Posttraumatic Growth in Combat Veterans: The Roles of Mindfulness and Experiential Avoidance

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Abstract

Combat veterans are at risk for developing a host of mental health concerns, especially posttraumatic stress disorder (PTSD), a defining feature of which is experiential avoidance. However, positive psychological changes can also occur following combat exposure, referred to as posttraumatic growth (PTG). Evidence highlights that PTG serves as a protective factor, indicating the importance of expanding treatment opportunities to increase PTG among combat veterans. Recent research suggests that mindfulness enhances PTG, but the mechanism through which this occurs is not understood. The current study examined the impact of mindfulness and experiential avoidance on PTG, testing specifically whether experiential avoidance would mediate the relationship between mindfulness and PTG. Combat veterans (N = 94) were recruited via social media and online forums and completed questions about dispositional mindfulness, experiential avoidance, PTG, PTSD symptoms, and military and demographic information.

Contrary to the hypothesis, experiential avoidance did not significantly mediate the relationship between mindfulness and PTG; however, experiential avoidance did emerge as a significant partial mediator of mindfulness and PTSD. Simple regression analyses were conducted to further examine the relationships between facets of mindfulness and those of PTG. Mindfulness was a significant predictor of PTG, particularly when the Spiritual Change facet of PTG was removed from the analysis. Mindfulness significantly predicted New Possibilities, as well as Personal Strength facets of PTG. The Nonreactivity facet of mindfulness significantly predicted PTG, as well as all facets of PTG except Spiritual Change. The Observing facet of mindfulness significantly predicted New Possibilities. Finally, a simple regression analysis revealed that experiential avoidance was a significant predictor of Personal Strength. The

findings of the present study point to the importance of targeting experiential avoidance in clinical interventions with combat veterans, to both reduce symptoms of PTSD and augment PTG specific to feelings of personal strength. Acceptance- and mindfulness-based interventions (MBIs) such as acceptance and commitment therapy may be implemented to help target experiential avoidance to thereby alleviate PTSD symptomology; however, MBIs alone may facilitate PTG in combat veterans. Such interventions should be adapted to specifically target nonreactivity to inner experience as well as observing facets of mindfulness in order to best enhance PTG in combat veterans.

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Dedication

For those who have made the ultimate sacrifice, we are grateful that such men and women were among us. For those who continue to serve, we honor their commitment. For those who return to civilian life, we honor their service. -Steve Buyer

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CHAPTER ONE

Posttraumatic Growth in Combat Veterans: The Roles of Mindfulness and Experiential Avoidance

Combat exposure is a risk factor for the development of posttraumatic stress disorder (PTSD)—with one study finding that 38% of men who had experienced combat-related trauma had PTSD (Kessler et al., 1995), which can be further accompanied by a host of mental, physical, and psychosocial health concerns (Aldwin, Levenson, & Spiro, 1994; Pietrzak et al., 2010). The Institute of Medicine (2012) stated that three categories of conditions frequently co-occur with PTSD: psychiatric (e.g., depression and substance use disorders), medical (e.g., chronic pain, traumatic brain injury, and spinal cord injury), and psychosocial (e.g., relationship problems, difficulties in social settings, intimate partner violence, child maltreatment, unemployment or lack of employment, homelessness, and incarceration). For example, if the stress of trauma exposure develops into PTSD, veterans are at increased risk for substance abuse, depression, suicide, job loss, divorce, and domestic violence perpetration (Bush, Skopp, McCann, & Luxton, 2011; Prigerson, Maciejewski, & Rosenheck, 2002). One in six Army and Marine veterans of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) met the criteria for PTSD, depression, or generalized anxiety disorder following return from combat (Hoge et al., 2004). Olatunji, Cisler, and Tolin (2007) found that PTSD impacts a person's physical health, social functioning, and interpersonal relationships to a much greater degree than any other anxiety disorder.

Since the beginning of combat operations in Iraq and Afghanistan, an upward trend of suicide rates among service members has been recognized. Record high suicide rates have been reported for the Army in recent years such that veterans in the general U.S. population may be

more than twice as likely to die of suicide compared to nonveterans (Belik, Stein, Asmundson, & Sareen, 2009; Kuehn, 2009). A study that examined PTSD as a risk factor for suicidal ideation among OEF and OIF veterans found that veterans who screened positive for PTSD were about 4.5 times more likely to report suicidal ideation than veterans who did not have PTSD (Jakupcak et al., 2009). Furthermore, among those veterans that screened positive for PTSD, those who also screened positive for two or more comorbid disorders were 5.7 times more likely to report suicidal ideation that those who had fewer comorbidities (Jakupcak et al., 2009). It is also important to highlight that even when a clinical diagnosis of PTSD is not warranted, health and psychosocial impairments may still result as a consequence of combat exposure (Pietrzak et al., 2009). The sequelae that can develop following combat exposure, particularly PTSD and its associated dangers, indicate a clear need to understand what factors can help protect against these severe effects of posttraumatic stress.

Posttraumatic Growth among Combat Veterans

Although exposure to traumatic events such as combat experiences can result in severely negative psychological consequences, there is also growing evidence that traumatic experiences can result in positive psychological changes (e.g., Linley & Joseph, 2004; Seligman & Csikszentmihalyi, 2000). Posttraumatic growth (PTG) refers to the positive psychological changes that develop following exposure to a traumatic event, and has been found to be associated with combat exposure (Dekel, Mandl, & Solomon, 2011) and many other significantly stressful life events (Tedeschi & Calhoun, 1995). With regard to the experience of PTG among veteran populations, Tsai and colleagues (2015) found that half (50.1%) of over 3,100 veterans who participated in the National Health and Resilience in Veterans Study reported at least moderate PTG in relation to their worst traumatic event. PTG can be characterized by five major

domains of positive change that manifest in the trauma-exposed individual: (a) improved interpersonal relationships, (b) openness to new possibilities, (c) a greater appreciation of life, (d) an increased sense of personal strength, and (e) spiritual development (Tedeschi & Calhoun, 1995). Researchers have highlighted that PTG is a complex construct and thus a critical area of study in order to work toward a better understanding of its multifaceted processes (e.g., Hobfoll et al., 2007; Tedeschi, Calhoun, & Cann, 2007); however, Tedeschi, Calhoun, and Cann (2007) emphasized that it is first and foremost important to fully understand the theoretical conceptualizations, which are reviewed below.

Janoff-Bulman (2006) developed a model to better understand the process of PTG, which depicts three different processes and perspectives on trauma survivors' positive changes: (a) strength through suffering, (b) existential reevaluation, and (c) psychological preparedness. The first process, strength through suffering, suggests that it is deemed a prerequisite for a trauma survivor to first experience distress in the aftermath of trauma—described by Janoff-Bulman (2006) as a shattering of one's pre-trauma assumptive world or core belief system—in order to experience growth. This process of reconstructing one's shattered beliefs serves as a foundation for recognizing personal strengths and new possibilities. In fact, several studies have supported this theory in demonstrating that individuals who experienced more core belief disruption experienced greater PTG (Cann et al., 2010; Roepke & Seligman, 2015). When coupled with survivors' reconstructed assumptive world, their greater appreciation for and recognition of the value of life becomes a foundation for committed action and thus leads to an increased appreciation of life, improved interpersonal relationships, and spiritual growth—this comprises the existential reevaluation process (Janoff-Bulman, 2006). A result of survivors' reconstructed fundamental assumptions is a state of psychological preparedness, which is characterized by a

reduced risk of psychological breakdown, degeneration, and shock in the face of any future adversity (Janoff-Bulman, 2006). This is a different form of PTG such that, instead of being reflected in positive changes reported by survivors, it is more akin to a psychological state in which survivors have built an immunity and resiliency against future traumatization. This form of PTG has been supported by various researchers who have found that PTG provides protective elements in the face of future adverse circumstances (Calhoun & Tedeschi, 2006; Meichenbaum, 2006; Moran, Burker, & Schmidt, 2013; Tedeschi & Calhoun, 2005).

If a trauma survivor does not experience a shattered assumptive world following a traumatic event, then that would indicate that there were no fundamental assumptions or core beliefs to be challenged to begin with; this response to trauma would instead demonstrate that the survivor possessed some form of resilience that shielded him/her from having his/her assumptive world disrupted. Therefore, a psychological change would not apply or be necessary with this trauma response. To provide further support for this model, in recent years researchers have found a curvilinear, inverted U-shaped relationship between PTG and PTSD, suggesting that PTG is most likely to develop when a moderate amount of PTSD symptoms exist (Dekel, Mandl, & Solomon, 2011; Shakespeare-Finch & Lurie-Beck, 2014; Tsai et al., 2015). Thus, PTG is most likely to occur when symptoms of posttraumatic stress reach a certain threshold, but not when these symptoms are too negligible or too severe.

Evidence suggests that the experience of PTG acts to promote adjustment and alleviate distress following trauma exposure, thus serving as a protective factor against the negative consequences that can develop after combat exposure (Davis, Nolen-Hoeksema, & Larson, 1998; Frazier, Conlon, & Glaser, 2001; Tsai et al., 2015). These protective effects of PTG remain evident even among those who are diagnosed with PTSD, as seen in veterans in Tsai and

colleagues' (2015) sample who screened positive for PTSD: 72% reported at least moderate PTG and reported better mental functioning and general health than their counterparts who screened positive for PTSD but did not report PTG. PTG has also been found to be associated with lower levels of PTSD and higher levels of emotional maturity (Aldwin & Levenson, 2004), as well as a preparedness or resilience for future events that may otherwise be traumatic (Calhoun & Tedeschi, 2006; Meichenbaum, 2006). Furthermore, PTG offers even greater protective elements following combat, including reduction in suicidal ideation (Bush, Skopp, McCann, & Luxton, 2011). The positive psychological changes that can result from combat exposure and, moreover, the protective factors they serve against the consequences of PTSD, highlight a need to cultivate interventions that enhance PTG among veterans following combat exposure.

Mindfulness and Posttraumatic Growth

Studies have shown that active processing of trauma exposure can facilitate PTG (Berger, 2015; Davis & Nolen-Hoeksema, 2009; Janoff-Bulman, 2006; Moran, Burker, & Schmidt, 2013; Tedeschi & Calhoun, 2004; Tedeschi & McNally, 2011). Mindfulness, which has been generally defined as "bringing one's complete attention to the experiences occurring in the present moment, in a nonjudgmental or accepting way" (Baer et al., 2006, p. 27), may enable the active processing that leads to growth following adversity. Mindfulness-based interventions, which seem to increase dispositional mindfulness—an inherent quality of consciousness available to all people to varying degrees (Brown & Ryan, 2003) and how mindfulness will be measured in the present study—have been found to improve, as well as predict, a wide range of medical and psychiatric disorders, including PTSD (Baer, Carmody, & Hunsinger, 2012; Eberth & Sedlmeier, 2012). For instance, dispositional mindfulness has been found to correlate with reductions in

thought suppression and substance cravings, both of which predict substance abuse and posttraumatic stress symptoms at higher levels (Garland & Roberts-Lewis, 2013).

Furthermore, mindfulness has been linked to PTG (Chopko & Shwartz, 2009; Garland et al., 2007; Hanley, Peterson, Canto, & Garland, 2015; Mackenzie et al., 2007), general well-being, and positive affect, as well as decreases in negative psychological states (Bowen et al., 2006; Brown & Ryan, 2003; Carmody & Baer, 2008; Chandiramani, Verma, & Char, 1995; Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007). Although preliminary research has shown that mindfulness-based interventions and dispositional mindfulness are associated with PTG, the mechanism through which this occurs is unclear and, moreover, has not been researched to date. Understanding the change mechanism through which mindfulness leads to an increased appreciation of life, openness to new possibilities, spiritual growth, increased relations to others, and a greater sense of personal strength (i.e., the five domains that characterize PTG) will help inform practitioners what mindfulness-based approaches are targeting and thus provide greater empirical support for utilizing these approaches with trauma survivors. That is, a clearer understanding of the relationship between mindfulness and PTG could help practitioners tailor mindfulness-based interventions for trauma survivors.

Acceptance and Commitment Therapy

Tedeschi and McNally (2011) emphasized that the approaches that have been recommended in the literature for the facilitation of PTG combine elements of cognitive, existential, humanistic, and narrative approaches to change. Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is an empirically validated mindfulness- and acceptance-based treatment that combines these various elements in its bottom-up-generated approach (i.e., it integrates concepts from existing, validated approaches) and would thus

theoretically be an ideal candidate for enhancing PTG. Moreover, its underlying theory may help clinicians understand the mechanism through which mindfulness facilitates PTG and, consequently, better inform researchers and practitioners how mindfulness-based approaches work.

The core conception of ACT rests on the belief that symptoms of posttraumatic stress are developed and perpetuated through experiential avoidance, which refers to deliberate attempts to alter the form, frequency, or situational sensitivity of private events, even when doing so causes behavioral harm and is inconsistent with one's long-term values (Hayes et al., 1996). Hayes and colleagues (1996) have described experiential avoidance as a functional diagnostic dimension that is often unrecognized as a mechanism across multiple disorders and problematic behaviors; furthermore, it has been negatively associated with mindfulness (Baer et al., 2006). An ACT process that supports experiential avoidance is called cognitive fusion, defined as "excessive or improper regulation of behavior by verbal processes, such as rules and derived relational networks" (Hayes et al., 2006, p. 6). Cognitive fusion occurs when an individual responds to his or her private events as if they are the absolute truth. Together, cognitive fusion and experiential avoidance comprise psychological inflexibility, which in turn leads to the development and maintenance of psychopathological symptoms. This highlights the importance of implementing therapeutic interventions that target experiential avoidance, especially for PTSD, of which avoidance symptoms are a defining feature that lead to impairment of functioning and lack of opportunity for experiencing growth.

The alternative to experiential avoidance is psychological flexibility, which refers to the ability to fully embrace thoughts, feelings, and experiences in the present moment without avoidance and persisting in or altering behavior to be consistent with goals and values (Hayes et

al., 2006). In fact, the ultimate goal of ACT interventions is to increase individuals' psychological flexibility (Follette, Palm, & Pearson, 2006; Orsillo & Batten, 2005).

The Present Study

The present study adds to the literature in examining the relationships between mindfulness, experiential avoidance, and PTG among a sample of combat veterans. If a lack of mindfulness and psychological flexibility (i.e., experiential avoidance) contributes to the development and maintenance of symptoms of PTSD as proposed by ACT, then mindfulness may lead to psychological flexibility (i.e., minimal experiential avoidance), which may in turn enhance PTG. That is, experiential avoidance may be the mechanism of change underlying mindfulness-based interventions. Kashdan and Kane (2011) found that experiential avoidance moderated the relationship between posttraumatic distress and PTG such that people with posttraumatic distress exhibiting low levels of experiential avoidance were more likely to experience PTG than their counterparts exhibiting higher levels of experiential avoidance. This finding supports that a willingness to fully contact the present moment may serve as a catalyst for growth after trauma; moreover, a disposition to mindfulness, enhanced through mindfulness-based interventions such as ACT, may precede this willingness.

The current study used a mediation analysis to investigate whether mindfulness leads combat veterans to be willing to fully contact the present moment, which in turn results in enhanced growth. Gu and colleagues' (2015) meta-analysis of mindfulness mediation studies provided preliminary but insufficient evidence that psychological flexibility serves as a mediator of mindfulness and stress and mood states, indicating the need for further research. Research to date has failed to fully examine experiential avoidance as a mediator of mindfulness and PTG. Understanding how experiential avoidance impacts the relationship between mindfulness and

PTG has important implications for the use of ACT and mindfulness-based interventions with combat veterans in protecting against the negative psychological consequences that can result from exposure to combat (e.g., suicide; Bush, Skopp, McCann, & Luxton, 2011). The following hypotheses were proposed:

H1: Dispositional mindfulness will be significantly positively correlated with PTG.

H2: Dispositional mindfulness will be significantly negatively correlated with experiential avoidance.

H3: Experiential avoidance will be significantly negatively correlated with PTG.

H4: The addition of experiential avoidance to the regression equation will significantly reduce the relationship between dispositional mindfulness and PTG.

Method

Participants

A G*Power a priori power analysis with an α error probability of .05, effect size of .15, and power of .95 suggested a total sample size of 89 participants for each linear multiple regression conducted. Combat veterans were recruited through convenience sampling, which included word-of-mouth through online veteran support groups as well as support groups from several universities in the mid-Atlantic region of the United States. Inclusion criteria for participation in the study included U.S. combat veteran status, meeting criterion A for DSM-5 criteria for PTSD (i.e., experiencing and/or witnessing traumatic experiences in combat), English-speaking, 18 years or older, and able to understand and sign informed consent and self-report measures. Participants were recruited until a total of 89 meeting full inclusion criteria was reached.

A total of 95 participants completed the survey; however, one individual did not complete the items capturing key variables for the present study (i.e., posttraumatic growth, dispositional mindfulness, and experiential avoidance). Thus, 94 participants were included in the analyses. Of these participants, a majority of the participants identified as male (74.5%) and White/Caucasian (72.3%), served in the Army (53.2%), were deployed to Iraq (55.3%), and received an Honorable discharge (75.5%). Mean degree of combat exposure reported by veterans, as measured by the CES, fell into the moderate range (M = 19.39, SD = 10.33). Mean age was 44.4 years (range = 21-73 years), with the largest representation of individuals in the 41-50 age range (28.7%). A majority of participants described themselves as married or engaged to be married (60.6%). Highest level of education received was variable, with the largest representation of individuals reporting some college (28.7%) followed by a bachelor's degree or some grad school (22.3%). Likewise, employment status varied, with 39.4% of participants describing themselves as employed (full- or part-time) and 20.2% describing themselves as disabled. Table 1 provides a summary of the demographic profile of participants.

Procedure

Approval was obtained from the Institutional Review Board at the researcher's university to conduct the present study. Participants were recruited by word-of-mouth through online veteran support groups (e.g., My PTSD Forum, Real Warriors) and Facebook groups (e.g., Combat PTSD Angels, Gulf War Illnesses, Combat Veterans with PTSD, REBOOT Combat Recovery, Combat Veterans Service Center & Retreat, Hope for Veterans and their Families, Iraq and Afghanistan Veterans of America, Huts for Vets, Student Veterans of America, Student Veterans Organization), as well as through veteran support groups across several mid-Atlantic region universities. Interested participants were directed to a URL of the survey (Qualtrics

software), the first page of which displayed the informed consent agreement. Participants who provided informed consent were directed to subsequent pages in Qualtrics where they completed the survey, which was estimated to take 15 to 20 minutes to complete. Upon completion of the survey, participants were able to choose to enter into a drawing to win one of three Visa gift card award prizes ($25, $50, and $125, respectively). Participants were also provided with 24-hour crisis hotline resources if they experienced discomfort or distress during or after completion of the questionnaires (e.g., Veterans Crisis Line, online Confidential Veterans Chat with a counselor, Veteran Combat Call Center, Military Helpline).

