidance. Furthermore, participants who typically disclose more distress were more likely to talk about the specific emotional event than participants who typically disclose less distress. However, emotional avoidance of the event was not associated with participants' emotional disclosure related to the event; thus, emotional

avoidance did not mediate the symptom-disclosure relationship, which contradicted Kahn and Garrison's hypothesis.

Given these results, Kahn and Garrison (2009) suggest that methodological differences between the two studies may explain the non-significant relationship between emotional avoidance and event disclosure found in Study 2. For example, Study 1 focused on participant's general tendencies to self-disclose and avoid emotions; whereas Study 2 looked at participant's disclosure and emotionally avoidant responses to a specific event, which may have been idiosyncratic. Additionally, Study 1 measured avoidance of emotional expression, whereas Study 2 measured avoidance of emotional experience. Thus, Study 1 remains supportive of the current research study, such that, it suggest that reducing ones avoidance of the expression of emotion (i.e., expressive suppression) may result in an increase in self-disclosure of distress to others.

Lastly, the DDI has also been used to examine the impact of disclosure on therapeutic outcomes. In their research examining the relationship between trait distress disclosure and therapeutic outcomes, Kahn, Achter, and Shambaugh (2001) found that the DDI was a predictor of improvement in counseling; such that the self-reported tendency to disclose personal distress was associated with a significantly greater decrease in client-reported symptomatology and perceived stress over the course of counseling in comparison to participants who reported a tendency to conceal distress. They also found that, prior to beginning counseling, self-reported distress disclosure tendencies significantly correlated with perceived social support (strong relationship). As such, Kahn et al., suggest that clients who enter counseling with a tendency to disclose personally distressing information with others may facilitate the counseling process because they possess important interpersonal skills. They also go on to state that clients with this tendency may feel more positive about the therapeutic relationship and the therapeutic process

(i.e., disclosing their distress to the counselor) than those clients who tend to refrain from disclosing their distress. Kahn et al. (2001) suggest that clients with a tendency to engage in distress disclosure are able to disclose aversive thoughts and emotions more so than nondisclosures. As a result, the disclosures may be in a better position to benefit from therapeutic interventions.

Sloan and Kahn (2005) investigated how different disclosure tendencies affect psychotherapeutic outcomes among clients at a university counseling center. They found that a client's self-reported tendency to engage in distress disclosure was moderately, but not significantly, related to the client's self-reported level of disclosure in an individual therapy session. However, clients with a high disclosure tendency reported being more likely to discuss and disclose material related to their therapeutic goals during individual therapy sessions (strong, positive relationship). These results suggest that with regard to individual therapy, clients with low disclosure tendencies may be less likely to engage in the discussion of information most relevant to desired therapeutic goals (Sloan & Kahn, 2005).

In a similar study, Kahn, Vogel, Schneider, Barr, and Herrell (2008) looked specifically at the emotional content of client disclosure rather than viewing all disclosure as equivalent. They initially found a non-significant zero-order correlation between client disclosure and session depth (i.e., value; evaluated via observer ratings). However, after controlling for the emotional content of disclosures made by clients (as judged by independent raters and computer analysis of the participants use of positive and negative emotion words), Kahn et al. (2008) found that emotional content of client disclosure significantly predicted session depth above and beyond the total number of disclosures. In other words, the sessions in which clients revealed a relatively higher percentage of disclosures and whose disclosures included relatively high

emotional content, tended to be rated by observers as having more depth. Additionally, a negative correlation was found between client disclosure and affective word usage, which supports the idea of some clients engaging in a greater number of disclosures (likely to be trivial in nature) as a way to avoid disclosing deeper emotional material. Given these results, Kahn et al. (2008) suggest that conducting further research aimed at understanding the process of client distress disclosure in psychotherapy may help identify interventions that promote session impact (e.g., increase in-session distress disclosures), with the result being more successful client outcomes.

In summary, distress disclosure (conceptualized as a trait and relating to one's openness to and expression of uncomfortable thoughts and emotions) appears to be an important area of research, especially how this individual trait may pertain to the therapeutic process. Studies have shown that individuals who are low in this trait are less likely to reveal important emotional information to others (Kahn et al., 2008). Past research has also shown that a self-report measure of distress disclosures (the DDI) is able to predict participant's disclosure behavior in an experimental condition (Sloan and Kahn, 2005). DDI scores have also been positively related to therapeutic outcomes (Kahn et al. 2001). Given this information, the current study hopes to better understand how trait distress disclosure relates to participants' emotional expression and disclosure during an expressive writing task. Additionally, as it is anticipated that distress disclosure is positively related to mindfulness, the utility of using mindfulness exercises to promote emotional expression and disclosure during therapy sessions warrants further investigation.

Mindfulness

Mindfulness is generally defined as: “paying attention in a particular way: on purpose, in the present moment, nonjudgmentally” (Kabat-Zinn, 1990, p. 4); “an open hearted, moment-to-moment, nonjudgmental awareness” (Kabat-Zinn, 2005, p. 24); “a receptive attention to and awareness of present events and experience” (Brown, Ryan, & Creswell, 2007, p. 212); and as a “different” way of relating to one’s inner and outer world as it occurs from one moment to the next, including thoughts, emotions, physical sensations, surroundings, and behavioral actions (Brown et al., 2007). Furthermore, mindfulness is considered an inherent ability to all humans; however, it can vary in strength from person to person as well as within person (Brown & Ryan, 2003).

Assuming a “mindful stance” towards one’s emotional experiences involves observing and noticing emotions as they naturally take place, instead of attempting to avoid, escape, control, change, or alter them in some way; it is being actively engaged with observed experiences, and not resigning, disengaging, or dissociating from them (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Mindfulness also involves bringing acceptance, openness, curiosity, and compassion to your emotional experiences and simply allowing them to arise (Bishop et al., 2004; Erisman & Roemer, 2010). A number of therapeutic interventions using mindfulness encourage an attitude of acceptance and nonjudgmentality towards one’s experiences as a way to facilitate increased and more direct contact with aversive or uncomfortable internal events (Hayes, Strosahl, & Wilson, 2012; Kabat-Zinn, 1990; Linehan, 1993a).

Additionally, mindfulness promotes the ability to recognize when one is “caught up” in thoughts and emotions about the past, present, or future, and enables the individual to return his

or her awareness to what is actually taking place in the present moment. This notion is highlighted in Brown and colleagues (2007) statement that “when consciousness dwells in thought-generated accounts of the past, present, and future, current reality, as it actually offers itself, is often ignored or only partially experienced” (p. 214). Thus, noticing that one is no longer present is itself an example of mindfulness. Another important aspect of mindfulness is gaining clarity of one’s experience and gaining the ability to disengaging from “holding the experience to be literally true,” which then makes it possible for the individual to respond differently to difficult internal events (i.e., no longer have to try to make the experience different or control it; Walser & Westrup, 2007, p. 25).

Self-reported trait mindfulness, or “dispositional mindfulness,” has been associated with greater well-being, life satisfaction, self-esteem, optimism, positive affectivity, and emotional intelligence (Brown & Ryan, 2003); as well as higher levels of self-compassion (Shapiro, Brown, & Biegel, 2007) and greater empathy for others (Shapiro, Schwartz, & Bonner, 1998). It has also been associated with lower levels of depression, anxiety, negative affectivity, alexithymia (i.e., difficulty identifying feelings), thought suppression, dissociation, and emotion regulation difficulties (Baer, Smith, & Allen, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003). Research indicates that individuals with higher trait mindfulness are more likely to be momentarily mindful; however, the effects of trait and state mindfulness have been shown to be independent, such that individuals who are low in the disposition can experience heightened instances of mindfulness and the benefits it lends to (e.g., higher positive affect and lower negative affect; Brown & Ryan, 2003; Lau et al, 2006).

Recent research has linked mindfulness with less habitual responding (Wenksormaz, 2005), less emotional reactivity and volatility to repetitive thoughts (Feldman, Greeson, &

Senville, 2010) and external stressors (e.g., aversive pictures, Arch & Craske, 2010). Research also suggests that mindfulness facilitates greater awareness, understanding, and acceptance of emotions and may thus be helpful in improving emotion regulation (Baer et al., 2004; Brown & Ryan, 2003; Erisman & Roemer, 2010). Furthermore, mindfulness may facilitate behavioral regulation such that more adaptive and flexible actions are possible via increased awareness of internal and external information, and reduced automatic, habitual, and impulsive reactions (Bishop, Lau, Shapiro, Carlson, Anderson, & Carmody, 2004). Brown and colleagues (2007) eloquently state, “Because mindfulness permits an immediacy of direct contact with events as they occur, without the overlay of discriminative, categorical, and habitual thought, consciousness takes on a clarity and freshness that permits more flexible, more objectively informed psychological and behavioral responses” (p. 212). In other words, being aware and nonjudgmentally observant of one’s thoughts and emotions, as well as one’s impulses to react behaviorally to such internal events, creates a “space” in which the individual may choose the most adaptive response given the situation (Brown et al., 2007).

A variety of mindfulness and acceptance-based interventions have been developed, empirically tested, and are showing positive results in the treatment of a variety of psychological difficulties (Baer, 2003). For example, Kabat-Zinn (1990) developed the Mindfulness-Based Stress Reduction (MBSR) program which evidences a variety of beneficial outcomes related to well-being (e.g., reducing distress related to physical pain and psychosomatic illnesses) as a result of enhancing mindfulness through training (Grossman, Niemann, Schmid, & Walach, 2004). Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), Acceptance and Commitment Therapy (ACT; Hayes et al., 2012), Acceptance-Based Behavioral Therapy (ABBT; Roemer & Orsillo, 2007), and Dialectical Behavior Therapy (DBT; Linehan,

1993a) are all psychological interventions that incorporate mindfulness. Of these interventions, MBSR is the one that most strongly emphasizes meditative practice as a mode of personal growth and development; whereas MBCT, ACT, DBT and AABT use non-meditative experiential exercises to enhance individual's awareness of emotions, thoughts, physical sensations, and actions. All five treatment modalities are multidimensional and utilize a variety of methods to enhance mindfulness and encourage acceptance of present-moment experiences (e.g., metaphors, labeling of thoughts and emotions, nonreactive observation of thoughts and emotions; Brown et al., 2007).

A recent meta-analysis including 39 studies, each involving some form of mindfulness-based therapy, found large effect sizes with regards to reducing anxiety and mood symptoms for participants diagnosed with an anxiety or mood disorder, and moderate effect sizes for reducing anxiety and mood symptoms in the overall sample from pre- to post-treatment (Hofmann, Sawyer, Witt, Oh, 2010). Based on their results, the authors of this meta-analysis go on to suggest that mindfulness-based therapies may target processes evident in numerous psychological disorders by modifying a range of “emotional and evaluative dimensions that underlie general aspects of well-being” (Hofmann et al., 2010, p. 180). Thus, the effects of mindfulness interventions may not be diagnosis specific, and may be beneficial to incorporate in treatment with individuals who have varying symptoms and degree of symptoms.

In contrast to the active acceptance of internal experiences, an effort to suppress or get rid of one's emotions or thoughts often has a paradoxical effect (i.e., increase intensity of the emotion and/or accessibility of the thought; Wegner, 1994; Wenzlaff & Wegner, 2000). A related construct to this, and to mindfulness by extension, is that of experiential avoidance (Baer, Smith, Lykins, Button, Krietemeyer, Sauer, et al. 2008). Experiential avoidance is described as

occurring “when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form, frequency, or situational sensitivity of these experiences even though doing so is not immediately necessary” (Hayes et al., 2012, p. 72-73). Specifically, Hayes and colleagues emphasize the “function” of psychological and behavioral processes rather than the “form” per se, and suggest that experiential avoidance serves as the function of many clinical problems. Evidence has demonstrated that experiential avoidance is related to the development and maintenance of many different forms of psychopathology and behavioral problems (for review see Chawla & Ostafin, 2007). Experiential avoidance has also been shown to interfere with quality of life and has been linked more specifically to increases in unwanted thoughts, feelings, or sensations (i.e., the targets of avoidance) and increase in general psychological distress (Salters-Pedneault, Tull, & Roemer, 2004). In a study designed to examine the structures and facets of mindfulness using self-report assessments, Baer et al. (2006) found that a self-report measure of experiential avoidance was significantly and negatively correlated with self-report measures of mindfulness. Thus, individuals who tend to engage in experiential avoidance strategies (e.g., suppression, distraction) are more likely to be less aware of their present moment experiences. Given this information, it may be beneficial for future research to continue investigating the relationship between increasing present moment awareness and decreasing experiential avoidance. The present study is attempting to investigate this effect using a single mindfulness exercise and a written emotional expression paradigm.

A vast amount of research has been conducted in the area of acceptance versus suppression, and how these different forms of instruction can affect the outcome of biological challenges. For example, Levitt, Brown, Orsillo, and Barlow (2004) investigated the effects of

directions to accept versus directions to suppress thoughts and emotions in patients diagnosed with panic disorder and their response to a carbon dioxide challenge. The authors hypothesized that, in response to the biological challenge, participants in the acceptance group would report less intense panic symptoms and subjective anxiety, as well as have lower physiological responses and less avoidance of an additional challenge, in comparison to the participants in the suppression group and the control group. Results of this study partially supported the authors' predictions. Primarily, participants in the acceptance group reported less subjective anxiety and displayed greater willingness to engage in a second challenge when compared to participants in the control or suppression conditions (Levitt et al., 2004). However, there were no group differences found with regard to self-reported symptoms related to panic (e.g., heart pounding, shortness of breath, fear of dying) or physiological arousal (i.e., heart rate and skin temperature) during the challenge.

As such, the results of Levitt et al.'s study indicate that participants in the acceptance group did not judge their symptoms of panic as negatively as participants in the other two groups, even though all three groups experienced similar symptoms. The authors point out that the results of their study are in line with two important goals of acceptance-based interventions: "(1) to encourage patients to experience emotions fully, without judging or evaluating them, and (2) to increase patients' willingness to participate in valued activities" (Levitt et al., 2004, p. 761). When looking at the emotion regulation strategies participants used during the challenge (i.e., manipulation check), the results indicated that participants in the acceptance group experienced less subjective anxiety and greater willingness because they used greater acceptance strategies and fewer suppression strategies. The authors also note that these findings are consistent with the use of acceptance-based interventions to decrease experiential avoidance (i.e.,

by employing less suppression-based strategies) and facilitate behavior change (i.e., by increasing one's willingness to experience aversive internal events; Levitt et al., 2004).

A study conducted by McMullen et al. (2008) provided evidence for the importance of including experiential exercises and metaphors when conducting experimental analogues of acceptance-based interventions. Before and after engaging in their prescribed intervention, participants were asked to partake in a simple computer matching task in which points were awarded for correct responses; after approximately every 11th trial participants were presented with the on-screen options to "Click here to receive a shock and continue" or "Click here to end the experiment" (McMullen et al., 2008, p. 124). Participants were told that the purpose of this study was to help identify useful coping strategies for people suffering from disabling chronic pain, and they were provided with a scenario in which someone with chronic pain had to work at a monotonous job in order to earn money for their family, despite their chronic pain. This study revealed that only the participants who received an acceptance-based metaphor and exercise (compared to distraction-based metaphor and exercise, acceptance-based written instruction, and distraction-based written instructions) displayed a significant increase, relative to baseline, in the number of self-delivered electric shocks administered after the intervention. Furthermore, participants in both acceptance-based groups were more likely to continue with the task after having engaged in their respective acceptance-based intervention (i.e., acceptance metaphor and exercise, or instruction-based acceptance), despite an increase in self-reported pain (McMullen et al., 2008). In other words, the acceptance interventions appear to have been useful in fostering participant's ability to disconnect their thoughts and feelings from their actions and continue with the study despite experiencing pain.

Another important study that utilized a brief mindfulness exercise to facilitate participants' emotional and behavioral willingness includes Arch and Craske (2006). The authors experimentally induced mindfulness with a 15-minute focused breathing exercise that utilized mindfulness of breath instructions. They were interested in the effects of this intervention on participants' emotional and behavioral responses to negative, positive, and neutral pictures. The authors also included a "worry" condition and an "unfocused attention" condition. Results of note include the focused breathing groups' greater willingness to view all 25 of the negative pictures when compared to the other groups. Additionally, when compared to the worry group (i.e., participants who were instructed to worry consecutively about six different content domains), the focused breathing group evidenced flatter and less varied emotional responses to the images, especially in response to the negative pictures (Arch & Craske, 2006). Based on these results, the authors suggest that the focused breathing group was better prepared to view the slides as "just pictures" and evidenced a greater ability to not become overwhelmed, especially by the negative pictures. Similarly, in a later study, Arch and Craske (2010) found that participants who were higher in trait mindfulness displayed greater willingness (i.e., longer duration) to engage in a hyperventilation task. Additionally, trait mindfulness was a significant predictor of task duration; whereas mood and anxiety symptoms, anxiety sensitivity, and state anxiety were not significant predictors. As such, Arch and Craske suggested that trait mindfulness may thus be useful in predicting an individual's persistence in a distressing situation when the duration of the situation is unknown.

In summary, recent research has revealed that acceptance/mindfulness instructions increase participants' willingness to engage in uncomfortable tasks such as viewing aversive images and films, delivering electric shocks to one's self, submerging a hand in cold water, and

breathing carbon dioxide enriched air. Additionally, and as it importantly relates to the current study, research suggests that engaging in a mindfulness exercises promotes participants ability to “disconnect” their thoughts and feelings from their actions/behavior. Thus, participants may be more likely to disclose personally distressing information (e.g., thoughts and emotions) after having engaged in a mindfulness exercise due to the accepting and nonjudgmental stance towards internal experience it promotes.

Mindfulness and Expressive Writing

Brody and Park (2004) suggest that heightened awareness is a contributing factor in the effectiveness of expressive writing and that this process shares some characteristics with mindfulness. The authors contend that writing induces a state of mindfulness and facilitates the transformation of implicit internal experiences into more explicit experiences. They explain that when participants complete an expressive writing task focusing on a past traumatic or stressful event, they are asked to write about their current thoughts and feelings about that experience, which may have been previously avoided or undisclosed. Additionally, while engaging in the task the participants may subsequently re-live the experience as if it were happening in the here-and-now, which would then be reflected in their writing. Given these speculations, Moore, Brody, and Dierberger (2009) investigated whether the narrative emotional disclosure task was able to decrease experiential avoidance, increase acceptance of thoughts and emotions, as well as improve mental health (i.e., decrease levels of depression and psychological distress). Furthermore, with regards to the mental health outcomes, they examined the effects of individual differences in mindfulness and experiential avoidance, as well as changes in these two areas, from baseline to post-task.

Contrary to their predictions, results of this study revealed that writing about traumatic experiences was not effective at reducing participant's level of depression, overall psychological distress, or level of experiential avoidance. Also, the experimental disclosure task did not improve the particular component of mindfulness being investigated (i.e., acceptance of thoughts and emotions). However, the authors did find that participants in the experimental group who showed an increase in mindfulness from baseline to follow-up evidenced improved mental health. With this, it is suggested that individuals will benefit more from written expression if they are able to become more mindful of their thoughts and emotions while disclosing their traumatic experiences.

The relationship between mindfulness and the expressive writing paradigm has also been studied by Poon and Danoff-Burg (2011). They suggest that mindfulness and expressive writing share some characteristics such that both interventions provide a context in which the individual attends to their current thoughts and feelings and may therefore be exposed to aversive internal stimuli. In their research, Poon and Danoff-Burg (2011) found that expressive writing was related to positive outcomes with regards to physical health and two of three psychological outcomes (decreased overall psychological distress and increased positive affect; no change in negative affect). Furthermore, this study revealed that participants in the expressive writing condition who scored higher in mindfulness at baseline evidenced greater reductions in physical symptoms, psychological symptoms, negative affect, and an increase in sleep quality and positive affect. As such, these findings are consistent with the suggestion made above by Moore and colleagues (2009) that individuals who are more mindful are likely to experience greater positive effects subsequent to disclosing their thoughts and emotions about a stressful experience when compared to individuals who are less mindful and engaging in the same task. Moreover,

Poon and Danoff-Burg (2011) go on to suggest that this may be because an individual who is more mindful is more aware of the present moment and has greater ability to pay attention to the writing process. Being willing and able to experience the thoughts and feelings associated with a past traumatic or stressful event and mindfully attending to the writing process are both considered important components of the expressive writing paradigm (Brody & Park, 2004; Sloan & Marx, 2004).

The Current Study

As outlined above, disclosure is an important part of psychotherapy, and recent experimental studies have evidenced increased tolerance for aversive internal and somatic events (e.g., panic symptoms, anxiety symptoms, dysphoric mood, and physical pain) and lowered subjective distress, following brief training in acceptance and/or mindfulness. Thus, mindfulness may promote increased willingness to remain in experiential contact with unpleasant stimuli (Broderick, 2005; Eifert & Heffner, 2003; Levitt et al., 2004), such as thoughts and emotions, that are likely to be present during an individual therapy session and when engaging in distress disclosure. The current study proposed that mindfulness may facilitate client self-disclosure due to its effectiveness in reducing experiential avoidance (i.e., attempts to change, alter, or otherwise avoid uncomfortable internal events) and increasing behavioral willingness.

Hypotheses

Based on previous research, the following hypotheses were made:

- 1.) Participants in the mindfulness condition would evidence greater levels of self-report state mindfulness (as measured by the Toronto Mindfulness Scale) immediately after the mindfulness intervention and after the expressive writing task (i.e., manipulation check), as compared to participants in the control condition. This was analyzed using

- a repeated measures analysis of variance (ANOVAs), with Group and Time as the independent variables (IVs) and TMS scores (T1 and T2) as the dependent variables (DVs).
- 2.) Participants in the mindfulness condition would evidence greater written emotional disclosure, which was objectively measured using the Linguistic Inquiry and Word Count (LIWC: Pennebaker, Francis, & Booth, 2001). Specifically, it was predicted that mindfulness participants would evidence greater use of emotion words (positive and negative), and cognitive processing words (including causation and insight related words). This was analyzed using a multivariate analysis of variance (MANOVA), with Group as the IV and the LIWC word categories as the DVs.
 - 3.) Distress disclosure (conceptualized as a trait and measured using the Distress Disclosure Index) would be positively correlated with trait mindfulness (as measured by the Five Facet Mindfulness Questionnaire). In other words, participants who report being more likely to disclose their distress to others would also report being more open to their internal experiences (i.e., more mindful of their experiences). This was analyzed using a Spearman's Rho r_s correlation.
 - 4.) Distress disclosure and trait mindfulness would also be positively correlated with level of objective emotional expression during the written disclosure task, as measured by the LIWC, such that individuals with higher trait distress disclosure and mindfulness would display greater emotional expression during the disclosure task. Specifically, it was predicted that participants with higher trait distress disclosure (as measured by the DDI) and higher trait mindfulness (as measured by the FFMQ) would evidence greater use of emotion words (positive and negative emotion words),

and cognitive processing words (causation and insight related words) in their expressive writing. A multiple regression analysis was conducted using the DDI and the FFMQ as predictor variables and the LIWC word categories as outcome variables. This would indicate whether or not trait mindfulness and/or trait distress disclosure are able to predict emotional expression via expressive writing.

- 5.) It was predicted that, in comparison to participants in the control condition, participants in the mindfulness condition will evidence lower subjective distress (as measured by the Negative Affect subscale of the Positive and Negative Affect Schedule) at the end of the study (i.e., post writing task). This was predicted based on the finding by Arch and Craske (2006) in which participants in a focused breathing condition (similar to the current mindfulness condition) evidenced a less varied and flatter affective profile after viewing emotional stimuli, especially following the negatively-valenced stimuli and with regard to the State Negative Affect (NA) subscale. However, both conditions were expected to experience an increase in negative affect given past research on the immediate effects of writing expressively about a traumatic or stressful event. This was analyzed using a repeated measures ANOVA, with Group and Time as the independent variables (IVs) and PANAS-state NA scores (T1, T2, and T3) as the dependent variables (DVs).

Method

Participants

Prior to collecting data, a power analysis was run to determine the number of participants needed for the current study. A small effect size of $d = 0.25$ (as indicated by the LIWC data in Ortner & Zelazo, 2012) and a power of 0.8 were entered; based on this analysis the total number

of participants needed was determined to be $n = 90$ (forty-five per condition). Thus, participants were 96 undergraduate students who are enrolled in Psychology 101 at the University of South Carolina Aiken (forty-eight per condition). Participants were awarded course credit for their participation in the study. Participants were randomly assigned to one of two conditions: a neutral audio condition (control group) and a mindfulness exercise condition (experimental/mindfulness group). Participants were excluded from the study if they had already participated in a similar mindfulness research study that was taking place at the same time as the present study. At the beginning of the first session, the experimenter asked each participant if they had already partaken in the related study; if they answered no, they were allowed to continue to participate in the current study. This exclusion information was also posted on the participant sign-up sheet, and a participation reminder email was sent out to each individual who signed up to participate in the current study giving details of this exclusion as well.

The final sample of participants was composed of 79 females (82.3%) and 17 males (17.7%). The age range for the sample was from 18 years to 27 years. The mean age of this group was 18.77 years ($SD = 1.39$) and the median was 18 years. The sample consisted of 77 Freshman (80.2%), 12 Sophomores (12.5%), 6 Juniors (6.3%) and 1 “Other”, who indicated that he was pursuing a second Bachelor’s degree. Participants identified themselves as the following: 55 Caucasians (57.3%), 34 African Americans (35.4%), 4 Hispanics (4.2%), 1 Asian American (1%) and 1 participant who identified herself as Biracial (1%); there was one individual who did not indicate her ethnicity.

Measures

Demographics Questionnaire. An author-created demographics questionnaire was used to collect demographic information on participants (e.g., sex, age, current year status, ethnicity) for descriptive purposes (see Appendix A and above).

Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006; see Appendix B). The FFMQ was used to measure trait mindfulness. The FFMQ is a 39-item self-report measure assessing an individual's general tendency to be mindful. The items that compose this scale are divided into five subscales or facets of mindfulness: Non-Reactivity (e.g., "I perceive my feelings and emotions without having to react to them"), observing (e.g., "when I'm walking, I deliberately notice the sensations of my body moving"), Acting with Awareness (e.g., "when I do things, my mind wanders off and I'm easily distracted," reverse scored), Describing/Labeling (e.g., "I'm good at finding words to describe my feelings"), and Non-Judging of experience (e.g., "I criticize myself for having irrational or inappropriate emotions," reverse scored). Each subscale is a Likert scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). The FFMQ has evidenced excellent psychometric properties (Baer, Walsh, & Lykins, 2009); it has been found to be related to similar constructs such as openness to experience and thought suppression, and experienced meditators have been found to score higher on the measure, and individual's scores tend to increase following training in mindfulness. Baer and colleagues (2006) found that the scales coefficient alpha (i.e., reliability) for the subscales range from .75 - .91, and has been found to be reliable and valid in non-clinical and student samples. Descriptive statistics for the five subscales and the total score can be found in Table 1.

Toronto Mindfulness Scale (TMS; Lau, et al., 2006; see Appendix C). The TMS was used as a manipulation check in this study as it assesses participant's level of state mindfulness. The

administration of this measure requires participants to sit quietly and engage in a mindfulness/meditation exercise for 15 minutes before completing the scale. The TMS contains 13 items measuring two factors, Curiosity and Decentering, and asks participants to rate what they “just experienced” on a scale ranging from 0 (*not at all*) to 4 (*very much*). This scale is designed to evaluate the extent to which the individual experienced a feeling of heightened awareness, the qualities of openness and curiosity related to that awareness, and the ability to be aware of one’s thoughts and feelings without becoming engrossed by them. Sample items include “I was more concerned with being open to my experiences than controlling or changing them” and “I was aware of my thoughts and feelings without overidentifying with them.”

Lau and colleagues (2006) reported that the coefficient alpha (i.e., internal consistency reliability) for the scale was .84 (Decentering) and .88 (Curiosity), and that construct validity was evidenced by higher TMS factor scores following training in mindfulness. In past research the TMS subscales were significantly and positively correlated with measures of absorption, reflective self-awareness, psychological mindedness, and awareness of one’s surrounding; however, only the Curiosity subscale was positively and significantly correlated with awareness of internal experiences and self-consciousness, while the Decentering subscale was significantly and negatively correlated with cognitive failures and positively correlated with openness to experience (Lau et al., 2006). Descriptive statistics for current study on this measure, including both times it was administered (post mindfulness/neutral audio clip, and post writing exercise) can be found in Table 2.

Distress Disclosure Index (DDI; Kahn & Hessling, 2001; see Appendix D). The DDI was used to measure participant’s tendency to self-disclose personally distressing thoughts and emotions to others. The DDI is comprised of 12 items that are rated by participants on a scale

ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include “When I feel upset, I usually confide in my friends” and “I prefer not to talk about my problems” (reverse scored). Kahn and Hessling (2001) reported that the scales test-retest reliability correlation coefficient (2-month period) was .80, and the coefficient alpha ranged from .92 to .95 among college students. Additionally, this measure has demonstrated convergent validity, such that scores correlate in expected ways with other measure of self-disclosure and concealment among samples of college student (Kahn & Hessling, 2001). Descriptive statistics for this measure can be found in Table 1.