Measures

Posttraumatic growth. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) is a 21-item measure that has been the most widely used instrument to conceptualize positive changes following adversity (Joseph & Linley, 2008). Additionally, it has been validated with military samples (Bush, Skopp, & McCann, 2011; Lee, Luxton, Reger, & Gahm, 2010; Marotta-Walters, Choi, & Shaine, 2015; Pietrzak et al., 2010). The measure yields a total score and five subscale scores, including Relating to Others (7 items); New Possibilities (5 items); Personal Strength (4 items); Spiritual Change (2 items); and Appreciation of Life (3 items). Each item is rated using a 6-point Likert-type scale in which participants indicate the degree of change reflected in the statement, specifically as a result of their traumatic military combat experiences (0 = *No change* to 5 = *Very great change*). Sample items include "I changed my priorities about what is important in life" (Appreciation of Life), "I have a greater feeling of self-reliance" (Personal Strength), "I developed new interests" (New Possibilities), "I have more compassion for others" (Relating to Others), and "I have a better understanding of spiritual matters" (Spiritual Change). Scores on the total scale have a potential range of 0 to 105, with

higher scores indicating greater levels of growth. PTGI has demonstrated strong reliability and validity, with a Cronbach's alpha reliability coefficient of .90 and a test-retest correlation coefficient of .71 over 2 months (Tedeschi & Calhoun, 1996). The following Cronbach's alphas were found for the current sample: PTGI Total Scale (α = .92); Relating to Others (α = .84); New Possibilities (α = .80); Personal Strength (α = .78); Spiritual Change (α = .60); and Appreciation of Life (α = .53).

Dispositional mindfulness. The Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) is a 39-item self-report questionnaire that assesses dispositional mindfulness among five facets: (a) Observing; (b) Describing; (c) Acting with awareness; (d) Nonjudging of Inner Experience; and (e) Nonreactivity to Inner Experience. Each item is scored on a 5-point Likert-type scale (1 = *never* or *very rarely true* to 6 = *always* or *very often true*). Sample items with the respective facets to which they belong include "I am easily distracted" (Acting with Awareness), "I watch my feelings without getting lost in them" (Nonreactivity to Inner Experience), "I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing" (Observing), "I disapprove of myself when I have irrational ideas" (Nonjudging of Inner Experience), and "Even when I'm feeling terribly upset, I can find a way to put it into words" (Describing). The FFMQ has demonstrated sufficient reliability, with strong Cronbach's alpha reliability coefficients for each facet of mindfulness: Nonreactivity = .75, Observing = .83, Acting with Awareness = .87, Describing = .91, and Nonjudging = .87 (Baer et al., 2006). The FFMQ has also demonstrated convergent validity (e.g., all five facets were positively associated with self-compassion, and all facets except observing were negatively associated with experiential avoidance, thought suppression, and psychological symptoms; Baer et al., 2006). Researchers suggested that the Observing facet may be "particularly sensitive to changes with meditation experience that alter

its relationships with other mindfulness facets and with related variables" (Baer et al., 2006, p. 42), indicating that the Observing facet's relationship with other variables may change as a function of meditation experience. The following Cronbach's coefficient alphas were found for the current sample: FFMQ Total Scale (α = .92); Observing (α = .81); Describing (α = .86); Acting with Awareness (α = .93); Nonjudging (α = .92); and Nonreactivity to Inner Experience (α = .78).

Experiential avoidance. The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) is the most widely used measure of experiential avoidance and psychological inflexibility, assessing the degree to which one becomes entangled with difficult thoughts, avoids emotions, and is unable to act effectively in the presence of difficult internal experiences (i.e., thoughts and feelings). The AAQ-II was designed to assess a specific model of psychopathology that emphasizes psychological inflexibility, rather than to diagnose psychological disorders (Bond et al., 2011). This measure contains 7 items that are scored on a Likert-type scale (0 = *never true* to 6 = *always true*), which yield a one-factor structure. Sample items include "I worry about not being able to control my worries and feelings" and "I'm afraid of my feelings." Higher scores indicate greater levels of experiential avoidance and have been found to be associated with depression, anxiety, and posttraumatic stress (Bond et al., 2011; Marx & Sloan, 2005). The AAQ-II strongly correlates with the original AAQ (r = .97; Hayes et al., 2004), but exhibits stronger psychometric properties, such as greater levels of reliability within various populations (Bond et al., 2011). The AAQ-II has demonstrated strong reliability, with a Cronbach's alpha reliability coefficient ranging from .78 to .88 and a test-retest correlation coefficient of .81 and .79 over 3 and 12 months, respectively. The AAQ-II has also demonstrated sufficient convergent validity (e.g., positively correlated with thought suppression) and discriminant

validity (e.g., not significantly associated with social desirability, age, gender, or race; Bond et al., 2011). Cronbach's alpha for the current sample was excellent (α =.94).

Demographic variables. Participants were asked to provide information regarding various demographic characteristics, including age, race/ethnicity, sex, level of education, combat experiences, past-month PTSD symptom severity, post-deployment social support, current relationship status, current employment status, military history, and income.

Combat exposure. The Combat Exposure Scale (CES; Keane et al., 1989) is a 7-item self-report measure that assesses wartime stressors experienced by combatants. Items are rated on a 5-point frequency (1 = *no* or *never* to 5 = *more than 50 times*), 5-point duration (1 = *never* to 5 = *more than 6 months*), 4-point frequency (1 = *no* to 4 = *more than 12 times*) or 4-point degree of loss (1 = *no one* to 4 = *more than 50%*) scale. Respondents are asked to answer items based on their exposure to various combat situations. Sample items include "Were you ever surrounded by the enemy?" and "How often were you in danger of being injured or killed (i.e., being pinned down, overrun, ambushed, near miss, etc.)?" The total CES score ranges from 0 to 41 and is calculated by using a sum of weighted scores, which can be classified into one of five categories of combat exposure ranging from "light" to "heavy" (where 0-8 represents light combat exposure, 9-16 light-moderate, 17-24 moderate, 25-32 moderate-heavy, and 33-41 heavy). The CES has demonstrated strong reliability, with an internal consistency for the original validation sample of Vietnam veterans of .85, and a test-retest correlation coefficient of .97 over a 1-week interval.

Posttraumatic stress. The PTSD Checklist (PCL-5; Weathers et al., 2013) is a 20-item self-report measure that assesses the 20 DSM-5 symptoms of PTSD and was used to measure severity of PTSD symptomology in the past month. Items are scored on a 5-point Likert-type

scale (0 = *Not at all* to 4 = *Extremely*). Sample items include "In the past month, how much were you bothered by repeated, disturbing, and unwanted memories of the stressful experience?" and "In the past month, how much were you bothered by feeling very upset when something reminded you of the stressful experience?" Scores range from 0-80, with higher scores representing higher levels of symptom severity. A cut-point of 33 has been suggested for a positive screening of PTSD, which differs from the cut-point of 50 of the previous version of the PCL that reflected DSM-IV-TR criteria for PTSD (Hoge et al., 2014; Weathers et al., 2013). To further compare the previous version of the PCL to the current PCL-5, in an analysis of soldiers exposed to combat, 19% screened positive by the DSM-IV-TR criteria for PTSD, whereas 18% screened positive by the DSM-5 criteria (Hoge et al., 2014). Although the PCL-5 was demonstrated to be equivalent to the previous version of the PCL, the researchers suggested that clinicians may need to consider how to manage discordant outcomes, particularly for service members and veterans who no longer meet criteria under DSM-5.

Post-deployment social support. The Postdeployment Social Support scale is a subscale of the Deployment Risk and Resilience Inventory-2 (DRRI-2; Vogt, Smith, King, & King, 2012), which is "a psychometrically sound, yet efficient, suite of 17 scales that addresses deployment-related factors that are associated with the post-deployment health and well-being of military Veterans" (p. 25). The Postdeployment Social Support scale measures the extent to which family, friends, and individuals within the veteran's community provide emotional sustenance and instrumental assistance. Vogt and colleagues (2012) defined emotional sustenance as "the extent to which others provide the individual with understanding, companionship, a sense of belonging, and positive self-regard (e.g., feeling cared for by family members and friends, having people to talk to about problems)" (p. 6). They defined instrumental assistance as "the

extent to which the individual receives tangible aid such as help to accomplish tasks and material assistance or resources (e.g., being able to count on people to take care of finances or belongings while deployed)" (p. 6). The scale contains 10 items that are measured using a 5-point Likert-type response format (1 = *Strongly disagree* to 5 = *Strongly agree*). Sample items include "My family members and/or friends make me feel better when I am down" and "There are family and/or friends with whom I can talk about my deployment experiences." Total scores may range between 10 and 50, with higher scores indicating greater perceived social support upon return from deployment.

Data Analyses

Descriptive statistics of the proposed demographic variables were analyzed using IBM SPSS Statistics 22 software. To explore the relationship between posttraumatic growth, mindfulness, and experiential avoidance using mediation, a mediation analysis proposed by Baron and Kenny's (1986) causal-steps test was used. This approach is deemed the most popular method of mediation analysis (Gu et al., 2015) and uses a regression framework. Under Baron and Kenny's approach, mediation is said to occur if four conditions are met through conducting a series of regression analyses. The first step is to show that the causal variable (X) is correlated with the outcome (Y; path *c*). The second step is to demonstrate that X is correlated with the mediator (M; path *a*). The third step is to show that M impacts Y, which is evaluated by testing the standardized regression coefficient (path *b*) for M when it and X are entered simultaneously in a multiple regression equation predicting Y. The final step is to evaluate the ability of X to predict scores for Y when M is entered simultaneously into the multiple regression equation predicting Y. The standardized regression coefficient for X in this last regression model represents path *c'*. Partial mediation is said to occur if this coefficient has decreased in size

relative to the coefficient for path *c* but remains significantly different from zero (Baron & Kenny, 1986).

To test the significance of the indirect effect, or the amount of mediation, the Sobel test (Sobel, 1982) and bootstrapping method (Preacher & Hayes, 2004) were used. The Sobel test provides an approximate estimate of the standard error of *ab*; it has been the most commonly used estimate in addition to the bootstrapping method (Gu et al., 2015). Thus, mediation effects were also assessed using Preacher and Hayes's (2004) approach and analyzed using PROCESS Procedure for SPSS 2.16.1 (Hayes, 2013). While Baron and Kenny's (1986) model suggests that mediation is strongest when there is an indirect effect but no direct effect, it has been suggested that the strength of mediation should be determined by the size of the indirect effect, and that less emphasis should be placed on the existence or nonexistence of a direct effect once a mediator has been added (Zhao, Lycnh, & Chen, 2010). Additionally, MacKinnon and colleagues (2002) recommended bootstrapping over the Sobel test due to the former having greater statistical power and the most accurate type I error rates. The number of bootstrap samples used in the mediation analyses was 5,000 with a level of confidence for all confidence intervals of 95%.

Results

Preliminary Data Analyses

The descriptive profiles for the key variables of the current study (i.e., all measured variables in the analyses) are presented in Table 2. Overall, participants reported moderate degrees of PTG (M = 60.88, SD = 20.10), dispositional mindfulness (M = 111.99, SD = 23.22), and experiential avoidance (M = 29.60, SD = 11.30). Average scores on the screener used to diagnose PTSD (i.e., PCL-5) were past the cut-off range of 38 suggested by Hoge and others (2014) as probable PTSD in veterans (M = 42.91, SD = 21.14). Pearson product-moment

correlation coefficients of the key variables were also calculated (see Table 3). Consistent with previous research (e.g., Institute of Medicine, 2012; Wahbeh, Lu, & Oken, 2012), there was a statistically significant positive association between degree of combat exposure and PTSD symptoms (r = .315, p = .004). However, no such association was found between degree of combat exposure and PTG (r = -.121, p = .249). Likewise, while perceived postdeployment social support was significantly negatively associated with PTSD symptoms (r = -.545, p < .0001), it was not significantly associated with PTG, although the relationship was trending toward significance (r = .190, p = .076).

Primary Analyses: Tests of Mediation for Experiential Avoidance

Regression analysis, using Baron and Kenny's (1986) causal-steps test, was used to test the hypothesis that experiential avoidance mediates the relationship between dispositional mindfulness and posttraumatic growth. Results of Step 1 indicated that dispositional mindfulness was a marginally significant predictor of posttraumatic growth, $t(93) = 1.974$, p = .051. Step 2 showed that, consistent with Hypothesis 2, dispositional mindfulness was a predictor of experiential avoidance, b = -.659, $t(93) = -8.398$, $p < .0001$. However, Step 3 showed that when the mediator (i.e., experiential avoidance) was entered simultaneously into the multiple regression equation with dispositional mindfulness to predict posttraumatic growth, it was not a significant predictor of posttraumatic growth, b = -.072, $t(92) = -.531$, p = .597. In examining this regression equation for Step 4, the ability of dispositional mindfulness to predict PTG was reduced but not significant, b = .154, $t(92) = -1.129$, p = .262. A test of the indirect effect using the Sobel test was not significant (z = .53, p = .596). Regression analysis using Preacher and Hayes' (2004) bootstrapping method revealed similar results. Results indicated that the bootstrapped unstandardized total effect was not significant, t = 1.129, p = .262, CI[-

.101, .378]. Thus, results of the analyses indicated that, contrary to the primary hypothesis of the present study, experiential avoidance did not significantly mediate the relationship between dispositional mindfulness and posttraumatic growth. The final model is displayed in Figure 2.

Exploratory Analyses

Exploratory simple regression analyses were conducted to further examine relationships among key variables; significant correlations among key variables as found in Table 3 served as a guide for the specific analyses conducted. Regarding the use of the PTGI in military research, research supports measuring PTG as both a unidimensional construct as well as a five-factor multidimensional construct (Lee, Luxton, Reger, & Gahm, 2010). This was taken into consideration in choosing the exploratory analyses. As found above, results of simple regression analysis indicated the ability of mindfulness to predict PTG was marginally significant, R^2 = .041, $F(1,93) = 3.895$, $p = .051$. However, when the Spiritual Change facet of the PTGI was removed, scores in mindfulness significantly predicted scores in the PTGI, $R^2 = .047$, $F(1,93) = 4.518$, $p = .036$. Looking at the influence of dispositional mindfulness on each of the facets of the PTGI, dispositional mindfulness was a significant predictor of the New Possibilities facet of PTG, $R^2 = .046$, $F(1,93) = 4.434$, $p = .038$. It also emerged as a significant contributor to the Personal Strength facet of PTG, $R^2 = .073$, $F(1,93) = 7.202$, $p = .009$. Regarding the influence of particular facets of dispositional mindfulness on PTG, the Nonreactivity to Inner Experience facet of mindfulness significantly contributed to the variance in PTGI scores, $R^2 = .072$, $F(1,93) = 7.124$, $p = .009$. Nonreactivity also significantly contributed to the variance in four of the five PTGI facets: Relating to Others [$R^2 = .041$, $F(1,93) = 3.978$, $p = .049$]; New Possibilities [$R^2 = .067$, $F(1,93) = 6.649$, $p = .012$]; Personal Strength [$R^2 = .098$, $F(1,93) = 10.033$, $p = .002$]; and Appreciation of Life [$R^2 = .047$, $F(1,93) = 4.537$, $p = .036$]. Finally, the Observing facet

significantly predicted the variance in the New Possibilities facet of growth, R^2 = .059, F(1,93) = 5.746, p = .019. With regard to the relationship between the proposed mediator variable (i.e., experiential avoidance) and criterion variable (i.e., posttraumatic growth), experiential avoidance was a significant predictor (b = -.261) of Personal Strength, R^2 = .068, F(1,93) = 6.713, p = .011.

Discussion

The purpose of the present study was to examine the roles of dispositional mindfulness and experiential avoidance in contributing to posttraumatic growth in a sample of combat veterans. The current study is the first to examine these relationships among a veteran population. While preliminary research suggests that mindfulness can enhance PTG, the underlying process by which this occurs has not been studied to date. As McCracken and Vowles (2014) asserted, "When one can identify processes of change that are both sufficient and necessary for the benefit observed in treatment, and identify the methods that impact these processes, then one is able to optimize treatment impact" (p. 179). Thus, the present study further adds to the literature by examining whether experiential avoidance, a core process in ACT, is a mechanism by which mindfulness may enhance PTG.

Overall findings indicated that, contrary to the major hypothesis, experiential avoidance did not significantly mediate the effects of dispositional mindfulness on PTG. Statistically speaking, this was attributable to the findings in the causal-steps test that (a) in Step 1, the ability of mindfulness to predict PTG was marginally significant (p = .051), and (b) in Step 3, when experiential avoidance (i.e., the proposed mediator) was added to the regression equation with mindfulness to predict PTG, it was not significant (p = .597). To this latter point, the Pearson product-moment correlations revealed that the only facet of PTG that was significantly associated with experiential avoidance was the Personal Strength facet. Interestingly,

dispositional mindfulness did significantly contribute to PTG when the 2-item Spiritual Change facet was removed from the analysis (p = .036), although the change in the effect size was not remarkable (from .041 to .047). When separate simple regression analyses were conducted to further examine the predictive ability of dispositional mindfulness on PTG domains, dispositional mindfulness significantly contributed to New Possibilities and Personal Strength facets of PTG. Looking within mindfulness domains, (a) Nonreactivity to Inner Experience significantly contributed to PTG as a whole and individual PTG domains except Spiritual Change, and (b) Observing significantly contributed to New Possibilities.

The findings of the present study do not support experiential avoidance as a mechanism of dispositional mindfulness in enhancing PTG; however, researchers have criticized the gold standard measure of experiential avoidance (i.e., AAQ-II, which was used for the present study; Bond et al., 2011), suggesting that the items make it difficult to discriminate between the construct as a process versus an outcome of engaging in this process (Wolgast, 2014). Nevertheless, the present study's findings suggest that dispositional mindfulness may be acting directly on particular facets of PTG, and experiential avoidance does influence growth in the personal strength domain. Dispositional mindfulness has been shown to decrease intrusive rumination, or unwanted thoughts about a traumatic event (Im & Follette, 2016; Williams, 2008), which in turn has been found to be associated with ongoing distress (Im & Follette, 2016; Triplett et al., 2011) and may furthermore promote growth. A prominent feature following traumatic experiences is the experience of intrusive, distressing trauma-related thoughts. Increased mindfulness can facilitate combat veterans' nonjudgmental awareness and acceptance of those inner experiences as they occur, thereby changing how they relate to those experiences and allowing them to feel personally stronger, be open to new possibilities in life, feel more

connected in their relationships, and gain a greater appreciation for life itself. As such, one component of Tedeschi and McNally's (2011) outlined PTG program for service members involves learning emotional regulation enhancement strategies; mindfulness training, particularly with regard to targeting nonreactivity to inner experiences, is likely to facilitate emotion regulation (Joseph & Murphy, 2013; Shapiro et al., 2006).

The finding of the Personal Strength and New Possibilities domains of PTG being independently significantly predicted by dispositional mindfulness is relevant to Janoff-Bulman's (2006) first process of "strength through suffering" in her proposed model of PTG, which involves a reconstruction of one's assumptions through successful coping and adaptation, providing survivors with a foundation for recognizing personal strengths and new possibilities. Coping that involves fully acknowledging, approaching, and confronting the traumatic experience is warranted in order to reach a once-again secure inner world (Janoff-Bulman, 2006). Consistent with previous research (Chopko & Shwartz, 2009; Garland et al., 2007; Hanley, Peterson, Canto, & Garland, 2015; Kearney et al., 2012; Mackenzie et al., 2007), current findings suggest that coping that enhances dispositional mindfulness, particularly nonreactivity and observing components, may enable the process towards reaching this once-again secure inner world.

Clinical implications of the current study's findings suggest implementing interventions for combat veterans that target dispositional mindfulness directly, rather than as a component of another treatment (i.e., ACT). Specifically, findings suggest that focusing on developing observing and nonreactivity components of dispositional mindfulness may most strongly contribute to PTG development in areas of new possibilities and personal strength, although dispositional mindfulness as a whole appears to be helpful in the process of PTG development.