Linguistic Inquiry and Word Count (LIWC: Pennebaker, Francis, & Booth, 2001). The LIWC text analysis program was used to evaluate the participants written disclosures. The program objectively assesses samples of writing using a dictionary of more than 2,300 words/word stems that are grouped into 74 categories. In order to control for absolute text length, the program provides percentages of total words that fall into the specific categories. Pennebaker and Francis (1996) provide external validity for this program, such that independent judges were in agreement with (i.e., significantly correlated with) the text analysis programs categorization of cognitive processing, emotional, past tense, acceptance, and other words. In a more recent study, the LIWC evidenced construct validity with regards to its use as a measure of emotional expression. Kahn, Tobin, Massey, and Anderson (2007) found that the text analysis program was able to distinguish between narratives that were specifically designed to contain target emotions. For example, the LIWC revealed higher percentages of positive emotion words in narratives that were written by participants who had just viewed an amusing film clip. The authors conclude that the LIWC seems to be a valid instrument in the measurement of verbal emotional expression (Kahn et al., 2007).

The specific word categories that are of interest to this study include positive emotion (e.g., “happy,” “good”), negative emotion (e.g., “hate,” “worthless”), and cognitive processing words, which includes causation and insight word subcategories (e.g., “think,” “realize,” “could,” “should”). Additionally, *quantity of expression* will be assessed using the participant’s narratives total word count. Previous studies have similarly used this as a measure of total expression (e.g., Lutgendorf & Antoni, 1999; Donnelly & Murray, 1991). Descriptive statistics for this measure can be found in Table 3.

Positive and Negative Affect Schedule, Trait and State versions (PANAS; Watson, Clark, & Tellegen, 1988; see Appendix E). **The PANAS** was used to measure participants experience of positive and negative affect *generally* (trait) and during the experiment (state). The PANAS is comprised of 20 emotions that are rated by participants on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). The PANAS has demonstrated good internal consistency (.86 - .90 for PA and .84 - .87 for NA) and moderate concurrent validity (.51 - .74). The PANAS was used in this study to investigate participants’ subjective experience of emotion throughout the experiment as well as generally. The PANAS Trait descriptive statistics can be found in Table 1, and the PANAS State descriptive statistics can be found in Table 2.

Procedure

Participants attended two separate sessions for the experiment. The first session was conducted in group format wherein the Informed Consent (see Appendix F) process was completed and then participants were asked to complete the following self-report questionnaires using LimeSurvey, an online survey application: demographic questionnaire, PANAS (trait), FFMQ, and DDI. Once all forms were completed each participant scheduled a time with the experimenter during which they were available to complete the second session of the experiment.

The second (experimental) session was completed within a four-week time frame of completing the first session. The experimenter contacted participants via email or text message to remind them of their second session. Only 1 participant did not return to complete the second session of the study; this participant's responses on the session 1 measures were deleted. This session was conducted individually with each participant and took place in a private laboratory office; LimeSurvey was also used for the entirety of the second session (including the written disclosure task). Participants were randomly assigned into either the Mindfulness Group or the Control Group. The Research Randomizer found at www.randomizer.org was used to determine participant group assignment.

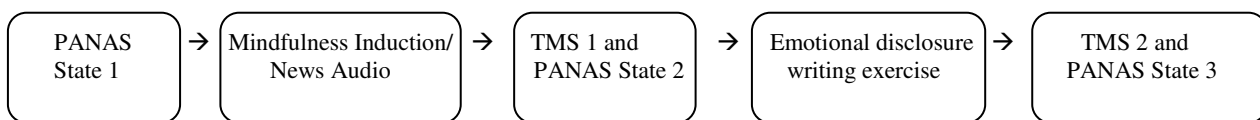
Participants in the Control Group were asked upon arrival to complete the PANAS-State version, and then listened (using headphones) to a 15-minute neutrally valenced National Public Radio excerpt from the podcast "Earth Eats". This podcast discussed an investigation into unapproved genetically modified wheat seeds found growing in small patches in Oregon; it also discussed the making of salsa (including the growing and canning of tomatoes) and the different flavor profiles to consider (e.g., sweet, heat, sour, savory). After listening to the audio clip, participants completed the TMS, the PANAS-State version for a second time, and then engaged in the written disclosure task (15 minutes). All participants were given 15 minutes to complete the written disclosure task (see Appendix G for the writing instructions used for both groups). After the disclosure task participants completed the TMS for a second time, and finally, they completed the PANAS-State version for a third time.

Participants in the Mindfulness Group followed the same procedure as the Control Group, only they were asked to listen (using headphones) to a 15-minute mindfulness intervention audiotaped by the author (see Appendix H for transcript). The mindfulness exercise

encouraged participants to close their eyes and focus on their breathing, the different physical sensations that arise, and the different thoughts and emotions that arise, while also being prompted to adopt an open, curious, non-judgmental, and accepting attitude towards their present-moment experience. The aim of this exercise was to have participants direct their attention and awareness to the sensations, thoughts, and emotions they were experiencing in that present moment.

At the end of the second session each participant was debriefed by the experimenter and provided with a debriefing form (see Appendix I). Essays were read by the author of the study for the purpose of identifying potential report of intent to harm self or others, or abuse of a child or an elderly person. The participants' writing samples did not reveal any of these situations.

Session 2 – Experimental Procedure



Results

Descriptive Statistics

When exploring the data using graphs, box-plots, and statistical tests (e.g., Kolmogorov-Smirnov test, Levene's test), it became apparent that much of the data had significant skewness and/or kurtosis, and/or contained numerous outliers, and/or violated assumptions of normality and homogeneity of variances. Significant results of skewness, kurtosis, K-S test, and Levene's test can be found in Tables 1, 2, and 3. Thus, the bootstrap facility in SPSS 22 was applied for all statistical tests it was available for, as recommended by Field (2013). The bootstrap method allows statistical tests to be run using robust estimates of the parameters (i.e., standard errors and confidence intervals). Unless otherwise noted, bootstrap results are based on 1000 bootstrap

samples, and bias corrected and accelerated bootstrap 95% confidence intervals are reported in square brackets. An alpha level of .05 was used to determine statistical significance for all analyses.

Assessing for Pre-existing Differences between Conditions

To assess pre-intervention differences between groups, independent sample *t*-tests using the bootstrap facility were conducted for trait mindfulness (FFMQ), trait distress disclosure (DDI), and PANAS Trait Negative and Trait Positive Affect. Despite random assignment, on average, participants in the Mindfulness Group reported greater levels of mindfulness on the FFMQ Total, and the Describe, and Non-Judge subscales. The FFMQ Total mean difference was significant $t(94) = 2.19, p < 0.05$. The Describe mean difference was significant $t(94) = 2.82, p < 0.01$. The Non-Judge mean difference was also significant $t(94) = 2.00, p < .05$. On average, participants in the Control Group reported a greater level of Trait Negative Affect (NA); this mean difference was significant $t(94) = -1.99, p < .05$. There were no other significant differences between the two conditions on the pre-intervention trait measures. The FFMQ Total, Describe, and Non-Judge subscales, and the PANAS Trait NA, were entered as covariates on statistical tests in order to control for the differences noted above.

Hypothesis One

Hypothesis One predicted that participants in the mindfulness condition would evidence greater levels of self-reported state mindfulness (as measured by the TMS) immediately after the mindfulness intervention and after the expressive writing task, as compared to participants in the control condition. A MANOVA was first conducted to detect any differences between groups with regards to level of Curiosity and Decentering at Time 1 (post-intervention), with Group as the IV and the TMS Curiosity and Decentering scores as the DVs. This statistical analysis is not

bootstrapped. Additionally, given the pre-intervention group differences (stated above) the following variables were entered as covariates: FFMQ Total, FFMQ Describe, FFMQ Non-Judge, and PANAS Trait Negative. This aspect of Hypothesis 1 was supported: there was a significant effect of condition on the TMS results, $F(2, 89) = 4.427, p < .02$; separate univariate ANOVA's on the outcome variables revealed a significant condition effect on both Curiosity and Decentering at Time 1 (post-intervention), respectively, $F(1, 90) = 8.398, p < .01$; $F(1, 90) = 5.135, p < .03$.

A repeated measures ANOVA was then used to further investigate any patterns with regards to state mindfulness across time, with Group and Time as the independent variables (IVs) and TMS scores (TMS1 and TMS2) as the dependent variables (DVs). This statistical analysis is not bootstrapped, and covariates noted above were entered to control for pre-existing differences between groups. With regards to the TMS Curiosity subscale, there was no main effect for time. However, the between-subjects effect was significant, $F(1, 90) = 4.039, p < .05$; the Mindfulness Group rated themselves higher on the Curiosity subscale than the Control Group. Finally, the interaction between time and condition approached significance, $F(1, 90) = 3.371, p = .07$. The Mindfulness Group's level of Curiosity decreased from post-mindfulness induction to post-writing, whereas the Control Group's level increased slightly (see Table 4 and Figure 1).

To examine participants' level of Curiosity from Time 1 to Time 2 within groups, paired-sample *t*-tests were conducted. This statistical analysis is bootstrapped, and no covariates were entered. Within the Mindfulness Group, the difference between Curiosity at Time 1 and Time 2 approached significance, $t(47) = 1.96, p = .06$, level of curiosity showed a marginal decrease

from post-mindfulness induction to post-writing. However, within the Control Group, the difference between Curiosity scores at Time 1 and Time 2 was not significant.

With regards to the TMS Decentering subscale, there was no main effect for time or condition. However, the interaction between time and condition approached significance, $F(1, 90) = 3.477, p = .07$. While both groups' level of Decentering increased from post-intervention (mindfulness/control) to post-writing exercise, the Control Groups average change was somewhat larger (see Figure 2).

To examine participants' level of Decentering from Time 1 to Time 2 within groups, paired-sample t - tests were conducted. Within the Mindfulness group, the difference between Decentering at Time 1 and Time 2 was not significant, however, within the Control Group, the difference between Decentering at Time 1 and Time 2 was significant $t(47) = -3.66, p < .01$, indicating that their level of decentering increased significantly from post-intervention (i.e., listening to the neutrally-valenced audio clip) to post-writing.

Lastly, contrary to the hypothesis, there were no group differences observed with regards to TMS scores at Time 2; this was analyzed using a MANOVA with Group as the IV and the TMS Curiosity and Decentering scores at Time 2 as the DVs. Additionally, given the pre-intervention group differences (stated above) the following variables were entered as covariates: FFMQ Total, FFMQ Describe, FFMQ Non-Judge, and PANAS Trait Negative. This indicates that after the writing exercise, participants in the Mindfulness Group were experiencing similar levels of Curiosity and Decentering as participants in the Control Group.

Hypothesis Two

Hypothesis Two predicted that participants in the mindfulness condition would evidence greater written emotional disclosure, measured with the LIWC and analyzed using the LIWC

computer software (Pennebaker, Francis, & Booth, 2001). Specifically, it was predicted that mindfulness participants would evidence greater use of emotion words (positive and negative), and cognitive processing words (i.e., causation and insight related words) during the writing task. This was analyzed using a MANOVA, with Group as the IV and the LIWC word categories as the DVs. Additionally, given the pre-intervention group differences (stated above) the following variables were entered as covariates: FFMQ Total, FFMQ Describe, FFMQ Non-Judge, and PANAS Trait Negative. This statistical analysis is not bootstrapped.

This hypothesis was partially supported. There was a marginally significant effect of condition on the LIWC word categories, $V = .116$, $F(5, 86) = 2.264$, $p = .06$, with separate univariate ANOVA's on the outcome variables revealing a significant condition effect on Insight words used, $F(1, 90) = 6.601$, $p < .01$. Participants in the mindfulness condition tended to use more insight related words (e.g., think, know, consider, curious, accept) than participants in the control condition. However, there was no significant difference by condition in the use of positive emotion words (e.g., love, nice, sweet), negative emotion words (e.g., hurt, ugly, nasty), or causation words (e.g., because, effect, hence).

Hypothesis Three

Hypothesis Three predicted that distress disclosure (as measured by the DDI) would be positively correlated with trait mindfulness (as measured by the FFMQ). This was analyzed using the non-parametric statistic, Spearman's Rho (r_s) correlation coefficient, as well as the bootstrap facility due to significant skewness and kurtosis (bias corrected and accelerated bootstrap 95% confidence intervals are reported in square brackets). This hypothesis was mostly supported (see Table 4). The DDI was significantly and positively correlated with FFMQ Total, $r_s = .38$, [.20, .52], $p < .01$. The DDI was significantly and positively correlated with FFMQ

Describe, $r_s = .45$, [.26, .61], $p < .01$. The DDI was significantly and positively correlated with FFMQ Act with Awareness, $r_s = .28$, [.07, .45], $p < .01$. Lastly, the DDI was significantly and positively correlated with FFMQ Non-Judge, $r_s = .23$, [.03, .40], $p < .05$. However, there was no significant relationship between DDI and FFMQ Observer, $r_s = .06$, $p = .54$, nor between DDI and FFMQ Non-React, $r_s = -.10$, $p = .32$. In other words, participants who reported having a greater general tendency to be mindful in everyday life (Total FFMQ), a greater aptitude to describe and label their emotions (Describe), an increased penchant to be aware of their actions (Act with Awareness), and an increased tendency to not judge or evaluate their inner experiences (Non-Judge), also reported having a greater tendency to disclose feelings of distress to others (DDI). However, participants' tendency to notice and attend to their internal and external experiences (Observe), and their ability to not get caught up in or carried away by their thoughts and feelings (Non-React) were not significantly related to their report of their tendency to disclose their feelings of distress to others.

Hypothesis Four

Hypothesis Four proposed that distress disclosure and trait mindfulness would predict level of objective emotional expression/disclosure during the trauma written disclosure task, as measured by the LIWC; such that individuals with higher distress disclosure and trait mindfulness would display greater emotional expression during the disclosure task. This was analyzed using a forced entry multiple regression analysis, with the DDI and the FFMQ as predictor variables and the LIWC word categories as outcome variables. This statistical analysis is bootstrapped.

This hypothesis was partially supported. The FFMQ Observe and FFMQ Non-Judge subscale significantly predicted an increase in the use of Positive Emotion words, respectively, b

= .126 [.046, .220], $p < .01$; $b = .075$ [.015, .151], $p < .04$ (see Table 6). The FFMQ Describe, Act with Awareness, and Non-React subscales, and the DDI did not predict the use of Positive Emotion words. The FFMQ Observe significantly predicted a decrease in Negative Emotion words used, $b = -.048$ [-.049, -.005], $p < .05$ (see Table 7); whereas the FFMQ Describe, Non-React, Non-Judge, and Act with Awareness subscales, and the DDI did not predict the use of Negative Emotion words. Lastly, the FFMQ Observe predicted a decrease in the use of Insight words, $b = -.045$ [-.087, -.002], $p < .05$ (see Table 8), while the FFMQ Non-React significantly predicted an increase in the use Insight words, $b = .065$ [.010, .119], $p < .02$ (see Table 8). However the FFMQ Describe, Non-Judge, and Act with Awareness subscales, and the DDI did not predict the use of Insight words. With regards to Causation words used, none of the constructs entered as predictors (i.e., FFMQ subscales and the DDI) predicted the use of Causation words (see Table 9).

Hypothesis Five

Hypothesis Five predicted that, in comparison to participants in the Control Group, participants in the Mindfulness Group would evidence lower subjective distress (as measured by the NA subscale of the State PANAS) at the end of the study (i.e., post-writing task). However, both conditions were expected to experience an increase in NA from T1 to T3, and from T2 to T3, given past research on the immediate effects of writing expressively about a traumatic or stressful event.

This hypothesis was analyzed using a repeated measure ANOVA, with Group and Time as the IVs and PANAS State NA scores (Time 1, Time 2, and Time 3) as the DVs. There was no main effect of time, suggesting that collapsing across groups, participant's level of state NA did not change significantly across Time 1, Time 2, or Time 3. There were no between-subjects

effects, suggesting that collapsing across time, the Mindfulness Group did not differ from the Control Group with respect to reported levels of state NA. Finally, there was no significant interaction effect, suggesting that when comparing the two groups, their pattern in NA scores did not differ across time (see Figure 3).

To investigate any differences between the Mindfulness Group and the Control Group's scores on the PANAS State NA at the 3 time points, separate ANOVA's were conducted, with Group as the IV and the PANAS State NA scores (Time 1, Time 2, and Time 3) as the DVs. Additionally, given the pre-intervention group differences (stated above) the following variables were entered as covariates: FFMQ Total, FFMQ Describe, FFMQ Non-Judge, and PANAS Trait NA. The hypothesis was not supported; there were no significant differences between groups on state NA at Time 1, Time 2, or Time 3.

To further investigate participants' state NA throughout the current study within each group, paired sample t – tests were conducted. Within the Mindfulness Group, there was a significant decrease in NA from Time 1 to Time 2, $t(47) = 3.03, p < .01$; a significant increase in NA from Time 2 to Time 3, $t(47) = -5.01, p < .01$; and a significant increase in NA from Time 1 to Time 3, $t(47) = -2.82, p < .01$. These results indicate that the Mindfulness Group experienced a significant decrease in NA following the mindfulness exercise; however, they then experienced a significant increase in NA after the writing exercise, which was also higher than their original state NA (Time 1). Within the Control Group, there was a significant decrease in NA from Time 1 to Time 2, $t(47) = 3.63, p < .01$; a significant increase in NA from Time 2 to Time 3, $t(47) = -4.36, p < .01$; however, the increase in NA from Time 1 to Time 3 was not significant. These results indicate that the Control Group experienced a significant decrease in NA following the NPR audio clip; and they experienced a significant increase in NA following the writing

exercise; however, their level of NA did not differ significantly from the beginning of the study to the end of the study (see Figure 3).

Discussion

The purpose of this study was to determine if a mindfulness exercise is effective at increasing participants' emotional disclosure during a trauma focused expressive writing task. This study was designed as an analogue to a therapy session in which a mindfulness exercise is utilized to increase disclosure of emotionally-charged experiences. This study also sought to investigate the relationship between trait mindfulness and trait distress disclosure. The proposal of using a mindfulness exercise to increase emotional disclosure is consistent with Roemer and Orsillo's (2009) proposal that engaging in mindfulness practice and cultivating mindfulness is therapeutic because it facilitates one's acceptance of internal experiences as well as decreases the avoidance of such experiences (e.g., thoughts, emotions, images, sensations). Therefore, given that emotionally valenced self-disclosure may be inhibited in response to aversive emotions and/or thoughts and that mindfulness has been shown to reduce experiential avoidance and increase an individual's behavioral willingness to come into contact with such aversive stimuli, a mindfulness intervention may promote increased emotional disclosure during a therapy session, and by extension, facilitate the beneficial effects of therapy.

State Mindfulness

The first hypothesis examined participant's level of state mindfulness at Time 1 (post-mindfulness induction) as a manipulation check for the current study. Results indicate that at Time 1 participants in the Mindfulness Group reported greater levels of Curiosity and Decentering than the Control group. Thus, it appears that the mindfulness intervention used in the current study was effective in fostering a mindful state within the Mindfulness Group

participants. When looking at participants' scores on the TMS at Time 2, there was no longer a significant difference between groups on self-reported levels of Curiosity and Decentering (post-writing task), suggesting that the groups were experiencing similar levels of state mindfulness after the writing exercise. Furthermore, when collapsing across time, participants in the Mindfulness Group rated themselves higher on the Curiosity subscale than the Control Group; however, there was no significant difference between groups with regards to the Decentering subscale ratings when collapsing across time. This is likely because the Control Group increased significantly with regards to their level of Decentering after the writing exercise (TMS Time 2).

Eirsman and Roemer (2010) found somewhat similar results in that participants in their study who engaged in a 10-minute mindfulness exercise scored higher on the TMS Decentering scale than participants who listened to neutral educational information of the same duration; however, they found no significant differences between groups with regards to the Curiosity subscale (this is in contrast to the current study). It is important to note, however, that participants in their study watched three different emotionally evocative film clips at the beginning of the study, then engaged in either the mindfulness or neutral educational information intervention, and then completed the TMS for the first time. Eirsman and Roemer (2010) also saw an increase in state mindfulness on both subscales and in both groups after the participants watched a series of film clips that were chosen based on their ability to elicit positive, distressing, and mixed emotions. This was in partial contrast to the current study, wherein only the Control Group increased significantly in Decentering after the writing task, and the Mindfulness Group experienced a marginal decrease in Curiosity scores after the writing exercise. Thus, their mindfulness condition participants continued to report a significantly higher

level of Decentering, but not Curiosity, as compared to the control condition; suggesting a “prolonged effect” of the 10-minute mindfulness intervention (Eirsman & Roemer, 2010).

This Eirsman and Roemer’s (2010) finding of a “prolonged effect” is in contrast to the current study’s finding of no significant differences between groups on either subscale at Time 2, and that the Mindfulness Group decreased marginally in their level of Curiosity after the writing exercise. However, the current study utilized a trauma written disclosure exercise (as opposed to emotionally evocative film clips). Thus, it is likely that the difference in findings is due to the different methodologies employed. It is possible that when the Mindfulness Group began the writing exercise they held a “curious” stance towards their internal experiences. However, by the end of the writing exercise, their thoughts and emotions may have proven to be more difficult to experience and thus they became “less curious” about what they were thinking and feeling.

Furthermore, Eirsman and Roemer’s (2010) mindfulness intervention utilized both experiential exercises and general information about mindfulness and its usefulness in the context of dealing with emotional experiences. They also gave participants “brief mindfulness prompts” while they were watching the emotionally evocative film clips. This likely fostered participants’ level of mindfulness throughout the study. As such, had the current study also provided the Mindfulness Group with such prompts, their level of state mindfulness may have experienced a similar pattern of increasing after the emotional disclosure exercise. Additionally, psychoeducational information regarding mindfulness may have also fostered the mindfulness intervention had it been included as well. This is a potential limitation to the current study, as the intervention used in Eirsman and Roemer (2010) may have been more analogous to therapy than the intervention used in the current study; such that, a therapist will typically give clients a

rationale for practicing mindfulness, explains what it is and how it can be helpful, and then encourages them to be mindful throughout the session.

It is interesting to note the significant increase in Decentering observed in the Control Group from post-intervention (neutral audio clip) to post-writing. It appears as though the writing exercise prompted control participants to adopt a more “decentered” stance towards their internal experiences. As a reminder, the TMS Decentering items emphasize participants tendency to have some distance from their internal experiences and their ability to dis-identify with their experiences so they do not get carried away by them (e.g., “I experienced myself as separate from my changing thoughts and feelings”; “I approached each experience by trying to accept it, no matter whether it was pleasant or unpleasant”). While this was an unintended effect, Sauer and Baer’s (2010) theorize that writing thoughts down and asking participants/clients to repeatedly observe and identify their thoughts and feelings provides practice in decentering which could help explain this finding in the present study. In the current study, however, the Mindfulness Group’s level of Decentering was consistent from post-mindfulness exercise to post-writing exercise, although it was predicted that it would have increased given the “decentering” quality of writing. It is possible that had the Mindfulness Group been given additional mindfulness prompts during the writing exercise, such as in the study by Eirsman and Roemer (2010), their level of state mindfulness may have increased, especially with respect to decentering.

Mindfulness and LIWC Word Categories

Hypothesis 2 examined whether or not there were differences between the Mindfulness and Control Group with regards to the specific words they used in the written disclosure exercise. It was predicted that the Mindfulness Group would use significantly more emotion and

cognitive processing words given that the mindfulness intervention was predicted to increase participants' acceptance and nonjudgmental awareness of participants' internal experiences (e.g., thoughts, emotions, sensations). Results indicated that participants in the Mindfulness Group tended to use a higher percentage of Insight related words (e.g., think, know, consider, accept, feel) than participants in the Control Group. However, there was no significant difference between the percentages of emotion (positive or negative) or causation words used by participants.

To understand why the Mindfulness Group used a higher percentage of insight related words but not emotion or causation words, it is possible that the mindfulness exercise fostered participants' desire to better understand or learn more about their thoughts and feelings surrounding the traumatic event they were writing about, and thus they used more words that would reflect this process. Many of the words within the Insight category of the LIWC reflect aspects of mindfulness that the current intervention was attempting to increase. Some of these words include: accept, acknowledge, aware, choice, consider, curiosity, disclose, feel, feeling, imagine, sense, think, thought, understand, and wonder. Here are some examples of phrases from participants writing samples that include the use of insight words: "I *feel* that I could have made a change..." "every time I *think* back to that day..." and "... by the end of the week I *accepted* that this was most likely how I am going to lose my mother."

Consistent with results of the current study, Ortner and Zelazo (2012) also found that participants' use of positive and negative emotion words did not differ between their groups in response to a mindfulness manipulation, distraction manipulation, and no manipulation. However, they only employed a 10-minute mindfulness manipulation and they had a small sample size; thus, they suggest that their results were due to low power. Given that the current

study used a 15-minute mindfulness exercise and included more participants, it is possible that the LIWC word categories are not an adequate measure of emotional expression or disclosure during a trauma writing exercise as conducted in the present study. Kahn et al. (2007) found that the LIWC was able to distinguish between participants' emotions elicited by emotionally provocative film clips; such that, after participants viewed a film clip about a funeral they expressed more negative emotion words than after they watched a comedy film clip. However, this study asked participants to first "reflect" on what they were feeling in that moment, and after a short pause, participants were asked to speak into a microphone about what they were feeling. Given this information, the LIWC does appear to be able to distinguish between participants who are expressing unpleasant versus pleasant emotions.

In the current study, however, all participants were instructed to write about a traumatic experience, which would generally be thought to elicit aversive/negative emotions. Thus, perhaps the LIWC was unable to distinguish emotionality between the groups because they were both expressing negative emotions, although it was predicted that the mindfulness group would express a greater percentage of negative emotion words. One possibility of addressing this issue would be to run a within-subjects experiment, in which participants are asked to partake in the trauma writing exercise both with and without having engaged in a mindfulness exercise prior to writing.

It is important to consider, however, being able to identify participants who disclosed their emotions more than they normally would have, and those that approached the disclosure exercise in a mindful, accepting, and non-judgmental way; these qualities of writing may be more difficult to detect using just the LIWC. Future researchers could devise a system of coding participants writing samples based on qualities that are most likely to reflect a mindful stance

towards the writing process as well as an increase in distress disclosure. For example, trained coders could read through participants writing samples looking for statements such as, “I never realized, until now, how upset it made me” (present-moment awareness, acceptance), “I have never told anyone about it before today” (increased disclosure), “I think that typing this has helped me realize a little that I can do it, I just have to change my attitude to be more positive again” (present-moment awareness and avoidance/non-acceptance), “I still feel as though my emotions are a lie, not what they should be, half of what I should be feeling” (present-moment awareness), “But right now I will choose to keep everything inside” (avoidance/non-acceptance, low disclosure). In addition, a self-report questionnaire could also be distributed to participants after the disclosure process to assess their perspective on how willing they were to disclose their feeling of distress and to what extent they felt they actually did so. It would also be important to assess their willingness to disclose thoughts and feelings they were experiencing in that moment (e.g., “how willing were you to describe the thoughts and feelings you were having, in that moment”).

Another possible explanation for the LIWC being unable to distinguish level of emotional disclosure between the current study’s Mindfulness and Control Group, is the observation that while the Mindfulness Group started the writing exercise with greater state mindfulness (both curiosity and decentering), the writing exercise itself led the Control Group to adopt a similar level of decentering by the end of that process. Thus, the writing exercise may have inadvertently functioned as an independent variable, rather than solely as a dependent variable. Brody and Park (2004) speculate that expressive writing induces a mindful state via focusing on a past traumatic or stressful event and having to write about current thoughts and feelings surrounding that event, which may have been previously avoided or undisclosed. Furthermore, Poon and Danoff-Burg

(2011) suggest that mindfulness and expressive writing share some characteristics, for example both interventions provide a context in which the individual attends to their current thoughts and feelings and may therefore be exposed to aversive internal stimuli. Thus, participants in both groups likely increased in their awareness of thoughts and feelings while writing about a past traumatic experience; as such, they used similar levels of positive and negative emotion words. Nevertheless, it is important to remember that the Mindfulness Group evidenced increase use of insight related words, which may reflect an accepting and allowing stance towards their internal experiences during the expressive writing task. Thus, use of insight words seems more reflective of a mindful state than the use of positive and/or negative emotion words.

Trait Mindfulness and Distress Disclosure

In Hypothesis 3, it was hypothesized that participants reported level of trait distress disclosure would be positively correlated with their reported level of trait mindfulness, suggesting that the more accepting and willing participants are to experience unpleasant thoughts and feeling, the greater their tendency to disclose such information to others. This hypothesis was partially supported as the FFMQ Total, as well as the Describe, Act with Awareness, and Non-Judging subscales, were all significantly correlated with the DDI, while the Observe and Non-Reactivity subscales of the FFMQ were not.