Dispositional mindfulness is enhanced directly through mindfulness-based interventions (MBIs; Gu et al., 2015). While MBIs such as mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1982, 1990) and mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002) have been implemented with combat veterans with PTSD and have shown promising results (i.e., with regard to symptom improvement; Kearney et al., 2012; King et al., 2013; Niles et al., 2012), evidence is needed to examine the influence of MBIs such as these on reports of PTG. Nevertheless, findings of the present study suggest such interventions may be more useful than other MBIs such as ACT, which has a broader focus on behavioral change.

Particularly since research, including the present study, has consistently found that combat veterans report the most growth in the domain of personal strength (Pietrzak et al., 2010; Tsai et al., 2015), this emphasizes the importance of helping combat veterans develop nonreactivity to inner experiences, particularly those that may be related to their traumatic experiences during deployment. It has been proposed that observation of one's internal experiences may be necessary in the process of becoming nonreactive to them (Bränström, Kvillemo, Brandberg, & Moskowitz, 2010). In order to facilitate the observing component of mindfulness, clinicians may encourage the importance of attending to internal stimuli including bodily sensations and cognitions, and external stimuli such as sights, sounds, and smells (Baer et al., 2004). Allowing an individual to simply notice his or her internal stimuli, especially when met with attitudes of nonjudgment, and simply describing experiences, may facilitate self-regulation and exposure processes, including nonreactivity, which directly influence positive change (Shapiro et al., 2006). Continued practice of changing the way one relates to ongoing internal and external stimuli may help observing and nonreactive traits of mindfulness to

develop, which will in turn lead to development of facets of growth in combat veterans, particularly a discovery of personal strengths and an openness to new possibilities in life.

The present study's findings are limited due to its smaller sample size and predominantly Caucasian, male combat veteran sample. Research suggests that ethnic minority status in combat veterans is a predictor of PTG (Hijazi, Keith, & O'Brien, 2015); however, due to low variation in the reported race/ethnicity of the current sample (i.e., $N = 68$ for White/Caucasian compared to $N = 13$ for ethnic minority status), between-group differences could not be explored. Although the current sample obtained a greater percentage of female veterans than previous samples conducting research with veterans (nearly 14% compared to less than 10%; Hoge et al., 2004; Jakupcak et al., 2008; Thomas et al., 2010), between-group differences were still unable to be assessed and it may be unclear how well these patterns of PTG generalize to them. The same concerns regarding generalizability are raised for transgender veterans, as the current sample contained less than 4% of transgender male-to-female identifying veterans. Future research should strive to recruit a more ethnically, religiously, spiritually, and sexually diverse sample of participants to examine the impact of such cultural factors on PTG development.

The present study did not assess for participants' trauma history, previous/current engagement in psychological treatment, and peritraumatic factors, all which may have influenced the study's key variables. For instance, research has suggested that the relationship between dispositional mindfulness and PTG is stronger for individuals who engage in forms of mindfulness practice (Hanley et al., 2015). Thus, future studies examining dispositional mindfulness and PTG in combat veterans should strive to gain an understanding of how this relationship may differ as a result of greater mindfulness practice, which is likely impacted by prior or current engagement in psychological treatment. Such studies should assess the impact of

clinical interventions such as MBIs on reports of PTG. Future research may also examine peritraumatic factors that have been found to influence PTG, including active coping, perceived-self-controllability, and perceived unit member support (Dekel, Mandl, & Solomon, 2011; Pietrzak et al., 2010).

Finally, the lack of relationship found between dispositional mindfulness and the Spiritual Change facet of PTG in this population warrants future research exploration. Criticisms have been made regarding the two items that comprise this subscale as not fully capturing the existential domain of growth purported to be assessed, and thus an updated version has recently become available (PTGI-X; Tedeschi et al., 2017) that future studies should employ. However, it may be possible that variables counterintuitive to mindfulness may be contributing to this domain of growth. For instance, while other PTG domains may be experienced because of efforts targeting emotional reactivity, it is possible that spiritual growth may be more likely to be experienced because of efforts targeting cognitions. Studies have shown that religious coping may contribute to the experience of PTG (Meisenhelder & Marcum, 2009; Prati & Pietrantoni, 2009). This meaning-making area of coping may be more focused on cognitive restructuring efforts, and is aligned with Janoff-Bulman's (2006) assertion of existential re-evaluation as an underlying process by which spiritual change may be developed.

Conclusion

Overall, the present study offers innovative findings by examining dispositional mindfulness, experiential avoidance, and PTG in a sample of combat veterans from mixed war eras. Additionally, this study extends previous literature by examining the mediational role of experiential avoidance in dispositional mindfulness and PTSD in combat veterans. These findings can serve as a catalyst for future research as well as provide support for the development

of treatment interventions aimed at targeting dispositional mindfulness, especially nonreactivity and observing components, to promote PTG.

Summary

In Chapter One, an overview of the current problem was presented, which highlighted the impact of combat exposure on veterans and their families, and the need to identify and enhance protective factors. This led to a discussion of posttraumatic growth, including its conceptualization and its ability to serve as a protective factor for combat veterans specifically. While guidelines for interventions to enhance posttraumatic growth have been introduced, an empirical basis of such interventions is lacking. Preliminary research suggests that mindfulness can enhance posttraumatic growth, although studies have not specifically viewed this relationship in combat veterans. Moreover, the relationship between mindfulness and posttraumatic growth is not well understood, suggesting a need to explore possible mechanisms by which mindfulness can enhance growth in combat veterans. This led to a discussion of the concept of experiential avoidance as understood by acceptance and commitment therapy, and the possible role that it may play in enhancing posttraumatic growth. Four hypotheses were proposed and an overview of the methodology of the current study was reviewed.

Results of the study were presented, which did not confirm all four hypotheses. These results overall suggest that dispositional mindfulness may be directly impacting PTG rather than through a process such as experiential avoidance. A discussion of these findings and their implications for developing and tailoring mindfulness-based interventions to enhance PTG in combat veterans was reviewed.

CHAPTER 2

REVIEW OF THE LITERATURE

As noted in Chapter One, the focus of the present study was to investigate the relationships between mindfulness, experiential avoidance, and posttraumatic growth (PTG) among combat veterans, specifically examining whether experiential avoidance serves as a mediator of mindfulness and PTG. In Chapter Two, the following integrative analysis will be presented: (a) a brief history of trauma, including posttraumatic stress disorder (PTSD) and PTG; (b) post-deployment-related outcomes in veterans; (c) conceptualization of PTG; (d) interventions for enhancing PTG; (e) an overview of mindfulness and its relation to PTG and PTSD; and (f) a proposed conceptualization of the relationship between mindfulness and PTG using the experiential avoidance component of the acceptance and commitment therapy model. Chapter Two concludes with proposed hypotheses for the present study.

Trauma: A Brief History

Posttraumatic stress disorder. Although characteristics of PTSD symptoms had been documented in the 19th century by civilians as a result of catastrophic events—especially the Civil War and its affected American soldiers—psychological impairments in military service members were largely overlooked up through much of the 20th century (Birmes et al., 2003; Jones, 2006). Medical priorities were instead placed on the high fatalities from disease, infection, and accidental injury (Birmes et al., 2003; Institute of Medicine, 2012; Jones, 2006). Many Civil War soldiers had diagnoses of nostalgia or melancholia—characterized by lethargy, withdrawal, and excessive emotionality—as well as diagnoses of exhaustion, effort syndrome, or conditions of heart that were given various terms such as “irritable heart” or “soldier’s heart” (Birmes et al., 2003). However, most surgeons and medical professionals during this time

believed that these conditions evolved from the heavy packs that soldiers carried, inadequate time for newly recruited soldiers to adapt to the military lifestyle, feelings of homesickness, and, as one army surgeon suggested, poorly activated soldiers who had impractical expectations of war (Jones, 2006).

During and following World Wars I and II, combat veterans were commonly diagnosed with shell shock, disorder of the heart, exhaustion, battle exhaustion, flying syndrome, war neurosis, cardiac neurosis, and psychoneurosis, many of the symptoms that parallel those associated with PTSD—tremors, tics, fatigue, memory loss, sleeping problems, nightmares, and trouble concentrating (Jones, 2006). It was following the Vietnam War that the empirical literature began to expand on what was then termed "combat fatigue" or "combat reaction" (Jones & Wessely, 2005) as a result of the chronic impairments in social and occupational functioning from which veterans were suffering. Furthermore, it was out of the large-scale studies of veterans of the Vietnam War that PTSD became recognized as a mental health disorder by the American Psychiatric Association in 1980. One of the consistently recognized core features of PTSD that is thought to be responsible for its development and maintenance is avoidance, which includes active efforts to avoid or control trauma-related thoughts, feelings, and situations (American Psychiatric Association, 2013).

The current diagnostic criteria for PTSD from the *Diagnostic Statistical Manual of Mental Disorders Fifth Edition (DSM*-5) include a history of exposure to a traumatic event that meets specific conditions (e.g., directly experiencing or witnessing the traumatic event, learning that it occurred to a close family member or friend) and symptoms from each of four symptom clusters: (a) intrusion (e.g., distressing memories, nightmares, flashbacks); (b) avoidance (e.g., efforts to avoid distressing memories, thoughts, or feelings associated with traumatic event); (c)

negative alterations in cognitions and mood (e.g., inability to remember important aspects of event, diminished interest or participation in significant activities, feelings of detachment or estrangement from others); and (d) alterations in arousal and reactivity (e.g., irritable behavior and angry outbursts, hypervigilance, exaggerated startle response). The sixth criterion concerns duration of symptoms (i.e., greater than 1 month); the seventh assesses functioning (e.g., social, occupational); and, the eighth criterion clarifies symptoms as not attributable to a substance or co-occurring medical condition (American Psychiatric Association, 2013).

Posttraumatic growth. Much of the research regarding posttraumatic responses has focused on the negative psychological consequences that can result. However, Linley and Joseph (2004) emphasized that focusing solely on the negative sequelae of trauma can lead to a biased understanding of posttraumatic reactions. In fact, it has been demonstrated in the literature that as many as 90% of people who face challenging life events experience at least some positive change (Tedeschi & Calhoun, 1995), a percentage that is substantially higher than that which represents the prevalence of posttraumatic stress disorder. Consequently, it has been suggested that concentrating on positive changes in addition to negative changes that can occur following trauma exposure may provide a more comprehensive understanding of posttraumatic reactions, which can thus lead to the development and implementation of more inclusive therapeutic interventions. The term *posttraumatic growth* has been used to refer to the positive psychological changes that can develop as a result of the struggle with a traumatic event (Tedeschi & Calhoun, 1995). Peterson and colleagues (2008) used the famous quotation by Friedrich Nietzche to capture the heart of this construct: “That which does not kill us makes us stronger” (p. 214).

The idea that positive personal changes can develop out of suffering has existed throughout human history and has even been inadvertently discussed by psychologists in the 20th century (Tedeschi & Calhoun, 2004); however, it is only within the last 25 years that the empirical literature in psychology has focused on the possibility of growth from the struggle with trauma. Within the literature, PTG has been examined among various groups of individuals experiencing a wide range of traumatic events or challenging life circumstances (Calhoun & Tedeschi, 1999; Lechner, Tennen, & Affleck, 2009; Linley & Joseph, 2004). Research has found, for instance, that PTG has been reported by survivors of serious medical illnesses (e.g., cancer, bone marrow transplantation, HIV/AIDS, multiple sclerosis, rheumatoid arthritis, heart attack, chemical dependency), acquired brain injury, spinal cord injury, rape, assault, intimate partner violence, childhood sexual abuse, natural disasters, war, terrorism, car accidents, and in bereaved individuals, college students, former refugees, amputees, caregivers of ill persons, and especially, combat veterans (Calhoun & Tedeschi, 1999; Lechler et al., 2009; Linley & Joseph, 2004).

Post-Deployment-Related Outcomes in Veterans

This section provides an overview of post-deployment-related outcomes in veteran populations. The following information will be presented: (a) posttraumatic stress and related problems, including information regarding epidemiological factors, trajectories, risk factors, and the impact of combat exposure; and (b) posttraumatic growth, including its role as a protective factor against the negative outcomes associated with PTSD.

Posttraumatic stress and related problems among veterans. As the historical foundations of PTSD have highlighted, it has been well-established that combat exposure places a number of soldiers and veterans at risk for the development of PTSD; however, it is less well-

known that the development of PTSD can be further accompanied by a multitude of mental, psychosocial, and physical health concerns among combat veterans that impact not only these individuals, but their families and the welfare of the greater community (Aldwin, Levenson, & Spiro, 1994; Pietrzak et al., 2010). The Institute of Medicine (2012) stated that three categories of conditions frequently co-occur with PTSD: psychiatric (e.g., depression and substance use disorders), medical (e.g., chronic pain, traumatic brain injury, and spinal cord injury), and psychosocial (e.g., relationship problems, difficulties in social settings, intimate partner violence, child maltreatment, unemployment or lack of employment, homelessness, and incarceration). For example, if the stress of trauma exposure develops into PTSD, veterans are at increased risk for substance abuse, depression, suicide, job loss, divorce, and domestic violence perpetration (Bush, Skopp, McCann, & Luxton, 2011; Prigerson, Maciejewski, & Rosenheck, 2002). Comorbid conditions—including depressive symptoms, alcohol use, and other high-risk behaviors—were present in more than 50% of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans with PTSD (Hoge et al., 2004; Santiago et al., 2010). PTSD in veteran populations has an immense impact on spouses, children, parents, and others in the affected veterans' lives (Institute of Medicine, 2012). PTSD is associated with lower quality of life, work-related impairment, and medical illness throughout its course (Marshall et al., 2001; Resnick & Rosenheck, 2008; Zatzick et al., 1997) and has been found to impact a person's physical health, social functioning, and interpersonal relationships to a much greater degree than any other anxiety disorder (Olatunji, Cisler, & Tolin, 2007). Several studies have shown an adverse effect of PTSD on physical health (e.g., Weiss et al., 2011), while others have found that mere exposure to a traumatic event increases the risk of physical health problems, including

many of the leading causes of premature death such as cardiovascular disease and stroke (Boscarino, 2008; Cohen et al., 2009; Dirkzwager et al., 2007; Kubzansky et al., 2007, 2009).

Finally, many studies have verified the links between PTSD and suicidal ideation, attempts, and completions (e.g., Marshall et al., 2001; Tarrier & Gregg, 2004). Since the beginning of combat operations in Iraq and Afghanistan, for instance, an upward trend of suicide rates among service members has been recognized; record high suicide rates have been reported for the Army in recent years such that veterans in the general U.S. population may be more than twice as likely to die of suicide compared to nonveterans (Belik, Stein, Asmundson, & Sareen, 2009; Kuehn, 2009). A study that examined PTSD as a risk factor for suicidal ideation among OEF and OIF veterans found that veterans who screened positive for PTSD were about 4.5 times more likely to report suicidal ideation than veterans who did not have PTSD (Jakupcak et al., 2009). Furthermore, among those veterans that screened positive for PTSD, those who also screened positive for two or more comorbid disorders were 5.7 times more likely to report suicidal ideation that those who had fewer comorbidities (Jakupcak et al., 2009).

It is also important to highlight that even when a clinical diagnosis of PTSD is not warranted, health and psychosocial impairments may still result as a consequence of combat exposure. For example, although most studies include a threshold measure of PTSD, health and psychosocial impairments have also been reported in a sample of OEF and OIF veterans with subsyndromal or partial PTSD (Pietrzak et al., 2009). The costs and dangers associated with the development of both full-blown and partial/subthreshold PTSD therefore indicate a need to include all combat veterans in relevant empirical studies (i.e., regardless of whether or not they meet full diagnostic criteria for PTSD).

Epidemiology. "Of growing concern to both the Department of Defense (DoD) and

the Department of Veterans Affairs (VA) is the high prevalence of PTSD in active-duty and veteran populations" (Institute of Medicine, 2012, p. 18). The Institute of Medicine (2012) further asserted that the true prevalence of PTSD in military populations is likely higher than available estimates due to common incidence of underreporting among this population, despite the DoD's vigorous improvements in screening efforts in recent years. Nevertheless, the prevalence of PTSD in the veteran population is several times higher than that of the general population and, moreover, military combat is a known major risk factor for the development of PTSD specific to military populations (Institute of Medicine, 2012). Estimates of the current prevalence of PTSD in OEF and OIF service members range from 13% to 20% (Hoge et al., 2004; Seal et al., 2007; Tanielian & Jaycox, 2008; Vasterling et al., 2010), compared to a 12-month prevalence rate of 3.5% in the general U.S. population (American Psychiatric Association, 2013). However, among those soldiers deployed to Iraq specifically, surveys using DSM-IV-TR symptom criteria showed a prevalence of PTSD ranging from 20.7% to 30.5% for 3 and 12 months post-deployment, respectively (Thomas et al., 2010). Furthermore, the number of OEF and OIF soldiers returning home from combat has been increasing within recent years, and thus the number of veterans seeking mental health services will likely continue to increase as well (Tanielian & Jaycox, 2008). One in six Army and Marine veterans of OEF and OIF met the criteria for PTSD, depression, or generalized anxiety disorder following return from combat (Hoge et al., 2004). A study of 103,788 returning OEF and OIF veterans seen in VA medical centers between September 2001 and December 2005 found that nearly one-third of these veterans received at least one mental health or psychosocial diagnosis, and 13% of this overall sample had a diagnosis of PTSD (Seal et al., 2007). Hoge and colleagues (2004) found that of the service members and veterans in need of mental health services, only 23 to 40% received

care; more recent findings indicated that of the U.S. service members and veterans who served in Iraq and Afghanistan and have screened positive for PTSD, only slightly more than half of them received treatment (Institute of Medicine, 2012). Therefore, estimates of the burden of mental health based on service records may underestimate the true burden in veteran populations.

Trajectories. Bonanno and colleagues (2012) used data from a large population-based sample of military personnel called the Millennium Cohort Study, the largest longitudinal military study followed prospectively for over a decade, to examine pre-to-post-deployment trajectories of posttraumatic stress from participants who had deployed at least once in support of the operations in Iraq and Afghanistan. To identify the trajectories, the researchers assessed participants pre-deployment (2001), first follow-up (2004-2006), and second follow-up (2007-2008), used latent growth mixture modeling (LGMM) and divided the sample between participants with single deployments (N = 3,393) and those with multiple deployments (N = 4,394). The researchers found that 6.7% of single deployers and 4.5% of multiple deployers fell into the worsening-chronic posttraumatic stress group, and 8.0% and 8.5% fell into the moderate-improving group. A high-stable group was found exclusively for single deployers (2.2%), and a high-improving group was found exclusively for multiple deployers (2.2%). The most common pattern across sample groups was low-stable posttraumatic stress or resilience (83.1% single deployers, 84.9% multiple deployers).

Risk factors. A number of variables have been identified as risk factors for the development of PTSD. Ozer, Best, Lipsey, and Weiss (2003) conducted a meta-analysis investigating possible predictors of PTSD. Their meta-analysis of 68 related studies revealed the following predictors of PTSD: (a) prior trauma, (b) prior psychological adjustment, (c) family history of psychopathology, (d) perceived life threat during the trauma, (e) posttrauma social

support, (f) peritraumatic emotional responses, and (g) peritraumatic dissociation (Ozer, Best, Lipsey, & Weiss, 2003). The findings from this meta-analysis suggested that peritraumatic psychological processes, not prior characteristics, are the strongest predictors of PTSD (Ozer, Best, Lipsey, & Weiss, 2003). The Institute of Medicine (2012) added that lack of social support, trauma severity, and ongoing life stress—including loss of employment, financial stressors, and disability—increase the risk of PTSD. Known risk factors for PTSD among military populations in particular include experiencing combat, high combat severity, being wounded or injured, witnessing death (especially that which is grotesque), serving on graves registration duty or handling remains, being taken captive or tortured, experiencing unpredictable and uncontrollable stressful exposure, experiencing sexual harassment or assault, combat preparedness, and deployment to a war zone without combat (Institute of Medicine, 2012).