As a reminder, the DDI reflects participant's tendency to self-disclose personally distressing thoughts and emotions to others (e.g., "When I feel upset, I usually confide in my friends"). The Describing subscale of the FFMQ reflects participant's tendency and ability to apply labels and words to observed internal and external events (e.g., "I'm good at finding words to describe my feelings"); this would likely facilitate participants' disclosure of such information to others. It is important to note that this was the strongest correlation between the FFMQ

subscales and the DDI. Given this, when working with a client who reports being low on this subscale of the FFMQ, it may prove beneficial to engage in exercises that are aimed at improving this mindfulness skill so as to increase distress disclosure during sessions. For example, a therapist might start by asking his/her client to describe a concrete object, and then progressively work on describing more internal events such as thoughts and feelings about the concrete object. The Non-Judging subscale reflects participants tendency to not evaluate their thoughts and feelings (e.g., “I criticize myself for having irrational or inappropriate emotions” - reverse scored); as such, if a participant is less likely to judge their internal experiences as being “bad” or “negative,” they may be more willing to disclose such events to others. A possible intervention to address this facet of mindfulness would be simply to have the client begin noticing and disclosing to the therapist when he/she is judging his/her thoughts, feelings, and emotions. This may not necessarily include disclosure of the thought or feeling, rather, simple disclosure of the act of judging could suffice to begin improving this mindfulness skill and increasing distress disclosure (e.g., “this is a bad thought, I am judging it as bad”). Lastly, the Acting with Awareness subscale reflects participants tendency to fully engage themselves in present moment experiences as opposed to functioning on “autopilot” (e.g., “when I do things, my mind wanders off and I’m easily distracted,” reverse scored); thus, as participants become more aware of and engaged in their present moment experiences and activities (e.g., conversing with another), they may be more likely to share feelings of distress with others. A therapist can help to improve this facet of mindfulness by prompting a client to become aware of his/her present moment experiences throughout a therapy session; this may start with simple awareness prompts, such as bringing his/her focus to their breathing for a few moments and describing to the therapist what is being noticed.

It is interesting to note that the Observe and Non-Reactivity subscales were not significantly correlated with participants' tendency to disclose distress to others. The Observing subscale reflects participant's tendency to attend to or notice both internal and external phenomena (i.e., thoughts, feelings, sensations, sounds; e.g., "when I'm walking, I deliberately notice the sensations of my body moving"). In the current study comprised of students with unknown meditation experience, the Observe subscale may be representing a construct that does not adequately reflect the quality of observing seen in experienced meditators and those familiar with mindfulness practice (Baer et al., 2006; see below for further details). For example, the Observe subscale in the current study may represent participants' general tendency to focus on only positive experiences; which would be unrelated to disclosing distress to others. The questions that comprise the Observe subscale largely reflect paying attention to external stimuli or bodily sensations related to external stimuli (as opposed to bodily sensations related to emotional responses). Only one of the eight questions involves observing the effect emotions have on behavior and thoughts ("I pay attention to how my emotions affect my thoughts and behavior"); while another question focuses on how foods and drinks affect participants thoughts, bodily sensations, and emotions ("I notice how foods and drinks affect my thoughts, bodily sensations, and emotions). The remaining questions focus on observing external stimuli without necessarily defining these stimuli as being positive or negative (e.g., "I pay attention to sensations, such as the wind in my hair or sun on my face," "when I take a shower or bath, I stay alert to the sensations of water on my body"). Given this information, if a therapist begins working with a client who has little or no mindfulness practice, and who scores highly on this facet of the FFMQ, it may prove beneficial to slowly begin practice incorporating observations of more internal events rather than just the external events the questionnaire refers to.

Additionally, it will be important for the therapist to emphasize the client's observation of negatively evaluated experiences as well.

On a different note, the Non-Reactivity subscale reflects participant's tendency to allow thoughts and feelings to come and go without having to do anything about them (i.e., attempt to suppress or distract), or without becoming carried away or overwhelmed by them (e.g., "I perceive my feelings and emotions without having to react to them"). Thus, if participants are less likely to react to their internal experiences, they may be less likely to disclose their distress to other as they do not feel the need to "do anything" about what they are experiencing internally and are able to "let it go," so to speak (e.g., "When I have distressing thoughts or images I am able just to notice them without reacting to them," "When I have distressing thoughts or images, I just notice them and let them go" In fact, there was a negative correlation between this subscale and the DDI, however it was not statistically significant.

The current study did find, however, that the DDI was significantly related to participants' trait positive and negative affect. The DDI significantly positively correlated with PANAS Trait positive affect, and significantly negatively correlated with PANAS Trait NA. This suggests that participants who experience greater NA in general are less likely to disclose thoughts and feelings of distress to others. This finding is consistent with past research using the DDI (Kahn et al., 2001; Kahn & Hessling, 2001; Kahn & Garrison, 2009; Garrison & Kahn, 2010). Although there were no significant correlations between DDI and the number of words written by participants in the written disclosure within either group, it is interesting to note that, within the Mindfulness Group, there was a significant positive correlation between word count and PANAS Trait NA; while in the Control Group there was a significant negative correlation between word count and trait NA. In other words, participants in the Mindfulness Group who

reported increased trait NA, wrote more words during the trauma disclosure exercise; whereas, participants in the Control Group who reported higher trait NA, used fewer words during the writing exercise.

Trait Mindfulness and Distress Disclosure Predicting LIWC Word Usage

Hypothesis 4 looked at the predictive quality of the FFMQ and the DDI with respect to the LIWC word categories of interest. It was hypothesized that trait mindfulness and trait distress disclosure would predict the use of emotion and cognitive processing words. Results indicated that the DDI was not a significant predictor of word usage. However, the FFMQ Observe and Non-Judging subscales significantly predicted the use of positive emotion words, the Observe subscale significantly predicted the use of Negative and Insight words (negative relationship), and the Non-Reactivity subscale significantly predicted the use of Insight words.

The current study's finding with regard to the Non-Judging subscale predicting an increase in positive emotions words seems to be inconsistent with what Moore and Broody (2009) found in their research. When looking at baseline mindfulness and linguistic categories on their participants' first day of writing, Moore and Broody (2009) found that the "nonjudgmental acceptance" component of mindfulness was significantly and negatively related to the frequency of positive emotion words used in the narratives; that is, the participants who tended to accept their internal experiences also tended to use less positive emotion words. They suggest that this indicates a defensive use of positive emotion words, such that individuals who are *less* able or *less* willing to accept their internal experiences will subsequently use more positive emotion words in their narratives, in an attempt to make themselves *feel better*. In the current study, the opposite was found, such that the Non-Judging subscale significantly predicted an increase in the use of positive emotion words. In other words, participants who tended to be more accepting of

their internal experiences tended to use more positive emotion words when writing about a traumatic experience. In the current study, participants either listened to a mindfulness exercise or NPR audio clip prior to writing about a personally traumatic experience; whereas in Moore and Broody's (2009) study, participants did not engage in any intervention prior to their writing sessions. It is possible that in the current study, fostering "nonjudgmental acceptance" and reducing state negative affect prior to the writing exercise (see Hypothesis 5) via a mindfulness or NPR audio clip, resulted in participants being more willing and likely to include positive emotion words in their writing samples.

It is important to note that the Observe subscale predicted three of the four word categories of interest. However, the relationships observed in the current study seem somewhat contradictory in nature. Given that the Observing subscale is meant to reflect participant's tendency to attend to or notice both internal and external phenomena (i.e., thoughts, feelings, sensations, sounds; e.g., "when I'm walking, I deliberately notice the sensations of my body moving"), one might predict that this would have led to an increase in negative words and a decrease in positive emotion words used while writing about a personally traumatic event; however, the opposite was true in the current study.

In considering the unpredicted relationships observed in the current study between the Observe subscale of the FFMQ and the LIWC word categories, it is important to review past research. Baer, Smith, and Allen (2004) found a significant negative correlation between the Observing and Non-Judging subscale on the Kentucky Inventory of Mindfulness Skills (KIMS). This is consistent with the current study's finding that the Observe subscale was significantly and negatively related to the Non-Judging subscale on the FFMQ. Baer et al. (2004) suggest that this correlation may indicate that individuals with no meditation experience are more likely to judge

and be non-accepting (i.e., lower scores on the Non-Judging subscale) of the internal and external stimuli they observe (i.e., higher scores on the Observe subscale). The Observe subscale in the current study was also significantly and negatively related to the Act with Awareness subscale suggesting that, in this non-meditating sample, being observant of one's experiences is associated with being less engaged and attentive of present moment experiences and actions.

As stated above, the authors of the FFMQ (Baer et al., 2006) suggest that when used to assess non-meditating samples, the FFMQ questions that comprise the Observe subscale may not adequately represent the quality of attending to and noticing internal and external stimuli that are representative of a more mindful person. They go on to suggest that if the observe items focused more so on noticing just internal experiences, as the other subscales do (rather than focusing on both internal and external stimuli), then the Observe subscale may show more of the predicted patterns that are seen with the other subscales (Baer et al., 2006). Baer et al. (2006) also suggest that the quality of observing changes as meditation experience increases. Consistent with this, Baer et al. (2008) found that meditation experience was significantly related to the Observing facet of the FFMQ; and this was the highest correlation among all the subscales.

Furthermore, Baer et al. (2008) found a significant and positive correlation between Observe and the Brief Symptom Inventory (which measures psychological symptoms and somatic complaints) in their sample of non-meditating students; whereas, within their sample of meditators this correlation was significant and negative. This suggests that the tendency to notice and attend to both internal and external stimuli is related to higher symptom levels in non-meditating students; whereas, with more experienced meditators, the observing quality as measured by the FFMQ is related to fewer psychological and somatic symptoms. These findings seem to be somewhat consistent with the current study's finding that the FFMQ Observe

subscale was unrelated to participants PANAS Trait positive and negative affect; whereas the other subscales of mindfulness were significantly and positively related to trait positive affect (with the exception of the Non-Judge subscale), and significantly and negatively related to the trait NA (with the exception of the Non-React subscale; see Table 4). In other words, participants who tend to be more mindful, with the exception of the observing factor, also tend to report experiencing less negative affect in general.

Given the information stated above with regard to the FFMQ Observe subscale and its validity when being used to assess mindfulness in a student sample with unknown meditation experience, it seems likely that this subscale would predict increased positive emotion words, decreased negative emotion words, and decrease insight related words. In other words, participants who reported greater observation of external sensations, that seem to be positively valenced, tended to use greater positive emotion words and less negative emotion words while writing about a traumatic experience, and tended to use fewer words that reflect insight or interest in what they were writing about. In this sample of participants, it seems reasonable to infer that the Observe subscale is measuring something that likely reflects an approach to one's internal experiences that is unrelated to or even contradictory of taking a mindful stance towards observed stimuli.

In attempting to explain why the current study did not find a significant relationship between the DDI and LIWC, it is important to consider the difference between disclosing distressing information to another person face-to-face, versus disclosing the same type of information via writing about it on a computer. Kahn, Lamb, Champion, Eberle, and Schoen (2002) used a 5-minute structured interview post manipulation (watching either a "high-distress" or "low-distress" film clip) to assess participants' concealment or disclosure of distress related to

what they had just viewed. The interview utilized open-ended questions to prompt participants to disclose their reactions to the film clips (e.g., “What were your reactions during the film? What types of feelings were you experiencing during the film?”). Participants statements were then independently counted by three trained observers who were naive to participants scores on the DDI (trait distress disclosure); the observers counted the number of statements made by each participant in which distress was either acknowledged (e.g., “That made me upset”) or denied (e.g., “I was not bothered by the film”). This procedure was very different from the current study’s procedure of assessing participant’s level of emotional disclosure (i.e., LIWC word categories); such that, the LIWC simply gives a percentage of specific word categories used in a writing sample (e.g., positive emotion words, negative emotion words), and does not necessarily assess the acknowledgement and/or acceptance or denial of distress being experienced/expressed during the writing procedure. Additionally, being interviewed by someone with regard to feelings of distress may affect how and what participants disclose at that time; whereas writing about distress may come easier and allow even those low in distress disclosure to express uncomfortable information (see below; Smyth, Anderson, Hochemeyer, & Stone, 2002).

Kahn et al., (2002) found that participant’s DDI scores significantly predicted the number of distressing emotional statements they disclosed during the interview. Specifically, participants who at pretest indicated a greater tendency to disclose distress acknowledged experiencing more distress to the interviewer following the film presentation. Scores on the DDI also significantly predicted observer’s ratings of how much distress was expressed by participants during the interview (i.e., independent ratings made by the observers using the negative affect scale of the PANAS). Although they were blind to participants DDI scores, observers rated high distress disclosers as expressing more distress during the structured interview than low distress

disclosers. Kahn et al. (2002) suggest that this research supports the predictive validity of the DDI as well as its ability to predict observable outcomes in an experimental situation.

This is contrary to the results of the current study's LIWC analyses, in which participant's general tendency to disclose distress to others did not predict the use of positive or negative emotion words in a written emotional disclosure exercise. It may be that participants who would not normally disclose such information to another person face-to-face, feel more comfortable disclosing via writing about the distressing information. Smyth et al. (2002) found in their sample of chronically ill participants/patients, self-reported characteristics associated with "non-expressivity" and "cognitive avoidance," (i.e., alexthymia, denial, behavioral disengagement, mental disengagement, focus on/venting emotions, and avoidant thoughts), did not predict participants emotional and personal engagement on a stressful-event writing exercise. Participants' essays were evaluated and coded by trained raters, who assessed the degree to which participants' essays included personal information and how much emotion (positive and negative) the participant conveyed through their writing. Participants "non-expressive" characteristics failed to predict either of these essay features. The authors conclude that characteristically non-expressive participants appear just as able and willing to display emotion and disclose personal information via writing about a stressful event as their counterparts (Smyth et al., 2002). Future research may wish to include both an objective measure of emotional disclosure (such as the LIWC), as well as a self-reported measure of distress disclosure during a writing procedure (such as an interview or study-specific questionnaire). Future research may also include a verbal condition, in which participants are asked to disclose a traumatic experience to the experimenter rather than just writing about it on a computer.

The results of the current study are also in contrast to the results of Sloan and Kahn (2005) with regards to the relationship between DDI and emotional expression/disclosure. In their study, they created the “session evaluation questionnaire (SEQ)” in order to assess participants’ perception of their personal disclosure during an individual counseling session. This questionnaire was administered after participants’ third or fourth session with their counselor, and it asked participants to rate the extent to which they disclosed personal information to their counselor, and to what extent this information was relevant/not relevant to their therapy goals, positive or negative, and whether it was emotional versus not at all emotional in nature. They found that a participant’s self-reported tendency to engage in distress disclosure (DDI) was moderately, but not significantly, related to their self-reported *overall* level of disclosures made during an individual therapy session. However, participants with a high disclosure tendency reported being more likely (strong, positive relationship) to discuss and disclose *material related to their therapeutic goals* (i.e., specific content of disclosures) during an individual therapy session. These results suggest that with regards to individual therapy, participants with low disclosure tendencies may be less likely to engage in the discussion of information most relevant to their desired therapeutic goals. However, this study used a self-reported measure of state disclosure, rather than an objective measure such as the current study used (i.e., the LIWC). This is a potential explanation as to why the current study did not find a significant relationship between DDI scores and the LIWC; the former is self-reported, whereas the latter is objective in nature.

State Negative Affect and Mindfulness

Lastly, Hypothesis 5 looked at the difference between groups with regards to self-reported state NA at across time. It was hypothesized that participants who engaged in the

mindfulness exercise would evidence lower subjective distress post-writing exercise (Time 3) as compared to the participants who listened to a neutrally valenced audio clip. However, this hypothesis was not supported by the results. There was no main effect for condition or time with regards to participant's state NA; the interaction was also not significant. However, utilizing paired-sample t – test's, participants level of NA appeared to follow a predicted pattern; such that NA decreased after the mindfulness exercise/NPR audio clip, and then increased after writing about a personally traumatic experience. However, within the Control Group, their level of NA at Time 1 (pre-intervention) was not significantly different from their NA at Time 3 (post-writing); in other words, participants in the Control Group finished the experiment with the same level of NA as when they started the experiment, whereas participants in the Mindfulness Group ended the experiment with a greater level of NA than what they started with.

To further investigate the relationship between state NA and both trait and state mindfulness (FFMQ and TMS Decentering and TMS Curiosity), Spearman's Rho (r_s) correlations were conducted. Within the Mindfulness Group only, there was a significant and negative correlation found between FFMQ Total and state NA at Time 3; a marginally significant negative correlation between FFMQ Describe and state NA at Time 3; and a significant negative correlation between FFMQ Act with Awareness and state NA at Time 3. However, there was a significant positive correlation between FFMQ Observe and state NA at time 3. The Non-Judging and Non-Reactivity subscales were not significantly correlated with state NA at Time 3, although they were also in the negative direction. In the Control Group none of these relationships approached significance. This suggests that participants in the mindfulness condition who are more inclined to describe their internal experiences and who are likely to be more attentive of their present moment experiences tended to report lower state NA after writing

about a traumatic event. Furthermore, the significant positive correlation between Observe and state NA seems consistent with what has already been discussed regarding this subscale's validity in a non-meditating sample. In other words, participants in this student sample with unknown meditation experience, who report an increased tendency to notice what is most likely external and positive stimuli, also report having increased NA after writing about a traumatic experience.

Within the Control Group only, there was a significant and positive correlation between Curiosity and Decentering scores at Time 1 (post-NPR audio clip) and state NA at Time 3 (post-writing exercise). Whereas, within the Mindfulness Group, there were no significant correlations between Curiosity and Decentering scores at Time 1 (post-intervention) and state NA at Time 3. This suggests that, after listening to the NPR audio clip, participants' in the Control Group who experienced an increase in state mindfulness as measured by the TMS tended to also experience an increase in state NA after writing about a personally traumatic experience. Additionally, within the Control Group only, scores on Decentering at Time 2 were significantly and positively correlated with state NA at Time 3. This suggests that although their level of state decentering increased after writing about a traumatic event, so did their level of state negative affect. Interestingly, this pattern was not seen in the Mindfulness group. Therefore, it seems possible that the writing exercise may not have increased control participants level of "decentering" with a quality that is indicative of a mindful state. Rather, the Control Group's "decenteredness" may have been more a reflection of attempts to avoid or get away from their uncomfortable thoughts and feelings, as opposed to accepting them as they are and noticing them as just thoughts and feelings. Additionally, it is possible that after having completed the state mindfulness questionnaire one time, participants in the Control Group attempted to engage in the behavioral

patterns alluded to in the questionnaire (e.g., “I experienced myself as separate from my changing thoughts and feelings,” “I experienced my thoughts more as events in my mind than as a necessarily accurate reflection of the way things ‘really’ are”); however, they had no previous training (i.e., the mindfulness intervention) and perhaps little to no experience with being mindful, and thus they displayed an increase in NA. Lastly, the lack of correlation between state mindfulness and state NA in the Mindfulness Group is explained by the very nature of being mindful; it is about experiencing the present moment for what it is, without attempting to change it in any way. Therefore, participants who evidenced an increase in their ability to accept and just sit with their present moment experiences were less likely to experience an increase in state NA likely because they were not attempting to avoid or change their thoughts, feelings, or sensations. Given this finding regarding state mindfulness and state NA, providing clients with mindfulness practice and prompts throughout a session may prove helpful in maintaining a level of NA that does not increase in response to increased mindfulness.

Limitations

Even though there were a number of interesting and significant findings in the current study, there were also a number of limitations that future research may wish to address. As noted above, one such limitation is the use of a mindfulness exercise only, as opposed to providing participants with a more thorough yet brief introduction into mindfulness. A study conducted by McMullen et al. (2008; noted above in the *Mindfulness* section) provided evidence for the importance of including experiential exercises and metaphors when conducting experimental analogues of acceptance-based interventions. This study revealed that only the participants who received an acceptance-based metaphor and exercise (compared to distraction-based metaphor and exercise, acceptance-based written instruction, and distraction-based written

instructions) displayed a significant increase, relative to baseline, in the number of self-delivered electric shocks administered after the intervention. In other words, they displayed an increased willingness to continue with the experimental task after having engaged in a mindfulness intervention that is more analogous to therapy (i.e., employed a metaphor as well as an experiential exercise).

Also noted above, in Eirsman and Roemer's (2010) mindfulness intervention, they utilized both experiential exercises and general information about mindfulness and its usefulness in the context of dealing with emotional experiences. They also gave participants "brief mindfulness prompts" while they were watching the emotionally evocative film clips. This likely fostered participants' level of mindfulness throughout the study, as their mindfulness condition experienced prolonged and increased levels of self-reported state mindfulness. Thus, their intervention may have been more analogous to therapy than the intervention used in the current study; such that, a therapist will typically give clients a rationale for practicing mindfulness, explains what it is and how it can be helpful, and then encourages them to be mindful throughout the session (Roemer & Orsillo, 2009; Segal et al., 2002).

Another limitation was the use of a writing exercise as an analogue to a therapy session. Research has shown that participants who endorse greater characteristics associated with non-expressivity are just as likely to share their thoughts and emotions via writing as participants who do not endorse this trait (Smyth et al., 2002). However, research has also shown that participants who tend to disclose distress to others are more likely to talk about therapeutically relevant topics in a therapy session (Sloan & Kahn, 2005), and participants with higher trait distress disclosure were more likely to disclose distressing emotional statements in a structured interview following a dysphoric mood induction (Kahn et al., 2002). The important distinction between

these two findings is that one uses the medium of writing while the other uses the medium of speaking in order to disclose thoughts and emotions related to distress. Thus, had the current study used the medium of speaking to a person face-to-face, much different results may have transpired (i.e., there may have been evidence to support the hypothesis that the DDI is able to predict emotional expression during an experimental task, and may also have been greater distinction between participants who engaged in a mindfulness exercise and those who did not with regards to their level of emotional expression).

Lastly, the use of the LIWC to measure participants' level of disclosure also seems to be a potential limitation and an area of future research. In the current study the LIWC appears to be ineffective at distinguishing participants' level of emotional expression and disclosure. Future researchers may wish to include both an objective measure of emotional disclosure (such as the LIWC), as well as a self-reported measure of distress disclosure during a writing procedure (such as an interview or study-specific questionnaire). Future researchers could also devise a system of coding participants writing samples or transcripts based on qualities that are most likely to reflect a mindful stance towards the writing process as well as an increase in and greater willingness to disclose distress to another person. A self-report questionnaire could also be designed and distributed to participants after the disclosure process to assess their perspective on how willing they were to disclose their feeling of distress and to what extent they felt they actually did disclose their thoughts and feelings surrounding the event.

Conclusion

The current research was able to provide some evidence to support the use of a mindfulness exercise at the outset of a therapy session. Participants who engaged in a mindfulness exercise reported greater state mindfulness and were more likely to use insight

related words (e.g., accept, feeling, sense, think, curious) when describing a traumatic or upsetting experience via the medium of writing. Thus, clients who begin a therapy session by engaging in a mindfulness exercise may be more likely to proceed in the session in a curious, open, and accepting manner, especially when it comes to talking about upsetting personal experiences. Additionally, there appears to be a significant relationship between trait mindfulness and trait distress disclosure; such that, individuals who report generally having an increased tendency to be aware of their actions, an increased tendency to not judge or evaluate their inner experiences, and a greater tendency to describe and label their emotions, also have a greater tendency to disclose feelings of distress to others. Thus, these trait characteristics may be important to assess when beginning therapy with a client, as it may offer some insight into how to approach discussing difficult topics with such client. For example, if a client is low on both trait mindfulness and trait distress disclosure, it may prove beneficial to focus initial efforts on strengthening the client's tendency to approach their internal experiences in an accepting and non-judgmental way; rather than straightforwardly attempting to have the client increase the amount of distressing information they disclose.

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Figure 1

State Mindfulness Curiosity Means: Post-intervention and Post-writing

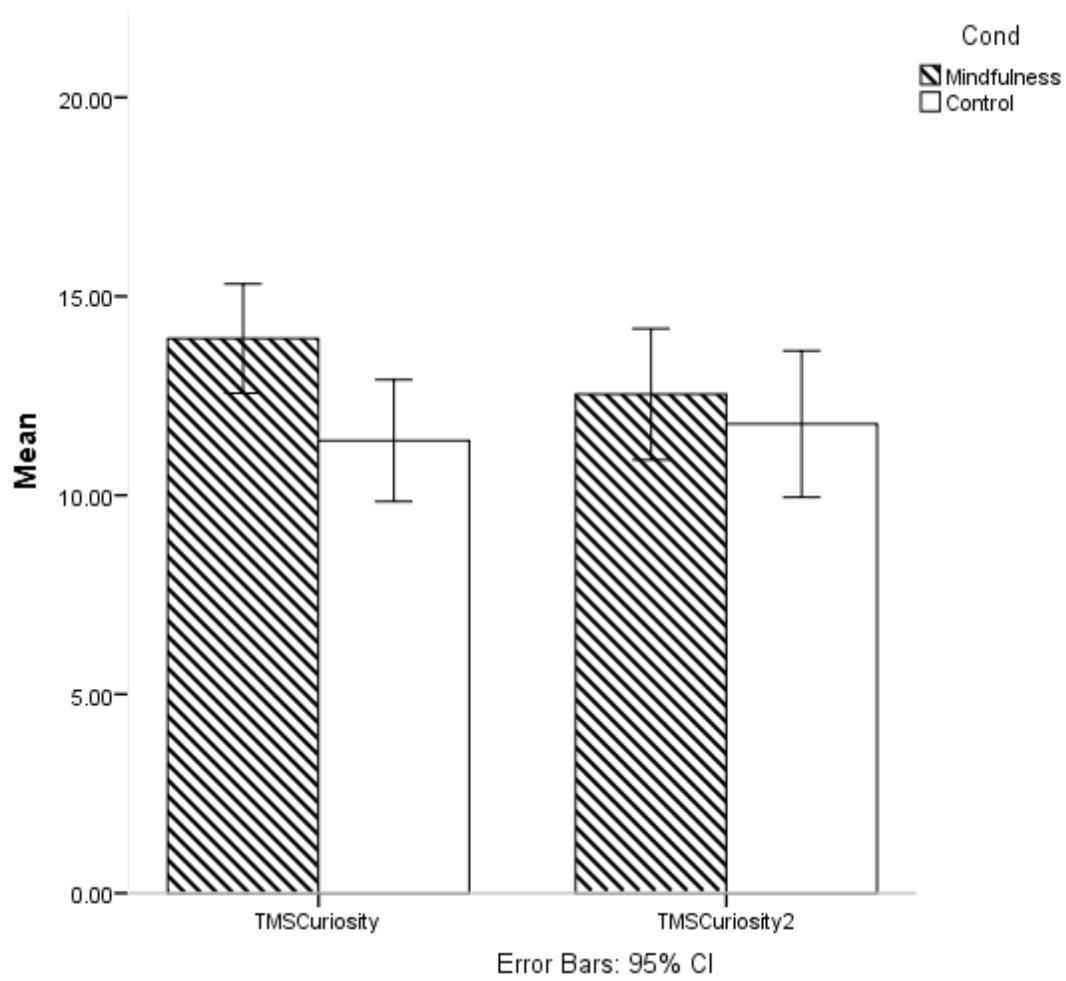


Figure 2

State mindfulness Decentering means: Post-intervention and post-writing

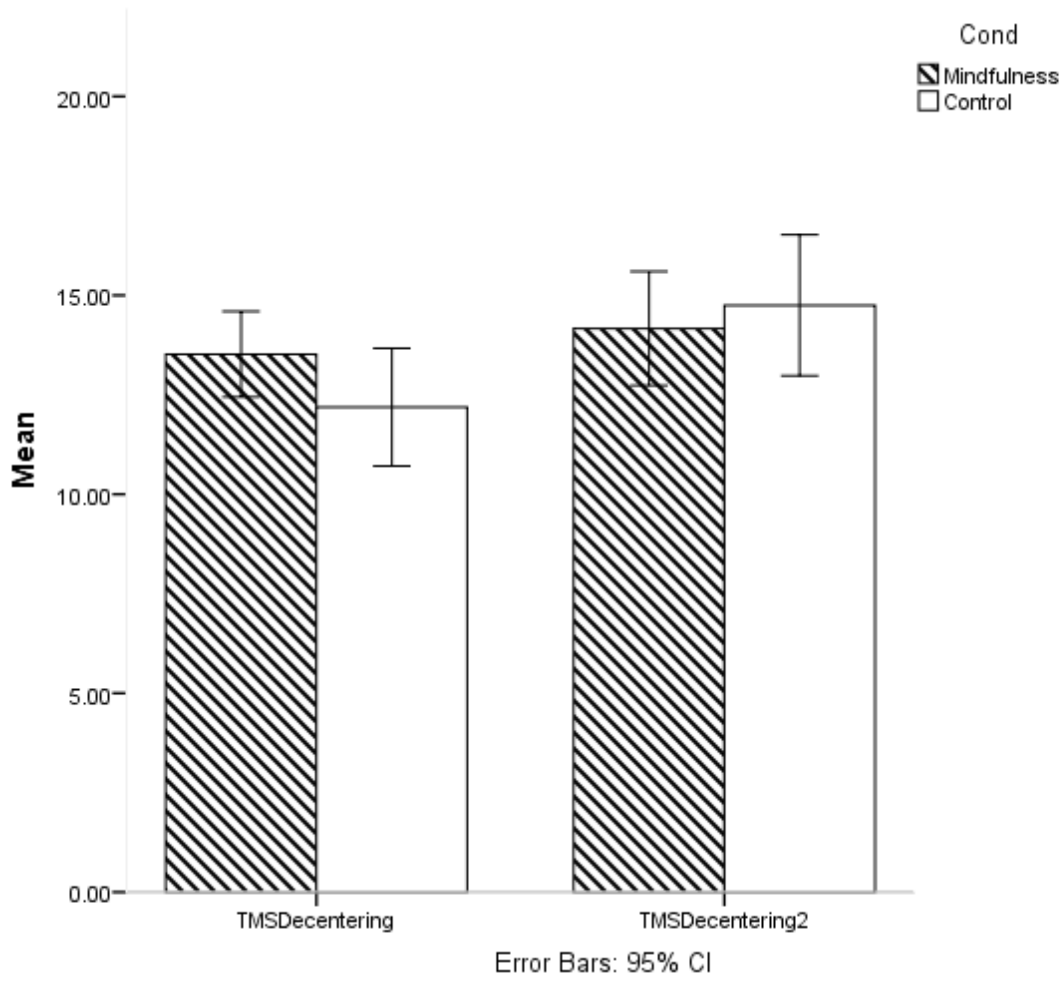


Figure 3

PANAS State negative affect means: Pre-intervention, post-intervention and post-writing