In the general population, women have higher prevalence rates of PTSD than men (Institute of Medicine, 2012); however, the opposite may be true when looking at military populations, specifically those in combat. In a study of OEF and OIF veterans seen in VA health care facilities from 2001 through 2005, women and men were equally likely to receive at least one mental health diagnosis (26% and 25%, respectively), but men were significantly more likely to receive a diagnosis of PTSD (Seal et al., 2007). Similarly, of 329,049 OEF and OIF veterans who received care at a VA health care facility, females were significantly less likely than their male counterparts to be diagnosed with PTSD (17% vs. 22%, respectively), although they were significantly more likely to be diagnosed with depression (23% vs. 17%, respectively; Maguen et al., 2010). An explanation for the higher prevalence of PTSD in men for military populations may be attributed to the fact that men are much more prevalent in this

population than women and, coupled with differences in combat roles, are more likely to be exposed to combat.

Impact of combat exposure. As mentioned, military combat is a major risk factor for the development of PTSD specific to military personnel, with one study finding that 38% of men who had experienced combat-related trauma had PTSD (Kessler et al., 1995). Additionally, an association has been found between greater combat exposure—including multiple tours of duty and increased exposure to personal threat and killing—and the risk of developing PTSD (Hoge et al., 2004; Institute of Medicine, 2012). This has growing implications for OEF and OIF soldiers due to the increasing number of deployments and greater exposure to combat situations in Iraq and Afghanistan. Specifically, Dohrenwend and colleagues (2006) found a positive dose-response relationship between severity of combat stressor exposure (e.g., number of firefights, ambushes) and clinically diagnosed PTSD, indicating that the greater the exposure, the greater the likelihood of the development of PTSD.

When looking within types of combat stressor exposures, perpetration-induced combat (i.e., killing) was associated with more severe PTSD, dissociation, violence, relationship problems, alcohol abuse, and other psychological impairments when compared with PTSD resulting from nonperpetrative combat trauma, even after controlling for general combat experience (Maguen et al., 2009, 2010). Pietrzak and colleagues (2011) examined specific combat experiences associated with PTSD in a sample of 285 OEF and OIF veterans. After statistically controlling for age, relationship status, unit support, post-deployment social support, and other combat experiences, the researchers found the following three combat experiences to be significantly associated with severity of combat-related PTSD symptoms: 1) witnessing someone in one's unit or ally unit being seriously wounded or killed while in a combat zone, 2)

being exposed to "friendly" fire, and 3) land mines or traps (Pietrzak et al., 2011). Elevated PTSD rates were reported among soldiers deployed to Iraq who participated in combat, but not deployed soldiers who did not participate in combat relative to nondeployed personnel (Smith et al., 2008). This consistent finding in the literature may explain the substantially higher prevalence of PTSD in veterans compared to the general population in the U.S.

Prigerson, Maciejewski, and Rosenheck (2002) further shed light on the negative emotional, mental, psychosocial, and societal impact of combat exposure in a representative national sample of 2,583 men aged 18 to 54 in the National Comorbidity Survey part II subsample. In their analysis, they aimed to determine the proportion of cases of PTSD among U.S. men that could be attributable to their experiences in combat. Adjusted attributable fraction estimates indicated that the following psychosocial problems were significantly attributable to combat exposure: 27.8% of 12-month PTSD, 7.4% of 12-month major depressive disorder, 8% of 12-month substance abuse disorder, 11.7% of 12-month job loss, 8.9% of current unemployment, 7.8% of current divorce or separation, and 21% of current spouse or partner abuse (Prigerson, Maciejewski, & Rosenheck, 2002). These striking findings emphasize a serious need to understand how to best help veterans—especially those who have experienced military combat—successfully navigate their return to civilian life following combat.

Posttraumatic growth among veterans. Although the majority of returning veterans have experienced some level of posttraumatic stress from combat experiences, not all develop full-blown PTSD (Tedeschi & Calhoun, 1996); rather, many more returning veterans have been shown to grow from their experiences in combat. Just as combat exposure has been shown to correlate with the development of PTSD (Hoge et al., 2004, Institute of Medicine, 2012), it has also been linked to PTG (Dekel, Mandl, & Solomon, 2011). Some of the earliest research on

PTG specifically among military personnel demonstrated that many of the veterans endorsed positive consequences of military service and combat, including greater independence and self-discipline, learning to better cope with adversity, appreciating peace, gaining positive feelings about self, and developing a broader perspective and a clearer direction and purpose in life (Aldwin, Levenson, & Spiro, 1994; Elder & Clipp, 1989). With regard to the prevalence of PTG among veteran populations, Tsai and colleagues (2015) found that half (50.1%) of over 3,100 veterans who participated in the National Health and Resilience in Veterans Study conducted during October-December 2011 reported at least moderate PTG in relation to their worst traumatic event, with the highest percentages reported in growth areas of personal strength and appreciation for life.

Posttraumatic growth as a protective factor among veterans. Evidence suggests that the experience of PTG acts to promote adjustment and alleviate distress following trauma exposure, thus serving as a protective factor against the negative consequences that can develop after combat exposure (Davis, Nolen-Hoeksema, & Larson, 1998; Frazier, Conlon, & Glaser, 2001; Tsai et al., 2015). These protective effects of PTG remain true even among those who are diagnosed with PTSD: Of the veterans in Tsai and colleagues' (2015) sample who screened positive for PTSD, 72% reported "moderate" to "very great" PTG, with the highest percentages reported in growth areas of relation to others and new possibilities. Furthermore, the group of veterans with levels of both PTSD and PTG reported better mental functioning and general health than their counterparts who screened positive for PTSD but did not report PTG. This is an extremely important finding that sheds light on the positive impact of PTG on mitigating the impairment in functioning that accompanies PTSD.

To further add to PTG's positive impact, recent research has shown that PTG offers even greater protective elements following combat, including reduction in suicidal ideation (Bush, Skopp, McCann, & Luxton, 2011), which, as previously mentioned, has been an increasing concern of today's recently deployed veterans (Belik, Stein, Asmundson, & Sareen, 2009; Kuehn, 2009; Marshall et al., 2001; Tarrier & Gregg, 2004). PTG has also been found to be associated with lower levels of PTSD and higher levels of emotional maturity (Aldwin & Levenson, 2004), as well as a preparedness or resilience for future events that may otherwise be traumatic (Calhoun & Tedeschi, 2006; Meichenbaum, 2006). The positive psychological changes that can result from combat exposure and, moreover, the protective factors they serve against the consequences of PTSD, highlight a need to delineate the specific pathways by which PTG develops.

Conceptualization of Posttraumatic Growth

In considering the nature of PTG, Tedeschi and Calhoun (1995) emphasized growth as manifesting through a cluster of responses rather than a single array of positive reactions. These positive changes may take the form of transformations in one's relationships with others, changes in one's sense of self, and changes in philosophy of life (Tedeschi & Calhoun, 1995). Thus, PTG has been categorized using five domains that capture these three major areas of change: (a) improved interpersonal relationships denoted by greater compassion and emotional connection, (b) openness to new possibilities or opportunities in the aftermath of trauma, (c) a greater appreciation of life, (d) an increased sense of personal strength, and (e) spiritual development (Tedeschi & Calhoun, 1995). Researchers have highlighted that PTG is a complex construct and thus a critical area of study in order to work toward a better understanding of its multifaceted processes (e.g., Hobfoll et al., 2007; Tedeschi, Calhoun, & Cann, 2007); however,

Tedeschi, Calhoun, and Cann (2007) emphasized that it is first and foremost important to fully understand the theoretical conceptualizations, which are reviewed below.

A model of posttraumatic growth. Since the five growth-related outcomes proposed by Tedeschi and Calhoun (1995) are described as a cluster of responses instead of a single set of positive reactions, they may reflect distinct psychological processes. Thus, a model of PTG has been proposed, which depicts three different processes and perspectives on trauma survivors' positive changes: (a) strength through suffering, (b) existential reevaluation, and (c) psychological preparedness (Janoff-Bulman, 2006). All three processes can be understood in terms of the impact of traumatic events on survivors' fundamental assumptions, which are described as individuals' core beliefs about themselves, others, and their surrounding environments that inherently provide a sense of security and safety (Janoff-Bulman, 2006).

Strength through suffering. "Trauma provides a dramatic test of human coping abilities" (Janoff-Bulman, 2006, p. 88). The strength through suffering process of growth involves a reconstruction of one's assumptions through successful coping and adaptation, and thus provides survivors with a foundation for recognizing personal strengths and new possibilities (Janoff-Bulman, 2006). Researchers have stressed that fundamental to this successful reconstruction is the adjustment of survivors' overgeneralized negative assumptions to more complex—albeit positive—assumptions such that their inner world is back to being secure (Janoff-Bulman, 2006; Joseph & Linley, 2008). In order to reach this once-again comfortable and secure inner world, coping that involves fully acknowledging, approaching, and confronting the traumatic experience is deemed mandatory (Janoff-Bulman, 2006).

Existential reevaluation. The remaining three of the five domains of Tedeschi and Calhoun's (1996) conceptualization of posttraumatic growth—appreciation of life, improved

interpersonal relationships, and spiritual growth—are proposed to stem from the existential reevaluation growth process (Janoff-Bulman, 2006). These three PTG domains stem from survivors' newly developed recognition of the value of human existence. Janoff-Bulman (2006) suggested that a key part of this process includes survivors recognizing the meaninglessness of existence—"meaning as comprehensibility"—in order to create a new perception of meaning—"meaning as significance." Coupled with survivors' reconstructed fundamental assumptions, their greater appreciation for and recognition of the value of life becomes a foundation for committed action, which is likely to occur through interpersonal and spiritual endeavors such as altruistic activities and more intimate connections with significant others.

Psychological preparedness. A result of survivors' reconstructed fundamental assumptions is a state of psychological preparedness, characterized by a reduced risk of psychological breakdown, degeneration, and shock in the face of any future adversity (Janoff-Bulman, 2006). This is a different form of posttraumatic growth such that, instead of being reflected in positive changes reported by survivors, it is more akin to a psychological state in which survivors have built an immunity and resiliency against future traumatization. This form of PTG has been supported by various researchers who have found that PTG provides protective elements in the face of future adverse circumstances (Calhoun & Tedeschi, 2006; Moran, Burker, & Schmidt, 2013; Meichenbaum, 2006; Tedeschi & Calhoun, 2005). Calhoun and Tedeschi (2006) described psychological preparedness as a way of reconstructing fundamental assumptions such that it can weather future shocks to the system.

Factors associated with posttraumatic growth. The section that follows will describe some of the factors that have been linked to PTG in the literature. Understanding what characteristics may contribute to a greater likelihood of experiencing PTG, especially among

veteran populations, will be an important foundation for the subsequent section, which will discuss interventions and guidelines for enhancing PTG among combat veteran populations.

The relationship between PTG and PTSD. It is important to first discuss the unique relationship between PTG and PTSD, as previously it was noted that both are trauma responses that have been associated with combat exposure (Dekel, Mandl, & Solomon, 2011; Hoge et al., 2004; Institute of Medicine, 2012). Given the aforementioned model of PTG proposed by Janoff-Bulman (2006), it is deemed a prerequisite for a trauma survivor to first experience distress in the aftermath of trauma—described by Janoff-Bulman as a shattering of one's pre-trauma assumptive world or core belief system—in order to thereby experience growth. In other words, the traumatic event(s) must impact the survivor in such a way that the individual's core beliefs (i.e., one's perceptions of being safe and secure in one's environment) are ruptured. In fact, several studies have supported this theory in demonstrating that individuals who experienced more core belief disruption experienced greater PTG (Cann et al., 2010; Roepke & Seligman, 2015). If a trauma survivor does not experience distress following a traumatic event, then that would indicate that there were no fundamental assumptions or core beliefs to be challenged or reconstructed to begin with; this response to trauma would actually demonstrate that the survivor possessed some form of resilience that shielded the individual from having his or her assumptive world disrupted, and therefore efforts toward positive psychological change would not apply or be necessary (Moran, Burker, & Schmidt, 2012). To provide further support this model, in recent years researchers have found a curvilinear, inverted U-shaped relationship between PTG and PTSD, showing that PTG is most likely to develop when a moderate amount of PTSD symptoms exist (Dekel, Mandl, & Solomon, 2011; Shakespeare-Finch & Lurie-Beck,

2014; Tsai et al., 2015). Thus, PTG is most likely to occur when symptoms of posttraumatic stress reach a certain threshold, but not when these symptoms are too negligible or too severe.

Sociodemographic and psychosocial characteristics. Specific characteristics have been identified that are associated with growth after trauma. Factors that have been negatively correlated with PTG include older age at time of traumatic event, depression, social constraint (e.g., inhibiting self-disclosure of intrusive thoughts), and disruptions in social activities (Cadell et al., 2003; Jim & Jacobsen, 2008; Kimhi et al., 2010; Powell et al., 2003; Zoellner & Maercker, 2006). Greater levels of perceived harm, threat, and uncontrollability during a traumatic event are associated with higher levels of growth in survivors of trauma (Dekel, Mandl, & Solomon, 2011; Linley & Joseph, 2004). Centrality of event, defined as "the degree to which one's life story is subsequently defined by the trauma experience" (Groleau, Calhoun, Cann, & Tedeschi, 2013, p. 477), was found to be a predictor of both posttraumatic distress and PTG (Groleau, Calhoun, Cann, & Tedeschi, 2013). Linley and Joseph (2004) stated that personality traits of openness, extraversion, and agreeableness are positively associated with PTG. Similarly, high possessions of the following five character strengths have been suggested to be associated with PTG: (a) interpersonal traits, such as humor, kindness, and leadership; (b) cognition, such as creativity and curiosity; (c) fortitude, including honesty, bravery, and judgment; (d) temperance, such as forgiveness, modesty, and fairness; and (e) transcendence, including gratitude, hope, and zest (Peterson, Park, Pole, D'Andrea, & Seligman, 2008). However, findings from empirical research on PTG suggested that PTG is not associated with pre-traumatic factors such as personality and sociodemographic characteristics (Dekel, Mandl, & Soloman, 2011), which supports the notion that PTG is a process set predominately by the traumatic event itself.

Dekel, Mandl, and Solomon (2011) conducted the first longitudinal study investigating the predictors of PTG and PTSD in the same study in order to better understand (a) what predictors PTG and PTSD share with one another and (b) what predictors are unique in PTG that are not seen in PTSD. In their analysis of 164 Israeli ex-prisoners of war (POWs) of the 1973 Yom Kippur War, the researchers found that peritraumatic factors (i.e., exposure and responses during the traumatic event), namely active coping and loss of control, predicted both PTG and PTSD. Specifically, loss of control in this study was defined as consisting of perceived emotional loss of control expressed in extreme terror and feelings of going crazy, which can be regarded as a failure to cope. However, active coping during the trauma—defined as "exercising efforts to manage a taxing stressor" (Dekel, Mandl, & Solomon, 2011, p. 248)—also predicted both PTG and PTSD, but predicted PTG above and beyond PTSD. When examining the predictors of PTG above and beyond the contribution of PTSD, perceived self-controllability emerged as a distinct variable. Moreover, unlike PTSD, PTG was not predicted by sociodemographic variables and it was not related to any personality variables. This lends support to PTG as a distinct construct separate from PTSD and, much like PTSD, as a process triggered predominantly by the trauma. Out of these findings, the researchers suggested that PTG and PTSD "share an engine that diverts into two routes" (Dekel et al., 2011, p. 249). The experience of loss of control disrupts fundamental assumptions, yet eventually turns into self-control, thus facilitating PTG. Alternatively, the same peritraumatic experience, resulting in shattered assumptions but without turning into self-control, may contribute further to PTSD.

Specifically in samples of veteran populations, Pietrzak and colleagues (2009, 2010) found that character strengths of perseverance and effort as well as greater perceptions of social support within one's unit were positively associated with PTG development among veterans.

Younger veterans were more likely to experience PTG than older veterans, which they found to be consistent with previous literature (Pietrzak et al., 2010). Tsai and colleagues (2015) found that greater social connectedness, intrinsic religiosity, and purpose in life were independently associated with greater PTG among a sample of over 3,100 U.S. veterans. Hijazi, Keith, and O'Brien (2015) investigated possible predictors of PTG in a multiwar clinical sample of combat veterans seeking treatment for PTSD; these researchers found that ethnic minority status, cognitive flexibility, and greater perception of moral wrongdoing (i.e., trauma-related guilt) were significantly associated with greater PTG, whereas greater anger was marginally associated with lower growth.

Lastly, studies have consistently shown that active coping and cognitive processing are heavily weighted predictors of PTG (Davis & Nolen-Hoeksema, 2009; Dekel, Mandl, & Solomon, 2011; Moran, Burker, & Schmidt, 2012, 2013; Prati & Pietrantoni, 2009; Triplett et al., 2011). Prati and Pietrantoni (2009) found, for instance, that several types of coping strategies used after trauma exposure predict PTG acquisition, including religious coping, positive reappraisal, and acceptance coping. Triplett and colleagues (2011) supported components of Janoff-Bulman's (2006) model of PTG described earlier in examining how the initial disruption of one's fundamental assumptions (i.e., core beliefs) is processed through two styles of ruminative cognitive work to then predict current distress, experienced growth, and, ultimately, well-being. Intrusive rumination, or unwanted thoughts about a traumatic event, was more likely to be associated with ongoing distress, whereas deliberate rumination—intentionally thinking about a traumatic event—was found to be associated with higher levels of self-reported PTG (Triplett et al, 2011). These findings are twofold, indicating that (a) challenges to core beliefs lead to both types of rumination and there is some indication that intrusive rumination, which

tends to occur in the immediate aftermath of trauma, can serve as an impetus for subsequent deliberate rumination; and (b) challenges to core beliefs that lead to constructive cognitive efforts are more likely to produce growth (Triplett et al., 2011). Overall, the final path model derived in Triplet and colleagues' (2011) study provides empirical support for Janoff-Bulman's (2006) theoretical underpinnings of how PTG can be developed—namely that challenges to one's fundamental assumptions serve as a "departure point" for PTG. Prati and Pietrantoni (2009) importantly noted that the coping mechanism employed by the traumatized individual has a greater effect on the development of PTG than social support and personality variables. The findings that active coping and cognitive processing are strong predictors of PTG, above and beyond other variables, have important implications for treatment interventions to enhance PTG in combat veterans.

Interventions to Enhance Posttraumatic Growth

The following section provides both guidelines and psychosocial interventions for enhancing PTG, specifically with a focus on veteran populations. It is outlined as follows: (a) guidelines for enhancing PTG; and (b) empirically supported treatments for PTSD and PTG. This section will end with a summary of the gaps in these interventions, which will provide a basis for the subsequent section on mindfulness.

Guidelines for enhancing PTG. Berger (2015) suggested that the process of facilitating PTG involves several steps, emphasizing that "throughout the process, it is important to emphasize that growth is a result of the way in which one chooses to respond to the traumatic event rather than the event itself" (p. 152). He stated that it is important for clinicians not to expect that every trauma-exposed client is going to experience growth and that some may experience growth in some domains but not in others. Berger also added that as part of the

process, the clinician teaches the client breathing exercises, imagery that is controlled by the client instead of being guided by the practitioner, and strategies for managing external distractions. As a first step, the clinician must help identify clues for impending floods of uncontrollable sensations. Second, the clinician should provide psychoeducation to the client regarding normal trauma reactions, effective ways to shift from intrusive to deliberate rumination, and skills for emotion regulation. Third, clinicians should help clients explore the following: (a) which parts of clients' fundamental assumptions (i.e., core beliefs) should be modified given their traumatic experience(s), (b) how to replace these no-longer-helpful assumptions in such a way that they are living life in a meaningful way, and (c) how to make necessary behavioral changes.

A posttraumatic growth program for service members. Tedeschi and McNally (2011) have outlined a pathway toward PTG and, ultimately, resilience, for returning service members as part of the Comprehensive Soldier Fitness (CSF) program, a program that aims to promote the psychological fitness of the U.S. Army. The authors stated that the PTG component of the CSF was in its preliminary development, as "the particulars of how it will be implemented, and by whom, are under discussion" (Tedeschi & McNally, 2011, p. 21). The Institute of Medicine (2012) confirmed that there is a lack of empirical evidence to support these approaches. To date, research still has yet to be published on the PTG component of the CSF program. Nonetheless, the authors review five major elements deemed to be central to this portion of the program, which will be presented below.

Part 1: Understanding trauma response as a precursor to posttraumatic growth. Combat veterans should be provided with basic psychoeducation regarding responses to traumatic experiences. This includes normalizing the common physiological and psychological responses

to experiences in military combat. Tedeschi and McNally (2011) highlighted that it would be especially useful for combat veterans to understand how the disruption of their core beliefs and fundamental assumptions (Janoff-Bulman, 2006) serve as a basis for eventual growth.

Part 2: Emotional regulation enhancement. This component of the program has been proposed to involve learning coping strategies for regulating sympathetic nervous system responses as well as intrusive thinking to encourage more constructive, deliberate rumination. Tedeschi and McNally (2011) suggested connecting the training in this portion to the training in the emotional fitness component of the CSF program.

Part 3: Constructive self-disclosure. Tedeschi and McNally (2011) explained the importance of this portion as a foundational basis for receiving emotional support, developing a trauma narrative, and finding models to promote a healthy adjustment and enhance growth. More specifically, this portion may encourage combat veterans to begin telling their story of their traumatic experience(s), with a special focus on its aftermath, using metaphors and their own language to convey complex matters.

Part 4: Creating a trauma narrative within posttraumatic growth domains. Elements in this part of the training are proposed to include the following: (a) having combat veterans organize their story such that the trauma itself is marked as a critical turning point; (b) encouraging the use of dialectical thinking and, moreover, the appreciation of paradox (e.g., the bad and the good, the beauty and the dreadful, the control and the loss of it, strength and vulnerability); (c) introducing the positive changes—referring to the five domains of PTG—to encourage veterans' stories to reflect PTG aspects in the aftermath of trauma; and (d) sharing others' stories that reflect positive changes to pose an example of the possibilities of change (Tedeschi & McNally, 2011).

Part 5: Developing life principles that are robust to challenges. Elements in this final portion of the program include (a) an emphasis on encouraging altruism, valuing the learning as a result of the aftermath of the trauma and how it creates new possibilities; (b) accepting growth without guilt for the benefit of not just the trauma survivor, but others as well; (c) accepting and developing a changed social identity as a trauma survivor, separating from those who have not gone through such an experience in a way that enhances connection to humanity; and (d) reflecting the notion of the hero, as it was understood in ancient Greek and Roman times, "an ordinary person who experiences an extraordinary event, survives it, and returns to the everyday world to express an important truth about life" (Tedeschi & McNally, 2011, p. 22). The authors suggested possible integration of this segment with the spiritual fitness component of the CSF program.

Empirically supported treatments for PTSD and PTG. Berger (2015) noted that even when PTG does occur, it is manifested later rather than sooner in the process, after the trauma has been processed. Since PTG has been shown to be associated with PTSD and subthreshold PTSD symptoms (e.g., Shakespeare-Finch & Lurie-Beck, 2014; Tsai et al., 2015), and it is suggested to treat PTSD symptoms prior to enhancing growth, it would be appropriate to discuss the empirically supported treatments for PTSD, only one of which has been evidenced to promote PTG (i.e., prolonged exposure). Furthermore, only one intervention, called Battlemind, has been implemented specifically to promote PTG. In general, the gold standard treatments for PTSD involve detailed, repeated exposure to traumatic material and the modification of maladaptive beliefs about events, behaviors, or symptoms (Sharpless & Barber, 2011). As previously described, enhancement of PTG involves modifying existing fundamental assumptions as well as developing positive coping strategies (Berger, 2015; Prati & Pietrantoni,

2009). Detailed, repeated exposure aligns with the confrontational nature of reconstruction of core beliefs, and the modification of maladaptive beliefs fits well with this, as well as the development of positive coping strategies, indicating that PTG is likely already facilitated in the currently accepted therapies for PTSD.

Prolonged exposure. Prolonged exposure (PE) therapy is a well-established treatment for PTSD and, moreover, has been confirmed to be effective specifically for combat and terror-related PTSD (Nacash et al., 2010). Treatment benefits have been maintained at 5 to 10 years follow-up (Resick et al., 2011). PE consists of 5 main components: (a) imaginal exposure for purposes of revisiting traumatic memories; (b) recounting memories verbally and discussing the experience immediately (processing); (c) in vivo exposure to safe, but trauma-related situations that the client fears and avoids; (d) psychoeducation; and (e) training in slow breathing techniques (Sharpless & Barber, 2011).

Hagenaars and van Minnen (2010) demonstrated PE's ability to promote PTG as well as decrease PTSD among a sample of 65 participants with mixed trauma experiences. Specifically, the researchers assessed for PTSD symptom severity and PTG before and after a standardized PE treatment program comprising 8 to 12 weekly sessions of 45-minute durations in a sample of individuals with a clinical diagnosis of PTSD. They found that there was a negative relationship between PTG and PTSD after the treatment program; however, increases in growth were specific to domains of Relating to Others, New Possibilities, and Personal Strength, whereas Spiritual Change and Appreciation of Life did not change (Hagenaars & van Minnen, 2010). PTG was negatively associated with avoidance behaviors, but not with re-experiencing and arousal related to the trauma (Hagenaars & van Minnen, 2010). This latter finding suggests that avoidance may

prevent the development of PTG, as it does not allow the individual to confront and deal with the trauma.

Cognitive therapies. Cognitive therapy has been found to be particularly effective in reducing the numbing and avoidance symptoms of PTSD and maladaptive coping mechanisms (Sharpless & Barber, 2011). Cognitive processing therapy (CPT) and cognitive behavioral therapy (CBT) are evidence-based treatments used to treat PTSD among veteran populations (Moran, Burker, & Schmidt, 2013); CPT, in addition to PE, is considered a gold standard treatment for PTSD in the VA. Both approaches target challenging automatic thoughts associated with trauma. Self-blame is a particular focus of CPT; in addition, CPT contains an exposure component that involves the client writing about his or her traumatic events in detail and reading this both quietly to oneself and verbally in therapy sessions (Sharpless & Barber, 2011). Although there have not been studies measuring PTG as a result of CPT, Moran, Burker, and Schmidt (2013) suggested that there is a high likelihood of growth developing particularly because of the exposure and writing components, as well as CPT's effects beyond treating PTSD and also improving anxiety and social functioning.

Eye movement desensitization and reprocessing (EMDR). EMDR is a structured and manualized treatment that integrates components of CBT, mindfulness, body-based approaches, and person-centered therapies (Sharpless & Barber, 2011). There are eight phases of treatment in EMDR, some of which include desensitization and reprocessing (clients hold distressing images in mind while tracking rhythmic finger movements of the clinician), the installation of positive cognitions (during which fingers are tracked while retaining positive thoughts), and journaling (Sharpless & Barber, 2011). In their meta-analysis of EMDR studies, Spates and colleagues (2008) revealed that EMDR is as efficacious as exposure-based therapies in both

civilian and military populations. Furthermore, EMDR has been recommended in VA and DoD guidelines (Institute of Medicine, 2012). However, there has been no research to date studying its potential impact on PTG, although its component of journaling may facilitate growth as discussed below.

Journaling. Journaling helps clients in emotionally and cognitively processing their traumatic experiences as it allows them to organize their thoughts, feelings, and reactions into an actual story (King & Holden, 1998). King and Holden (1998) suggested that this integration of thoughts and feelings provides a basis for effective action and change in the therapy process. Neimeyer (2006) specifically recommended journaling for the revision of life narratives, which is a part of the PTG process. In addition, writing in and of itself has demonstrated efficacy in the treatment of veterans with PTSD (Possemato, Ouimette, & Knowleton, 2011). Possemato, Ouimette, and Knowleton (2011) found that veterans in the Written Emotional Disclosure (WED) group, which involved three 20-minute sessions of writing thoughts and emotions related to combat incidents, reported a greater reduction in PTSD symptoms compared to the time management narratives group. A qualitative analysis of the WED group further revealed that those veterans who experienced the greater reduction of symptoms wrote more about their thoughts and feelings related to the traumatic event, rather than factual information; these veterans also reported finding meaning in their traumatic experience (Possemato, Ouimette, & Knowleton, 2011).

Battlemind. Battlemind is the only program in the literature that is exclusively focused on facilitating PTG (Moran, Burker, & Schmidt, 2013). It is a component of Combat and Operational Stress Control, described as a behavioral health support program that is targeted at (a) maximizing unit cohesion and combat capability in the face of high stress, and (b)

augmenting PTG (Brusher, 2007). Adler and colleagues (2009) found that Battlemind, in comparison to a stress education program, led to fewer symptoms of depression, PTSD, and sleep problems in soldiers who experienced high levels of combat. Participants in this study also expressed a preference for Battlemind over the stress education intervention. In the Battlemind program, soldiers are provided psychoeducation about the symptoms they may experience upon returning home as natural and typical responses to their combat experiences (Adler et al., 2009). By normalizing negative psychological symptoms in this way, the idea is that soldiers may be less likely to blame themselves and better equipped to handle their symptoms effectively (Adler et al., 2009). Soldiers are also taught positive coping strategies, often by adapting the same combat skills that they used before their return (Adler et al., 2009).

Summary of empirically supported treatments for PTSD and PTG. Although these treatments are deemed to be empirically supported treatments and evidence-based practices that follow the best practice guidelines for the treatment—and prevention, specifically for Battlemind—of PTSD, it is important to note that treating symptoms of posttraumatic stress does not in and of itself lead to growth (Berger, 2015; Lyons, 2008). Furthermore, Lyons (2008) explained that while cognitive behavioral interventions such as exposure and cognitive processing therapies are empirically validated treatments for PTSD, they are merely aimed to promote recovery and thus return trauma-exposed clients to their pre-trauma baseline. Additionally, it has been estimated that between a third and a half of patients receiving empirically supported treatments for PTSD do not fully respond to treatment, at least on some measures (Schottenbauer et al., 2008); similarly, the average drop-out rate in trials of exposure-based and cognitive interventions for PTSD is in the 20% to 25% range (Hembree et al., 2003). Taken together, this suggests that these existing treatment approaches may not meet the needs of

every individual with PTSD who seeks services. Therefore, additional strategies may be warranted to expand treatment opportunities and, especially, maximize growth, which would aid trauma survivors in exceeding their pre-trauma baseline.

Mindfulness

As previously discussed, researchers have suggested that the active processing of trauma exposure through deliberate rumination and positive coping strategies is a major means by which PTG may be facilitated (Berger, 2015; Davis & Nolen-Hoeksema, 2009; Janoff-Bulman, 2006; Moran, Burker, & Schmidt, 2013; Tedeschi & Calhoun, 2004; Tedeschi & McNally, 2011). Mindfulness, which has been defined as ‘‘the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145), may enable the active processing that allows for the experience of growth following trauma exposure. To provide empirical support to this stance, mindfulness has been shown to decrease rumination (Williams, 2008). This section will give an overview of the history of mindfulness, review mindfulness-based interventions and their relations to PTSD and PTG, and explain the links between (a) dispositional mindfulness and mindfulness-based interventions, (b) mindfulness and PTSD, and (c) mindfulness and PTG.

History of mindfulness. Mindfulness, as understood in Western psychology, originated from Eastern spiritual and philosophical traditions of meditation, primarily Buddhism (Baer & Krietemeyer, 2006; Kabat-Zinn, 1982). These traditions describe mindfulness meditation as a method applicable to anyone to minimize suffering and enhance positive qualities such as awareness, insight, wisdom, compassion, and composure (Goldstein, 2002; Kabat-Zinn; 2003). Kumar (2002) explained that a brief review of the Four Noble truths, which encompass the heart of Buddha’s teachings, is necessary since the utility of mindfulness practices arises directly from

these truths. These truths are summed as follows: "(a) Suffering is ubiquitous; (b) suffering is a consequence of the automatic tendency to cling to phenomena; (c) the cessation of suffering is possible; and (d) this cessation can be achieved by practicing the Eightfold Noble Path" (Kumar, 2002, p. 41). Aspects of this eightfold path are interdependent and comprise engaging in right understanding, conception, speech, action, livelihood, effort, mindfulness, and concentration (Harvey, 2013). Among these concepts, mindfulness—known as *sati*, which refers to a state of awareness of mental and physical experiences as they occur—has received the most attention in Western psychology. Mindfulness meditation in particular is part of the eightfold path and is thought to help achieve self-acceptance, or *maitri* (Follette, Palm, & Pearson, 2006). Four parts of *maitri* are facilitated through meditation: commitment, awareness, willingness to experience negative emotions, and attention to the here and now (Follette et al., 2006). "This approach to life circumstances is central to our acceptance based therapy" (Follette et al., 2006, p. 48).

It is important to denote both the similarities and differences of mindfulness between Buddhist tradition and some schools of Western psychology (e.g., cognitive behavioral therapies). Both sides share the assumption that humans have an innate potential toward incessant growth (Kumar, 2002). Both perspectives have common goals in facilitating growth, understanding, and freedom from suffering through the achievement of a state of awareness and acceptance (Follette et al., 2006). Buddha's teachings and Western psychology contextual behavioral approaches in particular—such as acceptance and commitment therapy (ACT)—both emphasize a contextual understanding of the world. However, while Buddhist thought sees "enlightenment" as accomplished experientially and believes that individuals and the external world are perceived as unpredictable through this lens, Western behavioral psychology is a "science" and, because of this, has a differing goal: being able to predict and influence behavior

(Follette, Palm, & Pearson, 2006). Also, while Buddhism has an extensive historical tradition of mindfulness practices, the science of this construct is relatively young in Western psychology (Follette, Palm, & Pearson, 2006). Whereas Buddhist traditions use mindfulness as a way of enduring painful experiences, Western psychology tends to focus on controlling and overcoming negative emotions (Follette, Palm, & Pearson, 2006). Newer behavioral approaches—such as ACT—have adopted a "middle way" between these two traditions in encouraging clients to accept their current experiences while being challenged to act more effectively in the future (Follette, Palm, & Pearson, 2006).

Mindfulness and psychology: A proposed model. To operationalize the Buddhist version of mindfulness to be used in the science of Western psychology, Shapiro, Carlson, Astin, and Freedman (2006) proposed three axioms of mindfulness, which were derived from the common definition of mindfulness generated by Kabat-Zinn (2003) that was quoted earlier in this review: (a) intention (i.e., on purpose); (b) attention (i.e., paying attention); and (c) attitude (i.e., paying attention in a particular way). These three axioms are interconnected aspects of a single, cyclic process, and thus occur concurrently. From an understanding of intention, attention, and attitude, one can understand the mechanisms of mindfulness.

Axiom 1: Intention. The intention or "on purpose" axiom is derived from the Buddhist's notion that mindfulness meditation has a certain direction and purpose; in other words, it answers the question of why one is practicing mindfulness in the first place. For Buddhist tradition, this intention involved enlightenment and compassion for others. In Western psychological science, Shapiro, Carlson, Astin, and Freedman (2006) indicated that intention may be comparable to some kind of personal vision, which may evolve over time and with continued mindfulness practice. A relevant example is that a veteran experiencing combat-related posttraumatic stress

may begin a mindfulness practice initially to reduce distress and improve symptoms, but with continued practice may develop a new intention of relating more kindly to others.

Axiom 2: Attention. "Attention has been suggested in the field of psychology as critical to the healing process" (Shapiro et al., 2006, p. 376). Paying attention requires one to observe internal and external experiences as they occur moment by moment. The practice of paying attention is said to be at the core of mindfulness (Shapiro et al., 2006).

Axiom 3: Attitude. Shapiro and colleagues (2006) emphasized that "the qualities one brings to the act of paying attention is crucial" (p. 376). They suggested that these qualities should come from the heart, meaning that they have a compassionate undertone as opposed to a more spiteful one. In the scientific literature, this has been generally referred to as paying attention without evaluation or judgment. The authors added that these heart qualities are essential to all internal and external experiences, even when these experiences are inconsistent with deeply held wishes or expectations. This attitude axiom has fundamental implications for trauma survivors' adjustment following exposure to trauma(s). Victor Frankl, a Holocaust survivor who was subject to severe trauma as a concentration camp prisoner and is famous for his ability to find meaning and growth out of this suffering, represents a prominent exemplar of posttraumatic growth. Frankl highlighted the importance of making meaning out of one's circumstances, no matter what the situation entails. He stated, "Whenever one is confronted with an inescapable, unavoidable situation, whenever one has to face a fate that cannot be changed…What matters most of all is the attitude we take towards suffering, the attitude in which we take our suffering upon ourselves" (Frankl, 1963, p. 178).

According to Shapiro and colleagues (2006), the state of mindfulness transpires when intention, attention, and attitude are simultaneously facilitated. Through this process,

"reperceiving" occurs, a term coined by the authors, which is characterized by a shift in perspective and is comparable to concepts of decentering (i.e., stepping out from immediate experience which throws it "off center" and changes its nature), deautomatization (i.e., negating the automatic processes that manipulate cognition and perception; Kang, Gruber, & Gray, 2013), and detachment (i.e., a blend of processes related to distancing, freeing of attention, and a phenomenological attitude). Shapiro and colleagues (2006) theorized that this shift in perspective is a "meta-mechanism" of action underlying mindfulness that overarches direct mechanisms that lead to change. Moreover, while it naturally occurs in development across the lifespan, this shift in perspective can be accelerated through mindfulness practice. Thus, through reperceiving, the ability to mindfully observe mental activity is strengthened, which leads to a shift in the sense of self that is proposed to be responsible for the changes fostered through mindfulness practice. The authors hypothesized that direct mechanisms leading to positive change are self-regulation, values clarification, cognitive-behavioral flexibility, and exposure.

Types of mindfulness-based interventions. Mindfulness has been linked to general well-being and positive affect, as well as decreases in negative psychological states (Bowen et al., 2006; Brown & Ryan, 2003; Carmody & Baer, 2008; Chandiramani, Verma, & Char, 1995; Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007). Mindfulness-based interventions have been found to improve as well as predict a wide range of medical and psychiatric disorders, including PTSD (Baer, Carmody, & Hunsinger, 2012; Eberth & Sedlmeier, 2012). The following section provides an overview of the different mindfulness-based interventions, including mindfulness-based stress reduction, mindfulness-based cognitive therapy, and dialectical behavior therapy. This overview will include the research regarding these different interventions' applications specifically with veteran populations.