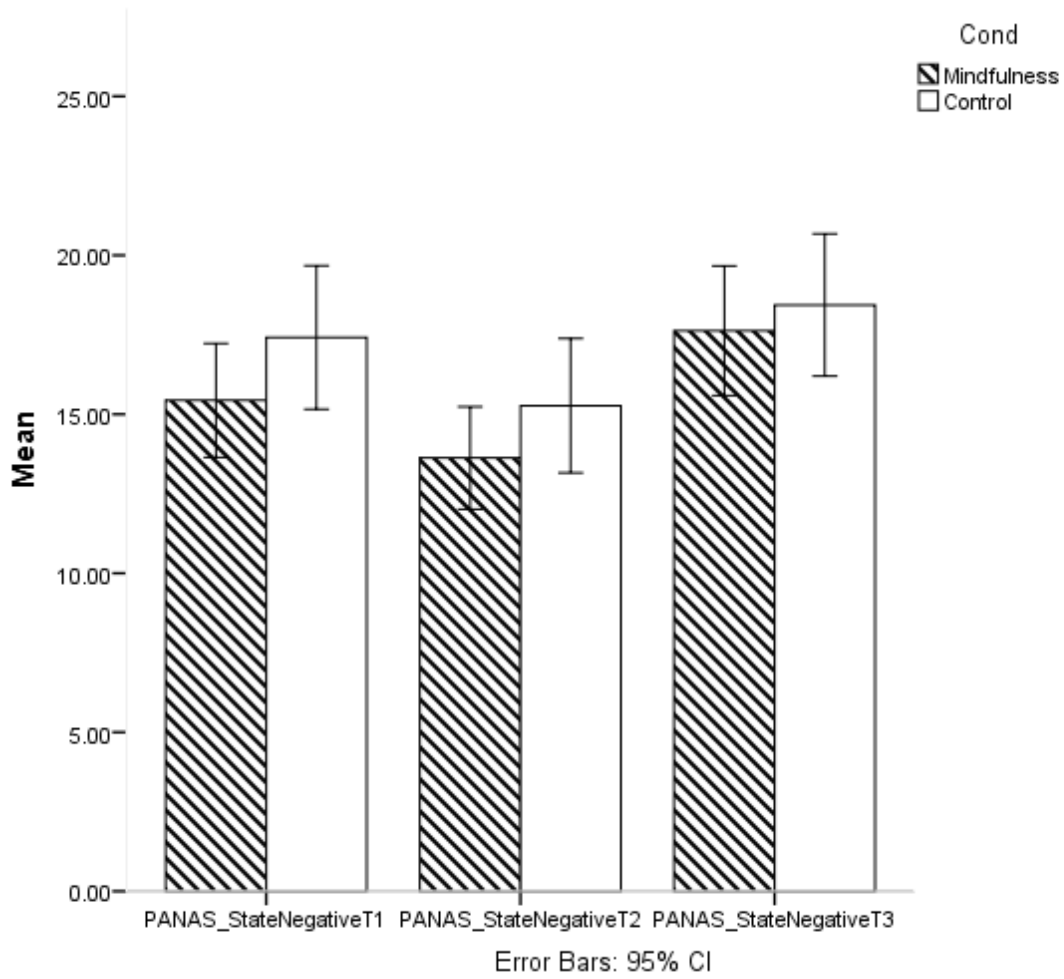


Table 1

Pre-intervention descriptive statistics: Trait mindfulness, trait positive and negative affect, and trait distress disclosure

Mindfulness Group (MG)	Mean	SD	Control Group (CG)	Mean	SD
FFMQ Observe	27.21	5.29	FFMQ Observe	27.56	4.99
FFMQ Describe	27.81	6.30	FFMQ Describe	24.35	5.70
FFMQ Act w/ Awareness	24.50	6.79	FFMQ Act w/ Awareness	23.56	4.95
FFMQ Non-Judge	25.65	6.45	FFMQ Non-Judge	23.13	5.87
FFMQ Non-React	21.56	3.62	FFMQ Non-React	21.29	3.46
FFMQ Total	126.73	16.46	FFMQ Total	119.9	14.06
PANAS Trait Positive	34.88	7.57	PANAS Trait Positive	34.96	6.27
PANAS Trait Negative	19.81	5.46	PANAS Trait Negative	22.56	7.81
DDI Total	36.29	12.42	DDI Total	34.94	9.27

Significant ($p < .05$) Skewness: FFMQ Non-React (MG), FFMQ Non-Judge (MG), FFMQ Total (CG), PANAS Trait Negative (MG), PANAS Trait Positive (MG), Significant ($p < .05$) Kurtosis: FFMQ Total (MG), PANAS Trait Positive (MG)

Significant ($p < .05$) Kolmogorov-Smirnov: FFMQ Non-Judge (MG), FFMQ Non-React (MG), FFMQ Total (MG), DDI Total (MG), PANAS Trait Positive (MG), PANAS Trait Negative (CG).

Significant ($p < .05$) Levene's Test: FFMQ Act w/ Awareness, DDI Total, PANAS Trait Negative

Table 2

Post-intervention descriptive statistics: State mindfulness post intervention and post writing exercise, and state positive and negative affect pre intervention, post intervention, and post writing exercise

Mindfulness Group (MG)	Mean	SD	Control Group (CG)	Mean	SD
TMS Curiosity 1	13.94	4.73	TMS Curiosity 1	11.38	5.27
TMS Decentering 1	13.52	3.71	TMS Decentering 1	12.19	5.10
TMS Curiosity 2	12.54	5.68	TMS Curiosity 2	11.79	6.34
TMS Decentering 2	14.17	4.93	TMS Decentering 2	14.75	6.09
PANAS St. Pos. 1	28.19	9.11	PANAS St. Pos. 1	30.35	8.19
PANAS St. Neg. 1	15.44	6.16	PANAS St. Neg. 1	17.41	7.78
PANAS St. Pos. 2	26.71	8.02	PANAS St. Pos. 2	26.15	9.04
PANAS St. Neg. 2	13.63	5.54	PANAS St. Neg. 2	15.27	7.28
PANAS St. Pos. 3	22.83	8.88	PANAS St. Pos. 3	23.33	8.46
PANAS St. Neg. 3	17.62	7.01	PANAS St. Neg. 3	18.44	7.72

Significant (p<.05) Skewness: PANAS State Negative 1 (MG and CG), PANAS State Negative 2 (MG and CG), PANAS State Positive 3 (CG), PANAS State Negative 3 (MG and CG)

Significant (p<.05) Kurtosis: PANAS State Negative 1 (MG and CG), PANAS State Negative 2 (MG and CG)

Significant (p<.05) Kolmogorov-Smirnov: TMS Decentering 1 (MG), PANAS State Negative 1 (MG and CG), PANAS State Negative 2 (MG and CG), PANAS State Negative 3 (MG and CG)

Significant (p<.05) Levene's Test: TMS Decentering 1

Table 3

LIWC word categories descriptive statistics

Mindfulness Group (MG)	Mean	SD	Control Group (CG)	Mean	SD
Word Count	463.79	134.03	Word Count	413.17	164.60
Positive Emotion	2.77	1.97	Positive Emotion	2.31	1.37
Negative Emotion	2.55	1.16	Negative Emotion	2.89	2.68
Insight	2.68	1.09	Insight	2.30	0.92
Causation	1.55	0.71	Causation	1.72	0.84

Significant ($p < .05$) Skewness: Causation (MG), Negative Emotion (MG), Positive Emotion (MG and CG)

Significant ($p < .05$) Kurtosis: Positive Emotion (MG)

Significant ($p < .05$) Kolmogorov-Smirnov: Positive Emotion (MG and CG)

Significant ($p < .05$) Levene's Test: None

Table 5

Means and standard deviations for LIWC word categories, and FFMQ subscales and DDI predictor variables

Variable	<u>M</u>	<u>SD</u>
Positive Emotion	2.54	1.71
Negative Emotion	2.72	1.06
Insight	2.49	1.02
Causation	1.64	0.78
FFMQ Observe	27.39	5.11
FFMQ Describe	26.08	6.22
FFMQ Act w/ Awareness	24.03	5.93
FFMQ Non-Judge	24.39	6.27
FFMQ Non-React	21.43	3.52
DDI Total	35.61	10.93

Table 6

Linear model of predictors of Positive Emotion words, with 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors based on 1000 bootstrap samples

Variable	<i>b</i>	<i>SE B</i>	β	<i>p</i>
Observe	.13 (.05, .22)	.04	.38	<i>p</i> = .01
Describe	-.00 (-.07, .07)	.04	-.01	<i>p</i> = .94
Act w/ Awareness	.03 (-.03, .10)	.03	.11	<i>p</i> = .31
Non-Judge	.08 (.02, .15)	.04	.28	<i>p</i> = .03
Non-React	-.06 (-.19, .07)	.06	-.12	<i>p</i> = .38
DDI Total	.00 (-.02, .03)	.01	.01	<i>p</i> = .91

Table 7

Linear model of predictors of Negative Emotion words, with 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors based on 1000 bootstrap samples

Variable	<i>b</i>	<i>SE B</i>	β	<i>p</i>
Observe	-.05 (-.09, -.01)	.02	-.23	<i>p</i> = .05
Describe	-.03 (-.08, .02)	.03	-.17	<i>p</i> = .25
Act w/ Awareness	-.04 (-.07, .01)	.02	-.20	<i>p</i> = .12
Non-Judge	.00 (-.05, .04)	.02	.01	<i>p</i> = .96
Non-React	.05 (-.01, .12)	.03	.16	<i>p</i> = .12
DDI Total	.01 (-.03, .03)	.01	.06	<i>p</i> = .69

Table 8

Linear model of predictors of Insight words, with 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors based on 1000 bootstrap samples

Variable	<i>b</i>	<i>SE B</i>	β	<i>p</i>
Observe	-.05 (-.09, .00)	.02	-.22	<i>p</i> = .04
Describe	-.01 (-.05, .04)	.02	-.06	<i>p</i> = .65
Act w/ Awareness	.02 (-.03, .06)	.02	.10	<i>p</i> = .44
Non-Judge	-.03 (-.07, .01)	.02	-.18	<i>p</i> = .13
Non-React	.07 (.01, .02)	.03	.22	<i>p</i> = .02
DDI Total	-.01 (-.03, .02)	.01	-.08	<i>p</i> = .60

Table 9

Linear model of predictors of Causation words, with 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors based on 1000 bootstrap samples

Variable	<i>b</i>	<i>SE B</i>	β	<i>p</i>
Observe	.01 (-.03, .04)	.02	.04	<i>p</i> = .71
Describe	-.03 (-.06, .00)	.02	-.23	<i>p</i> = .07
Act w/ Awareness	.00 (-.03, .03)	.02	.01	<i>p</i> = .95
Non-Judge	.01 (-.03, .03)	.01	.04	<i>p</i> = .69
Non-React	.02 (-.02, .06)	.02	.08	<i>p</i> = .41
DDI Total	.00 (-.02, .02)	.01	.02	<i>p</i> = .87

Appendix A. Demographic Information

Age (in years): _____

For the remaining items, please circle your answers—circle only one answer per question.

Education (choose your current level of education):

¹freshman ²sophomore ³junior ⁴senior ⁵graduate

Race (select the ethnicity that you most identify with):

¹African American ²Asian American ³Caucasian ⁴Hispanic ⁵Other

Sex:

¹Female ²Male

Appendix B. Five Facet Mindfulness Questionnaire

Participant number _____

Date _____

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

1	2	3	4	5
Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true

- _____ 1. When I'm walking, I deliberately notice the sensations of my body moving.
- _____ 2. I'm good at finding words to describe my feelings.
- _____ 3. I criticize myself for having irrational or inappropriate emotions.
- _____ 4. I perceive my feelings and emotions without having to react to them.
- _____ 5. When I do things, my mind wanders off and I'm easily distracted.
- _____ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.
- _____ 7. I can easily put my beliefs, opinions, and expectations into words.
- _____ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- _____ 9. I watch my feelings without getting lost in them.
- _____ 10. I tell myself I shouldn't be feeling the way I'm feeling.
- _____ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- _____ 12. It's hard for me to find the words to describe what I'm thinking.
- _____ 13. I am easily distracted.
- _____ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- _____ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.
- _____ 16. I have trouble thinking of the right words to express how I feel about things
- _____ 17. I make judgments about whether my thoughts are good or bad.
- _____ 18. I find it difficult to stay focused on what's happening in the present.
- _____ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.