Mindfulness-based stress reduction (MBSR). MBSR (Kabat-Zinn, 1982; 1990) is a standardized program that is a common clinical method for teaching mindfulness; it is typically conducted as an 8-week class with weekly sessions of two and a half to three hours. The eight group sessions are strongly experiential and expend considerable time practicing mindfulness exercises and discussion of group members' experiences with them (Baer & Krietemeyer, 2006). Kearney and colleagues (2012) measured the outcomes of veterans who participated in an MBSR program and found significant improvements in measures of mental health, including measures of PTSD, depression, experiential avoidance, and behavioral activation, as well as mental and physical health-related quality of life over a 6-month period. Niles and colleagues (2012) compared an 8-week mindfulness telehealth intervention to a psychoeducation telehealth intervention in a sample of combat veterans with PTSD and found that participation in the mindfulness intervention was associated with a temporary reduction in PTSD symptoms, whereas the psychoeducation intervention did not impact PTSD symptomology.

Mindfulness-based cognitive therapy (MBCT). MBCT (Segal, Williams, & Teasdale, 2002; 2013) is based largely on MBSR and uses many of its elements, including the various mindfulness practice exercises previously mentioned (Baer & Krietemeyer, 2006). MBCT was originally developed with the intention of treating recurrent depression, and is posited to decrease depressive recurrence by increasing awareness of and thereby disconnecting from repetitive negative thinking about one's depressive symptoms (Segal et al., 2002). A theoretical principle of both MBCT and MBSR is that the development of mindfulness skills leads to an inherent non-judgmental and non-reactive acceptance of moment-to-moment experiences, which in turn results in positive psychological outcomes (Kabat-Zinn, 1982; Segal et al., 2002). MBCT does not use traditional cognitive therapy exercises that are targeted at identifying and

challenging cognitive distortions; rather, it integrates several exercises based on cognitive therapy components that emphasize a decentered approach to inner experiences such that individuals are aware of unhelpful thoughts but pay attention to them nonjudgmentally (i.e., without analyzing or challenging them). MBCT is generally conducted in group format, with two-hour weekly sessions for the duration of 8 weeks. Though it was originally developed for the prevention of relapse of major depressive episodes, a recent study conducted by King and others (2013) revealed that combat veterans with chronic PTSD who participated in an MBCT group showed significant reduction in symptoms of PTSD. The researchers suggested that MBCT may be an acceptable brief intervention or adjunct therapy for combat PTSD, with specific potential for reducing avoidance symptoms and PTSD cognitions (King et al., 2013).

Dialectical behavior therapy (DBT). DBT (Linehan, 1993) is an evidence-based treatment that has been supported as an effective stand-alone treatment for PTSD, but is recommended to be used in conjunction with exposure therapies (Sharpless & Barber, 2011). Additionally, although DBT has been evaluated as a stand-alone treatment as well as a supplemental treatment to exposure therapies, none of the empirical studies to date have been conducted with veterans (Sharpless & Barber, 2011). DBT is considered a blend of CBT and mindfulness training that was originally developed for the treatment of borderline personality disorder, although a PTSD-focused version has been developed due to the similarities in experiencing difficulty in interpersonal relationships and regulating emotions (Sharpless & Barber, 2011). Components of DBT involve building skills in areas of mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance (Linehan, 1993).

Dispositional mindfulness vs. mindfulness-based interventions. Since the present study uses dispositional mindfulness in contrast to a mindfulness-based intervention, this section

will describe the connections between the two and provide a rationale for studying the former. As discussed previously, Buddhist traditions suggested that this multifaceted construct can be developed through the practice of meditation (Follette, Palm, & Pearson, 2006; Harvey, 2013; Kumar, 2002). Likewise, theoretical components of MBSR and MBCT posit that these interventions increase mindfulness itself, which thereby exerts its effects on psychological outcomes (Kabat-Zinn, 1982; Segal et al., 2002). The term dispositional mindfulness has been used to refer to the inherent quality of consciousness available to all people to varying degrees (Brown & Ryan, 2003) and is proposed to be increased through mindfulness-based interventions (e.g., Baer, Carmody, & Hunsinger, 2012; Gu et al., 2015). For instance, Baer, Carmody, and Hunsinger (2012) examined weekly change in self-reported mindfulness and perceived stress in adults with problematic levels of stress related to chronic illness, chronic pain, and other life circumstances who were participating in an MBSR program. They found that significant changes in mindfulness skills preceded significant changes in perceived stress, and the extent of change in mindfulness skills during the first 3 weeks predicted change in perceived stress over the course of the intervention. Findings of Baer, Carmody, and Hunsinger's (2012) study suggest that, comparable to previous studies (e.g., Carmody & Baer, 2008), improvements in mindfulness skills may mediate the effects of mindfulness-based interventions on mental health outcomes. Similarly, in their meta-analysis reviewing 12 applicable studies of mindfulness as a mediator of mindfulness-based interventions and stress and mood states, Gu and colleagues (2015) found that mindfulness significantly partially mediated the effects of mindfulness-based interventions on mental health outcomes. Moore and Malinowski (2008) found that meditators in their sample reported significantly higher levels of mindfulness compared to non-meditators in their sample. Thus, consistent across the literature is the implication that mindfulness-based

interventions increase a disposition to mindfulness, and it is this disposition that leads to positive psychological outcomes; that is, mindfulness-based interventions affect mental health outcomes indirectly through increasing dispositional mindfulness, providing a rationale for focusing on the latter variable in the present study.

Mindfulness and posttraumatic stress disorder. Not surprisingly, substantially more research has been conducted regarding the relationship between mindfulness and PTSD than that between mindfulness and PTG. Bearing in mind the inverted U-shaped relationship between PTSD and PTG (Dekel, Mandl, & Solomon, 2011; Shakespeare-Finch & Lurie-Beck, 2014; Tsai et al., 2015), the literature regarding the relationship between mindfulness and PTSD is relevant to understanding the relation of mindfulness and PTG, and thus the remaining relevant research (i.e., studies not already previously discussed in mindfulness-based intervention sections) will be reviewed before discussing mindfulness and PTG.

Hayes and colleagues (1996) suggested that a relative inability to accept aversive emotional experiences and concurrent attempts to avoid these experiences may backfire in exacerbating PTSD symptomology. In consideration of the general consensus among trauma researchers that the avoidance symptoms of PTSD predominate (e.g., Follette, Pearson, & Palm, 2006; Hayes et al., 1996; Thomas & Waltz, 2010), Follette, Palm, and Pearson (2006) stated, "The use of mindfulness as an intervention would theoretically break the behavioral loop of avoidance and increase attention and purposeful behavior that is often a deficit in those individuals with trauma histories" (p. 56). To support this claim, Kimbrough and colleagues (2009) adapted an 8-week MBSR program for survivors of childhood sexual abuse and found significant reductions in all PTSD symptoms, but most particularly avoidance symptoms. Similarly, Thomas and Waltz (2010) provided evidence that mindful non-judging—a proposed

facet of dispositional mindfulness described as acceptance of everyday experiences—accounted for a unique proportion of the variance in PTSD avoidance symptom severity. Garland and Roberts-Lewis (2013) found that dispositional mindfulness was linked to reduced thought suppression (i.e., an indicator of experiential avoidance, which will be discussed below; Bond et al., 2011), which in turn was associated with less severe PTSD symptoms. Although these researchers also found a link between dispositional mindfulness and reduced substance cravings, this relationship was not accounted for by thought suppression, further lending support to the notion that avoidance plays an integral role in PTSD.

Vujanovic and colleagues (2009) found that dispositional mindfulness, namely mindful non-judging, was significantly and incrementally associated with posttraumatic stress symptoms in a sample of trauma-exposed individuals without any mental health disorders, and that these effects were above and beyond the variance accounted for by negative affectivity and number of trauma types experienced. Mindful attention and awareness was significantly and incrementally associated with the posttraumatic stress-related re-experiencing symptoms. Together these major findings suggest that the capacity to be aware of the present moment and, more importantly, be willing to experience it without judging it, may play a role in the experience of posttraumatic stress symptoms, indicating that these components of mindfulness may prove clinically useful in the treatment of PTSD symptoms. A more recent study by Vujanovic, Bonn-Miller, and Marlatt (2011) further supported the potential power of a mindful non-judging disposition: Not only did mindful non-judging emerge as a significant incremental predictor of alcohol use coping motives, but it partially mediated the relationship between posttraumatic stress symptom severity and alcohol use coping motives among a sample of trauma-exposed adults.

Wahbeh, Lu, and Oken (2011) examined the relationship between mindful awareness, mindful non-judging, and PTSD symptoms in a sample of veterans and, using a cross-sectional design, assessed group differences in mindful awareness and mindful non-judging among three age and gender-matched groups: 15 combat veterans with PTSD, 15 combat veterans without PTSD, and 15 non-combat veterans without PTSD. They found that mindful non-judging was statistically significantly different across groups, with the PTSD group having the lowest score, but no statistically significant difference was found for mindful awareness. Furthermore, including mindful awareness and mindful non-judging in the regression model for PTSD symptom clusters explained additional variation for each PTSD symptom cluster beyond combat exposure (re-experiencing 32%, numbing-avoiding 19%, hyper-arousal 16%), although only mindful non-judging was significant in this model. The researchers suggested that psychosocial interventions using mindfulness-based approaches, with an emphasis on mindful non-judging, for veterans with PTSD may improve mental health outcomes (Wahbeh, Lu, & Oken, 2011).

Mindfulness and posttraumatic growth. No studies to date have examined the relationship between mindfulness and PTG among veteran populations specifically, although research with other populations has found that mindfulness is linked to PTG (Chopko & Shwartz, 2009; Garland et al., 2007; Hanley, Peterson, Canto, & Garland, 2015; Kearney et al., 2012; Mackenzie et al., 2007). In their meta-analysis of 39 studies examining the effects of mindfulness meditation on psychological variables, Eberth and Sedelmeier (2012) found that MBSR's most powerful effect seems to be on psychological well-being, a construct that Joseph and Linley (2008) explained is analogous to PTG. Chopko and Shwartz (2009) examined the relationship between dispositional mindfulness and PTG among a sample of police officers who experienced traumatic incidents as first responders. The researchers found that the scale they

used for dispositional mindfulness was not significantly correlated with PTG as a whole, but two of its subscales were significantly correlated. The observing component of mindfulness was significantly positively related to PTG, suggesting that observing, noticing, or attending to stimuli may be necessary for—or at least related to—the occurrence of PTG. They further suggested that repeated observation of aversive inner experiences may function as exposure to the experience and contribute to reduced emotional reactivity and avoidance strategies, which would allow for necessary cognitive processing of the traumatic event. The accepting without judgment component of mindfulness was significantly negatively related to PTG, and the researchers asserted that this negative correlation finding aligned with Tedeschi and Calhoun's (2004) model of PTG; however, a closer look into Tedeschi's (2011) proposed suggestions for facilitating PTG among combat veterans suggests that judgment of inner experiences can promote negative feelings, such as guilt, which thereby hinder growth. Likewise, Wahbeh, Lu, and Oken (2011) suggested that people with increased mindful non-judging may be less avoidant, which would suggest a greater likelihood of experiencing growth (e.g., facing one's fears rather than avoiding them may lead to feelings of personal strength, greater connectedness to others, greater appreciation of life, and openness to new possibilities).

Garland and colleagues (2007) compared an MBSR program and a healing through the creative arts (HA) program in a sample of patients with varying types and degrees of cancer and assessed participants' levels of posttraumatic growth before and after the intervention. Although participants in both groups improved significantly over time on overall PTG, participants in the MBSR improved on measures of spirituality significantly more than those in the HA group. Additionally, participants in the MBSR group demonstrated greater improvement than those in the HA group on measures of stress, anxiety, anger, and mood disturbance. The findings of the

study add to the literature in suggesting that PTG can be enhanced through psychosocial, mindfulness-based interventions.

Mackenzie, Carlson, Munoz, and Speca (2007) used a qualitative research design to examine the impact of MBSR on cancer patients' subjective well-being in an effort to better understand the mechanisms underlying mindfulness practices—how meditation practice affects patients' lives and mediates their ability to manage their illness. Using a grounded theory analysis, the researchers found five major themes to emerge from semi-structured interviews with nine patients who had been strongly impacted by their cancer diagnosis (i.e., suggesting a disruption of their core belief system), all of whom had previously taken an 8-week MBSR program and had also been active in an ongoing MBSR drop-in group at a cancer center for 1 to 6 years. The five major themes that emerged were opening to change, self-control, shared experience, personal growth, and spirituality, which align with most of the major domains that characterize PTG (i.e., spiritual growth, personal strength, openness to new possibilities, increased connections to others) and thus indicate the impact of mindfulness on enhancing aspects of PTG. The researchers integrated these emerging themes with Shapiro, Carlson, Astin, and Freedman's (2006) model of mindfulness mechanisms, which theorizes that mindfulness leads to "reperceiving," or being able to view situations with a completely new perspective for the first time. They related opening to change to the idea of reperceiving, and self-control as fitting with Shapiro and colleagues' (2006) speculation that self-regulation results from reperceiving.

Hanley, Peterson, Canto, and Garland (2015) investigated the relationship between dispositional mindfulness and PTG in a sample of adults who experienced varying traumatic experiences, specifically examining differences between contemplative practitioners (i.e., those

who frequently practice meditation, yoga, prayer) and non-contemplative practitioners. The researchers found that contemplative practitioners reported high levels of dispositional mindfulness and PTG, with particularly higher levels of mindful observing and spiritual growth. The relationship between mindfulness and PTG itself was stronger for contemplative practitioners compared to non-practitioners. The researchers suggested that dispositional mindfulness may be an important protective factor in the face of traumatic life experiences and, moreover, it may increase the possibility of finding meaning in such experiences.

Acceptance and Commitment Therapy

Tedeschi and McNally (2011) highlighted that the approaches that have been recommended in the literature for the facilitation of PTG combine elements of cognitive, existential, humanistic, and narrative approaches to change. Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is an empirically validated mindfulness- and acceptance-based treatment that combines these various elements in its bottom-up-generated approach and would thus theoretically be an ideal candidate for enhancing PTG. In a systems of psychotherapy video series published by the American Psychological Association (VandenBos, Frank-McNeil, Brown, & Nolley, 2009), Steven Hayes—the founder of ACT—described several other pieces about ACT that inadvertently underline its optimal place for enhancing PTG. He first stated that since ACT is a relatively emerging approach and an empirically validated treatment that extracts the common ingredients of existing evidence-based practices, it should be used as a supplement to the already validated approaches that clinicians have been using. This provides support for using ACT in addition to the existing gold standard treatments for combat PTSD so that not only recovery to pre-trauma baseline can be achieved with CPT or PE, but PTG can be enhanced as a result of using ACT as a supplemental treatment—thus allowing combat

veterans to exceed their pre-trauma baselines. Moreover, Hayes emphasized that ACT should be considered a type of positive psychology intervention, which further confirms why its approach, as well as its underlying theory, would best facilitate PTG, a concept derived from the positive psychology movement. Lastly, Roemer and Orsillo (2009) stated that ACT "provides an important cornerstone for acceptance-based behavioral models" (p. 25). A key component of the ACT model—experiential avoidance—provides an essential theoretical basis for understanding how psychopathology is developed and maintained, suggesting that it is a useful target for intervention. This final section of the review will first discuss experiential avoidance and its relation to mindfulness and PTG, which will then lead into an overview of the six core processes of ACT.

Experiential avoidance. The core conception of ACT rests on the belief that symptoms of posttraumatic stress are developed and perpetuated through experiential avoidance, which refers to deliberate attempts to alter the form, frequency, or situational sensitivity of internal experiences, even when doing so causes behavioral harm and is inconsistent with one's long-term values (Hayes et al., 1996). Hayes and colleagues (1996) as well as others (Boulanger, Hayes, & Pistorello, 2010; Roemer & Orsillo, 2009; Spinhoven et al., 2014) have described experiential avoidance as a functional diagnostic dimension that is often unrecognized as a mechanism across multiple disorders and problematic behaviors—especially PTSD, a defining feature of which, as previously discussed, is avoidance of thoughts, feelings, sensations, images, and behaviors associated with the trauma. For instance, thought suppression, which predicts posttraumatic symptoms at higher levels (Garland & Roberts-Lewis, 2013), has been shown to positively correlate with the gold standard measure that is used to assess experiential avoidance—the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). In fact,

many systems of psychopathology or therapy have inadvertently addressed some aspects of the concept, including psychodynamic theories, Gestalt therapy, humanistic therapies, existential therapies, and cognitive behavioral therapies (Boulanger, Hayes, & Pistorello, 2010), highlighting its overall significance across the differing perspectives of how psychopathology is developed. Furthermore, a meta-analysis conducted by Hayes and others (2006) demonstrated that experiential avoidance is associated with depression, stress, anxiety, general psychological distress, and PTSD, and that levels of experiential avoidance may account for as much as 28% of the variance in behavioral health problems in general. While experiential avoidance may provide short-term or temporary relief of distress, if it becomes a prominent motivator of one's behavior—whether consciously or not—it can have long-term negative effects.

History of experiential avoidance. Experiential avoidance, as the defining component of ACT, is based on Relational Frame Theory (RFT), a view that is focused on psychological processes and the contexts that determine their functions (Boulanger, Hayes, & Pistorello, 2010). RFT describes verbal behavior as the action of framing events relationally. These relational frames develop in infancy based on explicit training and are deemed developmentally mandatory in order to acquire normal language abilities (Boulanger et al., 2010). The meaning or psychological functions of stimuli are altered through their participations in these relational frames. To further explain this complicated conceptualization, Hayes and Lillis (2012) used the example that a child may initially learn that in terms of physical size, a nickel is bigger than a dime and a dime is smaller than a penny. Without needing to be trained, the child may generate other relationships based on the bidirectional and combinatorial nature of verbal relations (e.g., a nickel is bigger than a penny, a penny is bigger than a dime). Once a child is "trained," however, he or she learns that a dime is "bigger" than a penny or nickel, even though it is formally smaller.

The dime will then become more reinforcing than the nickel for a child who is saving up money. It is this transformation of stimulus properties through relational frames that thus explains how stimuli—whether objects or events—can come to have powerful emotional functions. In other words, RFT (and therefore ACT) stresses that verbally mediated internal experiences (i.e., cognitions, emotions, and memories) do not in and of themselves directly influence behavior; instead, they influence behavior through the context in which they occur (Hayes & Strosahl, 2004). Thus, RFT and ACT view the primary cause of psychological problems as the way that language and cognition interact with stimuli to produce an inability to behave in a way that is in accordance with one's values: "This kind of psychological inflexibility is argued in ACT and RFT to emerge from weak or unhelpful contextual control over language processes themselves" (Hayes et al., 2006, p. 6).

ACT and RFT view human suffering as originating in psychological inflexibility that is fostered not only by experiential avoidance, but a process termed cognitive fusion (Hayes & Strosahl, 2004). Fusion in its literal sense refers to when two things get stuck together and inherently become one thing. Cognitive fusion is defined as "excessive or improper regulation of behavior by verbal processes, such as rules and derived relational networks" (Hayes et al., 2006, p. 6). When individuals engage in contexts that feed this kind of fusion, their behavior is guided more by their rigid verbal networks, and as a result they reduce their ability to act in a way that is consistent with values. That is, they are literally buying into their thoughts and responding to them as if they are the reality. Cognitive fusion supports experiential avoidance (Hayes et al., 2006). A relevant example to demonstrate the connection between cognitive fusion and experiential avoidance would be that combat veterans with PTSD may avoid places that trigger memories associated with being in combat because of their fused relationships

with—that is, their "buying in" to—thoughts and feelings of fear of not being able to cope with or manage it. This may not only reinforce and maintain their symptoms of PTSD, but may prevent them from being able to face their fears and live in accordance with values that are important to them. On the other hand, if they were able to have those thoughts but not allow them to govern their actions, they might feel a sense of personal strength and, in living more consistently with their values, may come to find a greater appreciation for life, increase their connections with others, and see the opportunity for new possibilities.

Consequences of experiential avoidance. Roemer and Orsillo (2009) reviewed the many cognitive, social, emotional, and behavioral consequences of experiential avoidance. They highlighted that the habitual, rigid efforts to control difficult private events by way of elimination or avoidance are problematic for four major reasons: (1) These efforts are often unsuccessful, (2) they interfere with the functions that emotions and their responses serve, (3) they reinforce a problematic relationship with internal experiences, and (4) they impair functioning. For instance, to add to this problematic nature, research has shown that experiential avoidance is negatively correlated with various qualities of life indices, including less frequent positive events and diminished positive affect, life satisfaction, and meaning in life (Boulanger et al., 2010). Kashdan, Morina, and Priebe (2009) found that experiential avoidance partially mediated the relationship between PTSD and compromised quality of life in a sample of Albanian civilian survivors of the Kosovo war. To extend the example that was just discussed, the combat veteran with PTSD who continues to avoid anything associated with the trauma is not only maintaining his avoidance symptoms, but is likely causing further distress by missing out on valuable life experiences, such as spending time with family and friends and visiting new places. Thus, while the avoidance (i.e., isolation) grants temporary relief of distress, in the long run it perpetuates

symptoms and may even create new symptoms such as depression or rumination. These new emerging symptoms may in turn be coped with using more avoidance strategies (i.e., substance use), perpetuating a vicious cycle of experiential avoidance and further distancing from a life in the service of one's values.

Experiential avoidance and mindfulness. Mindfulness is proposed to teach individuals to accept and thus live better with difficult experiences by its very nature. The *intention* axiom of mindfulness (Shapiro et al., 2006)—that is, the very purpose of it—may actually be to reduce experiential avoidance in order to live a more meaningful, value-guided life. This idea aligns with Shapiro and colleagues' (2006) suggestion described earlier in this review that cognitive-behavioral flexibility, which is comparable to a lack of experiential avoidance, is a mechanism underlying mindfulness that directly influences positive outcomes. If mindfulness is understood as attending to the present moment without judgment and experiential avoidance is understood as an unwillingness to experience particularly difficult internal experiences as they occur in the moment, it would be plausible to suggest that the two have an inverse relationship with one another (i.e., mindfulness is associated with a lack of experiential avoidance, or a lack of mindfulness is associated with experiential avoidance). To support this assertion, Baer and colleagues (2006) demonstrated that there was a statistically significant negative association between measures of mindfulness and that of experiential avoidance. As discussed earlier, the non-judging component of mindfulness was shown to account for a unique proportion of the variance in the avoidance symptom severity of PTSD specifically (Thomas & Waltz, 2010). Silberstein, Tirch, Leahy, and McGinn (2012) examined the relationship between dispositional mindfulness and psychological flexibility (i.e., acceptance, or the opposite of experiential avoidance, as will be discussed further below) among a sample of adults who were beginning

outpatient therapy at a cognitive-behavioral clinic. The researchers found a statistically significantly positive relationship between dispositional mindfulness and psychological flexibility, suggesting that individuals who describe themselves as more intrinsically aware and nonjudgmental of their daily experiences are more likely to be accepting and open to a given experience, and thus willing to guide their behavior in more adaptive and effective ways.

Weinrib (2011) investigated experiential avoidance as a mechanism of action underlying an MBSR intervention in a sample of adults and, using separate mediational analyses for outcome variables, found that the beneficial effects of mindfulness on mental health and psychosocial outcomes, including negative cognitions, negative and positive affect, disability, and satisfaction with life, were partially mediated by decreased experiential avoidance. The findings of this study suggest experiential avoidance serves as a mediator of the effect of mindfulness on multiple outcomes, while highlighting a mechanism of change that may pertain across psychosocial interventions that utilize mindfulness to enhance outcomes.

To further offer support for experiential avoidance as a mechanism underlying mindfulness, specifically among trauma-exposed populations, Thompson and Waltz (2010) investigated the degree to which measures of experiential avoidance predicted PTSD avoidance symptom severity, and whether mindfulness adds to the prediction of PTSD above and beyond the predictive ability of measures of experiential avoidance. The researchers found that mindfulness and experiential avoidance together significantly contributed to predicting the variance in PTSD symptom severity above and beyond experiential avoidance alone, suggesting an importance of including both mindfulness and experiential avoidance in the picture when understanding mental health outcomes. Depending on the measure of experiential avoidance that was used, 17-25% of the variability in PTSD avoidance symptom severity was accounted for by

mindfulness. The non-judging dimension of mindfulness in particular, which the researchers explained as being especially contrary to experiential avoidance in comparison to other dimensions of mindfulness, predicted additional variance in avoidance symptom severity. The researchers suggested that the predictive power of mindful non-judging in this study supports the importance of an acceptance component in conceptualizations of mindfulness (Thompson & Waltz, 2010). That is to say, an attitude of openness and nonjudgment of experiences as they occur in the moment may reduce or eliminate experiential avoidance, or promote experiential "acceptance," and therefore may be an important target for trauma and PTSD treatment interventions.

Experiential avoidance and posttraumatic growth. Research has shown that experiential avoidance in trauma survivors contributes to the maintenance of PTSD (Marx & Sloan, 2005). Not only can deliberate, rigid efforts to avoid or eliminate distressing, difficult internal stimuli maintain and perpetuate PTSD, but it can limit opportunities for new learning and personal growth, and thereby contribute to diminished well-being. When a sample of combat veterans was asked what they thought about, planned for, and attempted to accomplish in their day to day lives, Kashdan, Breen, and Julian (2010) found that combat veterans with PTSD endorsed more strategies concerning control and avoidance of emotions compared to combat veterans without PTSD. These control strategies contributed to an unlikelihood of experiencing joy or meaning in life. On the other hand, combat veterans without PTSD were more likely to indicate strategies unrelated to control or avoidance, and consequently experienced greater psychological benefits from their striving effort (Kashdan, Breen, & Julian, 2010). This suggests that strategies utilized to push away trauma-related material inhibits the ability to properly regulate responses to

trauma-related cues, be mindfully present, realize one's strengths, and generate meaning from events, thus overall interfering with possibilities for PTG.

While no studies to date have examined the relationship between experiential avoidance and PTG specifically among combat veterans, a recent study using a similar construct to the counterpart to experiential avoidance (i.e., psychological flexibility)—cognitive flexibility—suggests that this relationship may exist among this population (Hijazi, Keith, & O'Brien, 2015). Cognitive flexibility was defined as "a person's awareness of alternatives, a willingness to adapt and be flexible, and a sense of effectiveness in being flexible" (Hijazi et al., 2015, p. 397), and the researchers asserted that this construct is promoted in ACT, further suggesting its similarity with psychological flexibility (i.e., the opposite of experiential avoidance). Hijazi and colleagues (2015) investigated the prevalence and predictors of PTG in a clinical sample of combat veterans of multiple wars. They found that 69% of the sample reported at least a moderate level of PTG in at least one of the five domains of PTG, with increased appreciation of life being the most frequently reported domain. Results from hierarchical multiple regression analyses indicated that ethnic minority status, higher cognitive flexibility, and greater perception of moral wrongdoing were significantly associated with greater PTG, and greater anger was significantly associated with reduced PTG. Out of these findings, the researchers suggested targeting cognitive flexibility in psychosocial interventions to enhance growth among veterans.

Kashdan and Kane (2011) examined the relationships between posttraumatic stress, experiential avoidance, PTG, and meaning in life in a sample of college students to investigate the potential moderating effects of experiential avoidance on posttraumatic stress and growth. The researchers found an interaction effect of experiential avoidance and posttraumatic stress in predicting PTG, supporting experiential avoidance as a moderator of posttraumatic distress and

growth. This interaction effect showed that in the presence of experiential avoidance, posttraumatic distress was linked to less growth and meaning and, conversely, in the absence of experiential avoidance, posttraumatic distress was linked to greater growth and meaning among participants. Kashdan and Kane explained that this supports Tedeschi and Calhoun's (2004) theory that some level of distress is necessary in order to experience growth. Furthermore, the researchers suggested that a willingness to be in contact with disturbing thoughts, feelings, sensations, and images (i.e., no experiential avoidance) may serve as a catalyst for the development of PTG.

Six core processes of acceptance and commitment therapy. If an unwillingness to fully contact the present moment (i.e., lack of mindfulness) and psychological inflexibility (i.e., experiential avoidance) contribute to the development and maintenance of symptoms of PTSD as proposed by ACT, then it would be plausible to theorize that mindfulness may lead to psychological flexibility (i.e., minimal experiential avoidance), which may in turn enhance PTG. Psychological flexibility refers to the ability to fully embrace thoughts, feelings, and experiences in the present moment without avoidance, and persisting in or altering behavior to be consistent with goals and values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Greater psychological flexibility is gained through the six core principles of ACT: acceptance, defusion, self-as-context, values, committed action, and contact with the present moment. Mindfulness can be conceptualized as a combination of acceptance, defusion, self-as-context, and contact with the present moment (Hayes & Strosahl, 2004). Because ACT is a contextual behavioral science, it is difficult to understand experiential avoidance without also considering other core ACT processes that occur in its context. Therefore, the six core processes will be reviewed below.

Acceptance. Experiential avoidance is seen as "an attempt to tap into core processes that reduce the psychological flexibility of people" (Boulanger, Hayes, & Pistorello, 2010, p. 115). Thus, psychological flexibility, which is used interchangeably with acceptance and willingness, is the flip side of the coin of experiential avoidance. That is, ACT interventions target experiential avoidance, the problem that maintains and exacerbates symptoms and the alternative to acceptance, in order to increase psychological flexibility. Since acceptance is the alternative to experiential avoidance, it is described as the active embracing of private events in the absence of attempting to alter their form or frequency, especially when doing so would cause psychological harm (Hayes et al., 2006). Jason and Lillis (2012) importantly noted that acceptance is not the same as tolerating pain, liking pain, wanting discomfort, or a forceful process. It encourages "exposure to previously avoided experiences, such as anxiety, by focusing full attention sequentially on each of its elements (e.g., sweaty palms, rapid heart rate) and noticing the characteristics of each sensation and the possibility of experiencing it without avoidance or harm" (Baer & Krietemeyer, 2006, p. 24). The interventions recommended by Tedeschi and McNally (2011) for enhancing PTG in combat veterans emphasize the importance of acceptance to facilitate growth outcomes as a result of combat exposure. Moreover, this relates to the concept of deliberate rumination, which, as discussed earlier, is associated with increased PTG (Triplett et al., 2011).

Cognitive defusion. ACT aims to help teach clients to observe their thoughts and observe the process of thinking without attaching to thoughts in a way that they are deemed true and must be listened to with complete obedience; as cognitive fusion was mentioned earlier as problematic, its alternative is cognitive defusion. This concept is essentially different from traditional cognitive behavior therapies, which are aimed at analyzing, disputing, and challenging

unhelpful, inaccurate thinking (Baer & Krietemeyer, 2006). Instead of trying to change thoughts like traditional cognitive behavior therapies, ACT intends to help clients change the way they relate to their thoughts (Hayes et al., 2006). This is said to reduce the behavioral impact of thoughts, as clients come to see that thoughts are merely thoughts and not necessarily truths or laws to be inherently followed. Seeing thoughts just as they are requires mindfulness skills. Thus, the combat veteran used as an example earlier who has the thought, "I'm not going to be able to cope with going to the store today," simply notices this thought without attaching to it and still goes to the store. The journaling and constructing a trauma narrative recommended as an intervention for enhancing PTG in combat veterans (Tedeschi & McNally, 2011) can be seen as a way of changing the way one relates to his or her inner experiences. In fact, the writing of a trauma narrative component is an essential part of cognitive processing therapy, which allows survivors to have a different perspective on their traumatic experience(s). As mentioned in the discussion of Shapiro, Carlson, Astin, and Freedman's (2006) conceptualization of mindfulness, mindfulness's mechanism is reperceiving, or a major shift in perspective, and reperceiving seems to be a component occurring as a result of cognitive defusion and thus the mindfulness skills that require its efficacy.

Present moment awareness. ACT uses various mindfulness exercises as an alternative to the dominant mode of being. In order to do acceptance and cognitive defusion work in ACT, it is important to first have the ability to notice and label what internal experiences may be occurring. Hayes and Lillis (2012) asserted that a certain degree of mindfulness skills is foundational for ACT. The combat veteran has to actually notice the thought of not being able to cope with going to the store to be able to work towards defusing it. Again, the goal is for individuals to experience the world more directly so that their behavior is more malleable and

thus their actions more in the service of their personal values (Hayes et al., 2006). A recent meta-analysis of mindfulness mediation studies found that cognitive and emotional reactivity and repetitive negative thinking mediated the relationship between mindfulness and mental health outcomes, supporting the notion that mindfulness and present moment awareness can lead to greater psychological health (Gu et al., 2015).

Self-as-context. ACT promotes recognition of the self as the context in which cognitions, emotions, and sensations occur, rather than as synonymous or fused with those experiences. This connection with a sense of self that is transcendent and interconnected with others is said to provide another dimension to life (Hayes & Lillis, 2012). Self-as-context is facilitated through mindfulness exercises, the use of metaphors, and experiential processes (Hayes et al., 2006). The use of metaphors is also mentioned as an intervention to enhance PTG in combat veterans (Tedeschi & McNally, 2011). An example of an exercise is having the combat veteran add the phrase "I'm having the thought that…" in front of the thought of not being able to cope in order to facilitate the recognition that the self is separate from the language processes, and promotes cognitive defusion. A powerful exercise called the observer exercise, for instance, has the individual close his or her eyes, observe internal experiences, and then notice the aspect of oneself that does the observing (Baer & Krietemeyer, 2006).

Values. "In ACT, acceptance, defusion, being present, and so on are not ends in themselves; rather they clear the path for a more vital, values consistent life" (Hayes et al., 2006, p. 8). Values are the chosen life qualities that differ from goals in that they cannot physically be obtained, but can be represented moment by moment and are more akin to a direction. From an ACT perspective, core values are not about feeling or thinking differently (Hayes & Lillis, 2012). ACT asks clients what they truly care about in regards to life and may use various

exercises to uncover clients' core values. The major five domains of PTG—(a) openness to new possibilities, (b) increased personal strength, (c) greater connection to others, (d) spiritual development, and (e) appreciation of life—can be conceptualized as values in the context as it is defined here.

Committed action. Lastly, the uncovering of values may lead to the identification of behaviors that may be necessary to attain relevant goals. ACT encourages clients to make commitments to engage in these relevant behaviors in order to live more consistently with values, despite the pain or difficulties that may inevitably occur in this process. Processes such as acceptance, defusion, mindfulness, and self-as-context serve as "valuable" tools in order to assist clients in facing these difficulties (Hayes & Lillis, 2012). The combat veteran who faces his fear of going to the store, despite having the thought that urges him not to, to attain a goal related to an overarching value of being a good husband and father, feels a sense of personal strength, an openness to new possibilities and opportunities in life, and a greater connection to his family.

The Present Study

With regard to the findings in the literature surrounding the relationships between dispositional mindfulness, experiential avoidance, and PTG in combat veterans outlined in this integrative analysis, the following four hypotheses were proposed:

H1: Dispositional mindfulness will be significantly positively correlated with PTG.

H2: Dispositional mindfulness will be significantly negatively correlated with experiential avoidance.

H3: Experiential avoidance will be significantly negatively correlated with PTG.

H4: The addition of experiential avoidance to the regression equation will significantly reduce the relationship between dispositional mindfulness and PTG.

In Chapter Two, the emphasis was on evidencing each of the relationships between dispositional mindfulness, experiential avoidance, and PTG among combat veterans, which involved a detailed discussion of both the uniqueness of this population and each of these constructs. As discussed, previous research has not examined the relationships between these variables. In an attempt to add to the literature base, four hypotheses were proposed.

CHAPTER 3

METHOD

Review of the Present Study

As discussed previously, the focus of the present study was to examine the relationships between dispositional mindfulness, experiential avoidance, and posttraumatic growth among combat veterans. Specifically, experiential avoidance was tested as a mediator of dispositional mindfulness and posttraumatic growth. The following four hypotheses were proposed:

H1. Dispositional mindfulness will be significantly positively correlated with PTG.

H2: Dispositional mindfulness will be significantly negatively correlated with experiential avoidance.

H3: Experiential avoidance will be significantly negatively correlated with PTG.

H4: The addition of experiential avoidance to the regression equation will significantly reduce the relationship between dispositional mindfulness and PTG.

Overview

The purpose of this chapter is to provide the following methodological information regarding the present study: (a) participants, (b) procedures, (c) measures used, and (d) statistical analyses to test the hypotheses.

Participants

A G*Power a priori power analysis with an α error probability of .05, effect size of .15, and power of .95 suggested a total sample size of 89 participants for each linear multiple regression conducted. Combat veterans were recruited through convenience sampling, which included word-of-mouth through online veteran support groups as well as support groups from several universities in the mid-Atlantic region of the United States. Inclusion criteria for participation in the study included U.S. combat veteran status, meeting criterion A for DSM-5

criteria for PTSD (i.e., experiencing and/or witnessing traumatic experiences in combat), English-speaking, 18 years or older, and able to understand and sign informed consent and self-report measures. Participants were recruited until a total of 89 meeting full inclusion criteria was reached.

A total of 95 participants completed the survey; however, one individual did not complete the items capturing key variables for the present study (i.e., posttraumatic growth, dispositional mindfulness, and experiential avoidance). Thus, 94 participants were included in the analyses. Of these participants, a majority of the participants identified as male (74.5%) and White/Caucasian (72.3%), served in the Army (53.2%), was deployed to Iraq (55.3%), and received an Honorable discharge (75.5%). Mean degree of combat exposure reported by veterans, as measured by the CES, fell into the moderate range (M = 19.39, SD = 10.33). Ages of participants ranged from 21-73 years, with a mean age of 44.4 years; the largest representation of individuals was in the 41-50 age range (28.7%). A majority of participants described themselves as married or engaged to be married (60.6%). Highest level of education received was variable, with the largest representation of individuals reporting some college (28.7%) followed by a bachelor's degree or some grad school (22.3%). Likewise, employment status varied, with 39.4% of participants describing themselves as employed (full- or part-time) and 20.2% describing themselves as disabled. Table 1 provides a summary of the demographic profile of participants.