Appendix B (continued). Five Facet Mindfulness Questionnaire

1	2	3	4	5
Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true

- _____ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
- _____ 21. In difficult situations, I can pause without immediately reacting.
- _____ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
- _____ 23. It seems I am "running on automatic" without much awareness of what I'm doing.
- _____ 24. When I have distressing thoughts or images, I feel calm soon after.
- _____ 25. I tell myself that I shouldn't be thinking the way I'm thinking.
- _____ 26. I notice the smells and aromas of things.
- _____ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.
- _____ 28. I rush through activities without being really attentive to them.
- _____ 29. When I have distressing thoughts or images I am able just to notice them without reacting.
- _____ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
- _____ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
- _____ 32. My natural tendency is to put my experiences into words.
- _____ 33. When I have distressing thoughts or images, I just notice them and let them go.
- _____ 34. I do jobs or tasks automatically without being aware of what I'm doing.
- _____ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.
- _____ 36. I pay attention to how my emotions affect my thoughts and behavior.
- _____ 37. I can usually describe how I feel at the moment in considerable detail.
- _____ 38. I find myself doing things without paying attention.
- _____ 39. I disapprove of myself when I have irrational ideas.

Appendix C. Toronto Mindfulness Scale

<p>Instructions: We are interested in what you just experienced. Below is a list of things that people sometimes experience. Please read each statement. Next to each statement are five choices: “not at all,” “a little,” “moderately,” “quite a bit,” and “very much.” Please indicate the extent to which you agree with each statement. In other words, how well does the statement describe what you just experienced, just now?</p>	<p>Not at all</p>	<p>A little</p>	<p>Moderately</p>	<p>Quite a bit</p>	<p>Very much</p>
<p>1. I experienced myself as separate from my changing thoughts and feelings.</p>	0	1	2	3	4
<p>2. I was more concerned with being open to my experiences than controlling or changing them.</p>	0	1	2	3	4
<p>3. I was curious about what I might learn about myself by taking notice of how I react to certain thoughts, feelings or sensations.</p>	0	1	2	3	4
<p>4. I experienced my thoughts more as events in my mind than as a necessarily accurate reflection of the way things ‘really’ are.</p>	0	1	2	3	4
<p>5. I was curious to see what my mind was up to from moment to moment.</p>	0	1	2	3	4
<p>6. I was curious about each of the thoughts and feelings that I was having.</p>	0	1	2	3	4
<p>7. I was receptive to observing unpleasant thoughts and feelings without interfering with them.</p>	0	1	2	3	4
<p>8. I was more invested in just watching my experiences as they arose, than in figuring out what they could mean.</p>	0	1	2	3	4
<p>9. I approached each experience by trying to accept it, no matter whether it was pleasant or unpleasant.</p>	0	1	2	3	4
<p>10. I remained curious about the nature of each experience as it arose.</p>	0	1	2	3	4
<p>11. I was aware of my thoughts and feelings without overidentifying with them.</p>	0	1	2	3	4
<p>12. I was curious about my reactions to things.</p>	0	1	2	3	4
<p>13. I was curious about what I might learn about myself by just taking notice of what my attention gets drawn to.</p>	0	1	2	3	4

Appendix D (continued). Distress Disclosure Index

10. When I'm distressed I don't tell anyone.

1 2 3 4 5

11. I usually seek out someone to talk to when I am in a bad mood.

1 2 3 4 5

12. I am willing to tell others my distressing thoughts.

1 2 3 4 5

Appendix E. PANAS – Trait

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally feel this way, that is, how you feel on average. Use the following scale to record your answers

	1	2	3	4	5
	very slightly	a little	moderately	quite a bit	extremely
Interested_____					
					Irritable_____
Distressed_____					
					Alert_____
Excited_____					
					Ashamed_____
Upset_____					
					Inspired_____
Strong_____					
					Nervous_____
Guilty_____					
					Determined_____
Scared_____					
					Attentive_____
Hostile_____					
					Jittery_____
Enthusiastic_____					
					Active_____
Proud_____					
					Afraid_____

Appendix E (continued). PANAS – State

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

	1	2	3	4	5
	very slightly	a little	moderately	quite a bit	extremely
Interested_____					
Irritable_____					
Distressed_____					
Alert_____					
Excited_____					
Ashamed_____					
Upset_____					
Inspired_____					
Strong_____					
Nervous_____					
Guilty_____					
Determined_____					
Scared_____					
Attentive_____					
Hostile_____					
Jittery_____					
Enthusiastic_____					
Active_____					
Proud_____					
Afraid_____					

*Appendix F. Consent Form for Course Credit***Introduction**

You are invited to participate in a research study investigating the impact of distress disclosure and mindfulness on expressive writing. The results of the study may be used to help researchers design interventions that promote client disclosure during therapy sessions. This experiment is being conducted by Kelsey Eitel to fulfill requirements for a master's degree at the University of South Carolina Aiken. Dr. Jane Stafford is the faculty supervisor for this study. Please read this form carefully and ask questions you may have before making the decision about whether or not to participate.

Procedures

Your participation in this study will involve attending two separate sessions, which will be scheduled to take place approximately one to four weeks apart. While participating in the experiment you will be required to turn off your cell phone. During the first session, you will be asked to complete some questionnaires. You will then be asked to schedule a time with the experimenter in which you will be able to attend the private second session of the experiment. This first session should take you approximately 30 minutes.

During the second session you will be escorted by the experimenter to a private laboratory office with a computer, where you will be asked to write expressively about a traumatic or upsetting event after either engaging in an audiotaped mindfulness exercise or listening to an audiotaped excerpt from National Public Radio. You will be asked to complete various self-report forms throughout this phase of the experiment. This session will take you approximately 60 minutes to complete

Total time for participating in this study will be approximately one hour and 30 minutes. While you will not be paid for your participation, you will receive 30 minutes course credit for attending session one, and one hour course credit for attending session two.

Confidentiality

Your participation will be confidential. Your name will not be used in reporting the results of this study or with the process of data collection, nor will it appear in any reports or presentations about this study. An identification number will be assigned to you at the beginning of the project and this number will be used on all records. Any forms that have your personal identifying information, for example your name and birth date, will be stored in a locked filing cabinet and only authorized study personnel will have access to them. There are, however, limitations to confidentiality. If you endorse the intent to harm yourself or others, we would have the obligation to report this to someone who could prevent or stop this from happening. Additionally, if you report the abuse of a child or an elderly person, we are also obligated to

report this to the appropriate authorities. If you decide to participate in this study, you will also be required not to talk with others about the experiment, as it may ruin or change its findings.

Risks of Participating

People sometimes feel sad or depressed after writing about something upsetting. If that happens, it is completely normal. Most people say that these feelings go away in an hour or so. If at any time during the experiment you feel overwhelmed with distress or sadness, you may speak to the experimenter about your feelings and/or discontinue your participation. If you wish to speak to a mental health counselor, you may receive these services at the USCA Counseling Center located in the Business and Education Building, Suite 126 (803-641-3609), free of charge.

Voluntary Participation

You are free to leave the experiment at any time. If you wish to stop, you may do so without any repercussions and still receive credit for the amount of time you participated. You may simply tell the experimenter that you wish to quit, and the study will be stopped.

Contacts

If you have any questions about this study, please contact the Principle Investigator: Kelsey Eitel at (847) 337-6704 or at keitel@usca.edu, or her supervisor Dr. Jane Stafford at jstafford@usca.edu.

I may be contacted at the following phone number _____ or email address _____ to remind me of my following appointment.

I have read (or have had read to me) the contents of this consent form. I have been encouraged to ask questions and received answers to my questions. I give my consent to participate in this study. I have received (or will receive) a copy of this form for my records and future reference.

Participant Signature

Date

Experimenter Signature

Date

Appendix G. Participant Writing Instructions

Both conditions will receive the following writing instructions: “Using the computer in front of you, I want you to write about one of the most traumatic and/or upsetting experiences of your life. This may include such topics as the loss of a loved one, the ending of an important relationship, a personal failure, or a tragic accident you’ve experienced. Ideally, whatever you write about should be intensely personal and dealing with an event or experience that you have not talked about with others in detail. It is also important that you really “let go” for the time being, so you can write about and examine your deepest thoughts and feelings related to the event. You are asked to continuously write for 15 minutes. Whatever you write about will be confidential, as explained in the consent form. However, if your writing indicates that you intend to harm yourself or others, or you report the abuse of a child or elderly, we are legally bound to break that confidentiality. It is also important to note that people sometimes feel sad or depressed after writing. If that happens, it is completely normal. Most people say that these feelings go away in an hour or so. If at any time during the experiment you feel overwhelmed with distress or sadness, please contact the counseling center or the psychology clinic on the University’s campus.” (adapted from Pennebaker et al., 1988, and Sloan & Marx, 2004).

Appendix H. Mindfulness Exercise Transcript (audiotaped by the author prior to conducting the experiment)

For the next 15 minutes I would like you to listen along with this recording as I guide you through a mindfulness exercise. There is no right or wrong way to do this exercise, just follow my voice as best you can. I would like you to start this exercise by placing your feet squarely on the floor and sitting up in your chair so that your back is straight but not rigid. Make sure that your head feels square with your shoulders and place your arms in a comfortable position at your side. This posture helps us to stay alert and focused.

Next, I'd like you to gently close your eyes... and take a moment to notice the parts of your body that make contact with the chair you are sitting in... Notice how you are sitting in the chair... Pay attention to the place on your body where you are touching the chair and the places where you are touching the floor... Notice where you feel your legs and buttocks press against the chair, where your feet contact the floor, and the places on your arms and hands that touch either your lap or the armrest of the chair...

When you are ready to do so, shift the focus of your attention to your breathing... Place your attention at the tip of your nose and begin to notice the sensations of air moving in and out of your nostrils... You may notice that the air coming in through your nostrils is slightly cooler than the air moving out of your nostrils... Follow the breath as it enters your nostrils and travels down through your body and into your lungs... Allow yourself to gently follow your breathing, paying attention to the gentle, easy air as it passes in and out... You may also notice the rise and fall of your chest... Notice how your chest and abdomen gently rise upward and slightly inward with each breath that is inhaled... Be completely aware of your breathing... Notice the point where the breath has reached its end and the process of exhaling begins... Follow the breath as it

comes from your lungs and leaves your nostrils... Continue to follow each breath as it enters and exits your nostrils... If you become distracted at any point during the exercise, see if you can first notice what distracted you... Then gently bring your attention back to your breathing... There is no way to fail this exercise no matter how many times you might become distracted... Each time you become distracted is an opportunity to practice gently redirecting your attention back to your breathing... Now, let's just take the next few moments to focus completely on your breathing... Noticing the air as it passes in and out... noticing the rise and fall of your chest...

Now, I'd like you to sift your attention to following the sound of my voice again... I want you to imagine that you are sitting next to a small quiet stream on a cool fall day... The only noises you hear are that of the birds chirping, the leaves rustling in the wind, and the sound of the stream flowing by you... As you gaze at the stream you notice a number of large leaves floating by in the water... They are all different colors, shapes, and sizes, just drifting along... each at its own pace, one by one, in the slowly moving current of the stream... Allow yourself to simply be there for a moment, just watching and noticing the leaves in the stream...

Gradually bring your awareness to what is going on inside of you, gently notice and label each thought, feeling, sensation... one by one place each experience on a leaf in the stream and watch it as it is being carried away... Focus your attention on the stream of thoughts passing by in front of you, one by one... perhaps one of those thoughts is "I don't have time for this..." Observe as each leaf comes closer to you... then watch as it slowly moves away, drifting along as it carries the contents of your mind and body down the stream... Notice that as each thought drifts by, another arises to replace it in the flow... Follow each thought until another emerges in the progression... Continually return your attention to the gazing of the stream, waiting for the

next leaf to float by... Continue placing each thought, feeling, sensation, on its own large leaf... watch each one as you let them just float away...

If you become distracted at any point during the exercise, see if you can first notice what distracted you. Then gently bring your attention back to your breathing. Next, shift your attention back to watching the flow of thoughts in front of you... Place any distracting thoughts in with the others you have been watching and observe it being carried by on a leaf... There is no way to fail this exercise no matter how many times you might become distracted... each time you become distracted is an opportunity to practice gently redirecting your attention back to watching your thoughts... Let's take the next few moments to continue watching the leaves on the stream go by... one by one... carrying your thoughts, feelings, sensations down the stream... Placing each of your thoughts, feelings, sensations, on its own leaf, and allowing the stream of thoughts to gently flow past you...

Now, releasing your attention from the stream, gently focus again on the rise and fall of your breathing... The sensation of air as it passes through your nostrils and into your lungs... Paying attention to the gentle, easy air as it passes in and out... be completely aware of your breathing... Then, when you're ready... bring your attention to your body and how it feels to sit in the chair... Notice the placement of your feet, your arms, your hands, and your head... Now, picture what the room will look like when you open your eyes... And, when you're ready, rejoin the room by opening your eyes.

Appendix I. Debriefing Sheet

Thank you for your participation in this experiment!

The objective of this study was to investigate the effects of trait distress disclosure, trait mindfulness, and a mindfulness exercise, on emotional expression during a written disclosure exercise. Distress disclosure refers to an individual's ability and willingness to be open and share with others their personal and sometimes upsetting thoughts and feelings. Mindfulness refers to paying attention and noticing thoughts and emotions in the present moment in a particular way: on purpose, nonjudgmentally, and with receptiveness, curiosity and acceptance. Mindfulness involves allowing your thoughts and feeling to be as they are, without attempting to change them in any way. We expect to find evidence that individuals' who are higher in trait distress disclosure and trait mindfulness will express more emotion during the written disclosure task. We also expect to find that participants who engaged in the mindfulness exercise prior to the writing task will also express more emotion due to the exercises ability to promote a mindful state (i.e., accepting and willing to experience thoughts and feelings in the present moment) and thus facilitate the participants' emotional engagement in the writing task.

Please do not tell your friends or classmates who may participate in this study about your experiences while participating in this study as it could impact our results.

If you have any further questions or concerns please feel free to contact Kelsey Eitel at Eitelk@email.usca.edu or Dr. Stafford at jstafford@usca.edu for more information.

Appendix I (continued). Debriefing Sheet

Mindfulness Resources

Websites:

- www.mindful.org
- www.psychologytoday.com/basics/mindfulness
- www.mindfulness-solution.com

Books:

- *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress* (Jon Kabat-Zinn)
- *Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life* (Jon Kabat-Zinn)
- *Mindfulness for Beginners: Reclaiming the Present Moment - and Your Life* (Jon Kabat-Zinn)
- *The Mindfulness Solution: Everyday Practices for Everyday Problems* (Ronald D. Siegel)
- *Meditation and Mindfulness Training: Practical Mindfulness Exercises and Mindful Meditations (The Meditation for Life Series)* (Beth Banning)