Procedure

Approval was obtained from the Institutional Review Board at the researcher's university to conduct the present study. Participants were recruited by word-of-mouth through online veteran support groups (e.g., My PTSD Forum, Real Warriors) and Facebook groups (e.g.,

Combat PTSD Angels, Gulf War Illnesses, Combat Veterans with PTSD, REBOOT Combat Recovery, Combat Veterans Service Center & Retreat, Hope for Veterans and their Families, Iraq and Afghanistan Veterans of America, Huts for Vets, Student Veterans of America, Student Veterans Organization), as well as through veteran support groups across several mid-Atlantic region universities (see recruitment flyer; Appendix A). Interested participants were directed to a URL of the survey (Qualtrics software), the first page of which displayed the informed consent agreement (see Appendix B). Participants who provided informed consent were directed to subsequent pages in Qualtrics where they completed the survey, which was estimated to take 15 to 20 minutes to complete. Upon completion of the survey, participants were able to choose to enter into a drawing to win one of three Visa gift card award prizes ($25, $50, and $125, respectively). Participants were also provided with 24-hour crisis hotline resources if they experienced discomfort or distress during or after completion of the questionnaires (e.g., Veterans Crisis Line, online Confidential Veterans Chat with a counselor, Veteran Combat Call Center, Military Helpline; see Appendix C).

Measures

Posttraumatic growth. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996; see Appendix D) is a 21-item measure that has been the most widely used instrument to conceptualize positive changes following adversity (Joseph & Linley, 2008). The measure yields a total score and five subscale scores, including Relating to Others (7 items); New Possibilities (5 items); Personal Strength (4 items); Spiritual Change (2 items); and Appreciation of Life (3 items). The factor loadings for the individual items among Taku, Cann, Calhoun, and Tedeschi's (2008) diverse sample of 926 adults showed that all of the 21 items of the PTGI had loadings that were between .58 and .84, indicating that the items are appropriate

indicators of their respective factors. Each item is rated using a 6-point Likert-type scale in which participants indicate the degree of change reflected in the statement, specifically as a result of their traumatic military combat experiences (0 = *No change* to 5 = *Very great change*). Sample items include "I changed my priorities about what is important in life" (Appreciation of Life), "I have a greater feeling of self-reliance" (Personal Strength), "I developed new interests" (New Possibilities), "I have more compassion for others" (Relating to Others), and "I have a better understanding of spiritual matters" (Spiritual Change). Scores on the total scale have a potential range of 0 to 105 with higher scores indicating higher levels of growth, with strong associations found with positive emotions and spirituality (Tedeschi & Calhoun, 1996). When used in a veteran sample (Morrill et al., 2008), high total scores on the PTGI moderated the relationship between posttraumatic stress symptoms, as measured by the DSM-IV-TR version of the PTSD Symptom Checklist (Blanchard, Jones Alexander, Buckley, & Forneris, 1996), and both depression and quality of life.

The PTGI has demonstrated strong reliability, with a Cronbach's alpha reliability coefficient of .90 and a test-retest correlation coefficient of .71 over 2 months (Tedeschi & Calhoun, 1996). Each of the five domains also showed sufficient internal consistency: New Possibilities ($\alpha = .84$); Relating to Others ($\alpha = .85$); Personal Strength ($\alpha = .72$); Spiritual Change ($\alpha = .85$); and Appreciation of Life ($\alpha = .67$). Tedeschi and Calhoun (1996) found moderate to strong correlations among these factors, ranging from .62 to .83 in their sample of 600 college students; Taku, Cann, Calhoun, and Tedeschi (2008) found similar factor correlations among their sample (.56 to .85). The PTGI has also demonstrated concurrent and discriminant validity (e.g., positively correlated with optimism, religiosity, and all big five personality factors except neuroticism; unrelated to social desirability) as well as construct validity (e.g., participants

experiencing severe trauma reported greater PTG than those who did not; Tedeschi & Calhoun, 1996). Last, Tedeschi and Calhoun (1996) consistently found a tendency of women to score higher than men on all domains of the PTGI, although somewhat less of a gender difference was found in domains of new possibilities and personal strength.

Lee, Luxton, Reger, and Gahm (2010) examined the factor structure of the PTGI specifically among a sample of active duty soldiers exposed to combat in Iraq or Afghanistan (N = 3,537) by conducting confirmatory factor analyses to test both the five-factor model and a single higher-order factor model. Their analyses provided reasonable model-data fit, indicating that the use of the PTGI in military research, to measure PTG as both a unidimensional construct as well as a five-factor multidimensional construct, is supported. This study also provided construct validity of the PTGI for use with previously deployed U.S. soldiers (Lee, Luxton, Reger, & Gahm, 2010).

Likewise, Pietrzak and colleagues (2010) used the PTGI to measure posttraumatic growth among 272 OEF and OIF combat veterans and found a Cronbach's alpha reliability coefficient of .86 for their sample, which was consistent with the alpha reliability coefficient of .90 reported in the initial validation of the instrument (Tedeschi & Calhoun, 1996). Another study comprised of 107 OEF and OIF combat veterans used the PTGI and found a Cronbach's alpha reliability coefficient of .93 for their sample (Marotta-Walters, Choi, & Shaine, 2015). Yet another study comprised of 5,302 service members with war zone or combat experience used the PTGI and found a Cronbach's alpha reliability coefficient of .94 for their sample (Bush, Skopp, McCann, & Luxton, 2011).

Dispositional mindfulness. The Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) is a 39-item self-report questionnaire that assesses dispositional mindfulness among

five facets: (a) Observing, (b) Describing, (c) Acting with Awareness, (d) Nonjudging of Inner Experience, and (e) Nonreactivity to Inner Experience (see Appendix E). Each item is scored on a 5-point Likert-type scale (1 = *never* or *very rarely true* to 6 = *always* or *very often true*). Sample items with the respective facets to which they belong include "I am easily distracted" (Acting with Awareness), "I watch my feelings without getting lost in them" (Nonreactivity to Inner Experience), "I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing" (Observing), "I disapprove of myself when I have irrational ideas" (nonjudging of inner experience), and "Even when I'm feeling terribly upset, I can find a way to put it into words" (Describing). The FFMQ has demonstrated sufficient reliability, with strong Cronbach's alpha reliability coefficients for each facet of mindfulness: Nonreactivity = .75, Observing = .83, Acting with Awareness = .87, Describing = .91, and Nonjudging = .87 (Baer et al., 2006). The FFMQ has also demonstrated convergent validity (e.g., all five facets were positively associated with self-compassion, and all facets except observing were negatively associated with experiential avoidance, thought suppression, and psychological symptoms; Baer et al., 2006). Researchers (e.g., Baer et al., 2006; Taylor & Millear, 2016) suggested that the observing facet may be "particularly sensitive to changes with meditation experience that alter its relationships with other mindfulness facets and with related variables" (Baer et al., 2006, p. 42), indicating that the observing facet's relationship with other variables may change as a function of meditation experience.

The FFMQ has been utilized in studies with veteran as well as other trauma-exposed populations (e.g., Garland & Roberts-Lewis, 2013; Kearney et al., 2012; Labelle et al., 2015; Thompson & Waltz, 2010). The FFMQ has been used with elderly adults (e.g., Moss et al., 2015) as well as adults experiencing a range of issues, including Type 2 diabetes (Miller,

Kristeller, Headings, & Nagaraja, 2014), treatment-resistant depression (Eisendrath et al., 2014), health anxiety (Lovas & Barsky, 2010), and Parkinson's disease (Pickut et al., 2015). It has also been used with college student populations covering a multitude of areas, including suicidal thoughts (Chesin & Jeglic, 2015; Tucker et al., 2013); alcohol problems (Bodenlos, Noonan, & Wells, 2013; Vinci, Spears, Peltier, & Copeland, 2016); borderline personality traits (Yu & Clark, 2015); perfectionism (James, Verplanken, & Rimes, 2015); sexual body esteem (Fink, Foran, Sweeney, & O'Hea, 2009); and other health behaviors (e.g., binge eating, sleep quality, and physical activity; Roberts & Danoff-Burg, 2010). Validity of the FFMQ has also been demonstrated in demographically diverse samples in Australia (Taylor & Millear, 2016) and Brazil (Barros, Kozasa, Souza, & Ronzani, 2014); furthermore, reliability has been demonstrated in the use of the FFMQ with Latino populations (Cebolla i Martí et al., 2012). Kearney and colleagues (2012) used the FFMQ to assess dispositional mindfulness among 92 veterans with varying PTSD symptomology who participated in a mindfulness-based stress reduction program and found a Cronbach's alpha reliability coefficient of .93 for their sample.

Experiential avoidance. The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) is the most widely used measure of experiential avoidance and psychological inflexibility (see Appendix F). That is, it assesses the degree to which one becomes entangled with difficult thoughts, avoids emotions, and is unable to act effectively in the presence of difficult internal experiences (i.e., thoughts and feelings). It is important to note that experiential avoidance "is not a commonsense category, which explains why it is not measured in a commonsense way" (Boulanger, Hayes, & Pistorello, 2010, p. 115). In other words, the measure attempts to tap into processes that reduce psychological flexibility, which is a complex, multifaceted construct. Additionally important to point out is that the AAQ-II was designed to

assess a specific model of psychopathology that emphasizes psychological inflexibility, rather than to diagnose psychological disorders (Bond et al., 2011). Nonetheless, Bond and colleagues (2011) indicated that aside from the AAQ-II's associations with negative mental health variables, "higher levels of psychological inflexibility may serve as a risk factor for mental ill health, as higher scores on the AAQ-II predicted, 1 year later, greater psychological distress" (p. 686).

The AAQ-II correlates with the original version of the AAQ (r = .97; Hayes et al., 2004), which has been used among trauma-exposed populations (e.g., Kashdan & Kane, 2010; Morina, 2007; Thompson & Waltz, 2010), but exhibits stronger psychometric properties, such as greater levels of reliability with various populations (Bond et al., 2011). The AAQ-II contains 7 items that are scored on a Likert-type scale (0 = *never true* to 6 = *always true*), which yield a one-factor structure. Sample items include "I worry about not being able to control my worries and feelings" and "I'm afraid of my feelings." Higher scores indicate greater levels of experiential avoidance and have been found to be associated with depression, anxiety, and posttraumatic stress (Bond et al., 2011; Marx & Sloan, 2005). The AAQ-II has demonstrated strong reliability, with a Cronbach's alpha reliability coefficient ranging from .78 to .88 (mean alpha coefficient of .84) across six samples and a test-retest correlation coefficient of .81 and .79 over 3 and 12 months, respectively. The AAQ-II has also demonstrated sufficient convergent validity (e.g., positively correlated with thought suppression, depression, anxiety, and stress) and discriminant validity (e.g., not significantly associated with social desirability, age, gender, or race; Bond et al., 2011). Studies using the AAQ have also found significant positive relations with posttraumatic stress (Marx & Sloan, 2005; Tull, Gratz, Salters, & Roemer, 2004).

A meta-analysis of 27 studies that used the AAQ found that it predicted a wide range of quality-of-life and related outcomes (e.g., depression, anxiety, general mental health, job satisfaction, future work absence, and future job performance), with an average effect size of r = .42 (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Importantly, the AAQ showed these significant effects even after controlling for variables such as emotional intelligence, negative affectivity, thought suppression, social desirability, and locus of control (Hayes et al., 2006). Empirical studies have also supported the AAQ as a mediator of the impact of other coping processes (e.g., Kashdan, Barrios, Forsyth, & Steger, 2006; Skinner et al., 2010) as well as a moderator variable of PTSD and PTG (Kashdan & Kane, 2011). The AAQ has been used with diverse samples and adapted for multiple populations and areas, including chronic pain, smoking, diabetes management, tinnitus, coping with epilepsy, and coping with psychotic symptoms (Bond et al., 2011).

Demographic variables. Participants were asked to provide information regarding various demographic characteristics, including age, race/ethnicity, sex, level of education, combat experiences, past-month PTSD symptom severity, post-deployment social support, current relationship status, current employment status, military history, and income (see Appendix G).

Combat exposure. The Combat Exposure Scale (CES; Keane et al., 1989) is a 7-item self-report measure that assesses wartime stressors experienced by combatants (see Appendix H). Created by staff at the Veterans Affairs National Center for PTSD, it was developed to be easily administered and scored and was proposed to be useful in both research and clinical settings (Keane et al., 1989). Items are rated on a 5-point frequency (1 = *no* or *never* to 5 = *more than 50 times*), 5-point duration (1 = *never* to 5 = *more than 6 months*), 4-point frequency (1 = *no* to 4 =

more than 12 times) or 4-point degree of loss (1 = *no one* to 4 = *more than 50%*) scale. Respondents are asked to answer items based on their exposure to various combat situations. Sample items include "Were you ever surrounded by the enemy?" and "How often were you in danger of being injured or killed (i.e., being pinned down, overrun, ambushed, near miss, etc.)?" The total CES score ranges from 0 to 41 and is calculated by using a sum of weighted scores, which can be classified into one of five categories of combat exposure ranging from "light" to "heavy" (where 0-8 represents light combat exposure, 9-16 light-moderate, 17-24 moderate, 25-32 moderate-heavy, and 33-41 heavy). The CES has demonstrated strong reliability, with an internal consistency for the original validation sample of Vietnam veterans of .85, and a test-retest correlation coefficient of .97 over a 1-week interval.

The CES has been used with several samples of Vietnam combat veterans (e.g., Douglas, 1992, 1993; Frueh et al., 2005; Lund, Foy, Sipprelle, & Strachan, 1984; McNally & Shin, 1995; Miller, Greif, & Smith, 2003; Owens, Steger, Whitesell, & Herrera, 2009; Taft et al., 2007; Yehuda, Southwick, & Giller, 1992). It has also been used with samples of combat veterans from World War II and the Korean War (Aldwin, Levenson, & Spiro, 1994; Miller et al., 2003; Owens et al., 2009; Taft et al., 2007) and those deployed to Iraq (Owens et al., 2009; Renshaw, Rodrigues, & Jones, 2009) and Afghanistan (Owens et al., 2009). Other studies did not specify in which war(s) their sample of combat veterans served (Witvliet, Phipps, Feldman, & Beckham, 2004; Yehuda, Brand, & Yang, 2006).

Posttraumatic stress. The PTSD Checklist (PCL-5; Weathers et al., 2013) is a 20-item self-report measure that assesses the 20 DSM-5 symptoms of PTSD, and will be used to measure severity of PTSD symptomology in the past month (see Appendix I). Symptom categories in DSM-5 include re-experiencing, avoidance, negative alterations of cognitions and moods, and

hyperarousal (American Psychiatric Association, 2013). The PCL is used as a screening tool rather than to make a formal diagnosis of PTSD (Weathers et al., 2013). Items are scored on a 5-point Likert-type scale (0 = *Not at all* to 4 = *Extremely*). Sample items include "In the past month, how much were you bothered by repeated, disturbing, and unwanted memories of the stressful experience?" and "In the past month, how much were you bothered by feeling very upset when something reminded you of the stressful experience?" Scores can range from 0-80, with higher scores representing higher levels of symptom severity. A cut-point of 33 has been suggested for a positive screening of PTSD, which differs from the cut-point of 50 of the previous version of the PCL that reflected DSM-IV-TR criteria for PTSD (Bovin et al., 2016; Hoge et al., 2014; Weathers et al., 2013). To further compare the previous version of the PCL to the current PCL-5, in an analysis of soldiers exposed to combat, 19% screened positive by the DSM-IV-TR criteria for PTSD, whereas 18% screened positive by the DSM-5 criteria (Hoge et al., 2014). Although the PCL-5 was demonstrated to be equivalent to the previous version of the PCL, the researchers suggested that clinicians may need to consider how to manage discordant outcomes, particularly for service members and veterans who no longer meet criteria under DSM-5. Hoge and colleagues (2014) found the PCL-5 to have near equivalent psychometric characteristics as the previous version of the PCL. Additionally, Bovin and colleagues (2016) examined the psychometric properties of the PCL-5 in two independent samples of veterans receiving care at a Veterans Affairs medical center. The PCL-5 test scores demonstrated sufficient internal consistency ($\alpha = .96$), test-retest reliability ($r = .84$), and convergent and discriminant validity (e.g., correlated positively with previous version of PCL, panic, somatization, disability, and functional impairment and showed weaker correlations with alcohol

abuse and psychopathy), indicating that the PCL-5 is a psychometrically sound instrument that can be used effectively with veterans.

Post-deployment social support. The Postdeployment Social Support scale is a subscale of the Deployment Risk and Resilience Inventory-2 (DRRI-2; Vogt, Smith, King, & King, 2012), which is "a psychometrically sound, yet efficient, suite of 17 scales that addresses deployment-related factors that are associated with the post-deployment health and well-being of military Veterans" (p. 25; see Appendix J). The Postdeployment Social Support scale measures the extent to which family, friends, and individuals within the veteran's community provide emotional sustenance and instrumental assistance. Vogt, Smith, King, and King (2012) defined emotional sustenance as "the extent to which others provide the individual with understanding, companionship, a sense of belonging, and positive self-regard (e.g., feeling cared for by family members and friends, having people to talk to about problems)" (p. 6). They defined instrumental assistance as "the extent to which the individual receives tangible aid such as help to accomplish tasks and material assistance or resources (e.g., being able to count on people to take care of finances or belongings while deployed)" (p. 6). The scale contains 10 items that are measured using a 5-point Likert-type response format (1 = *Strongly disagree* to 5 = *Strongly agree*). Sample items include "My family members and/or friends make me feel better when I am down" and "There are family and/or friends with whom I can talk about my deployment experiences." Total scores may range between 10 and 50, with higher scores indicating greater perceived social support upon return from deployment.

Data Analyses

Descriptive statistics of the proposed demographic variables were analyzed using IBM SPSS Statistics 22 software. To explore the relationship between posttraumatic growth,

mindfulness, and experiential avoidance using mediation, a mediation analysis proposed by Baron and Kenny's (1986) causal-steps test was used. This approach is deemed the most popular method of mediation analysis (Gu et al., 2015) and uses a regression framework. Under Baron and Kenny's approach, mediation is said to occur if four conditions are met through conducting a series of regression analyses. The first step is to show that the causal variable (X) is correlated with the outcome (Y; path *c*). The second step is to demonstrate that X is correlated with the mediator (M; path *a*). The third step is to show that M impacts Y, which is evaluated by testing the standardized regression coefficient (path *b*) for M when it and X are entered simultaneously in a multiple regression equation predicting Y. The final step is to evaluate the ability of X to predict scores for Y when M is entered simultaneously into the multiple regression equation predicting Y. The standardized regression coefficient for X in this last regression model represents path *c'*. Partial mediation is said to occur if this coefficient has decreased in size relative to the coefficient for path *c* but remains significant and different from zero (Baron & Kenny, 1986).

To test the significance of the indirect effect, or the amount of mediation, the Sobel test (Sobel, 1982) and bootstrapping method (Preacher & Hayes, 2004) were used. The Sobel test provides an approximate estimate of the standard error of *ab*; it has been the most commonly used estimate in addition to the bootstrapping method (Gu et al., 2015). Thus, mediation effects were also assessed using Preacher and Hayes's (2004) approach and analyzed using PROCESS Procedure for SPSS 2.16.1, which selects different cases from the original sample thousands of times to compute the indirect effects (Hayes, 2013). While Baron and Kenny's (1986) model suggests that mediation is strongest when there is an indirect effect but no direct effect, it has been suggested that the strength of mediation should be determined by the size of the indirect

effect, and that less emphasis should be placed on the existence or nonexistence of a direct effect once a mediator has been added (Zhao, Lycnh, & Chen, 2010). Additionally, MacKinnon and colleagues (2002) recommended bootstrapping over the Sobel test due to the former having greater statistical power and the most accurate type I error rates. The number of bootstrap samples used in the mediation analyses was 5,000 with a level of confidence for all confidence intervals of 95%. Mediation is said to occur if the derived confidence interval for the indirect effect does not contain zero (Preacher & Hayes, 2004). See Figure 1 below for an illustration of the proposed model of mediation for the present study.

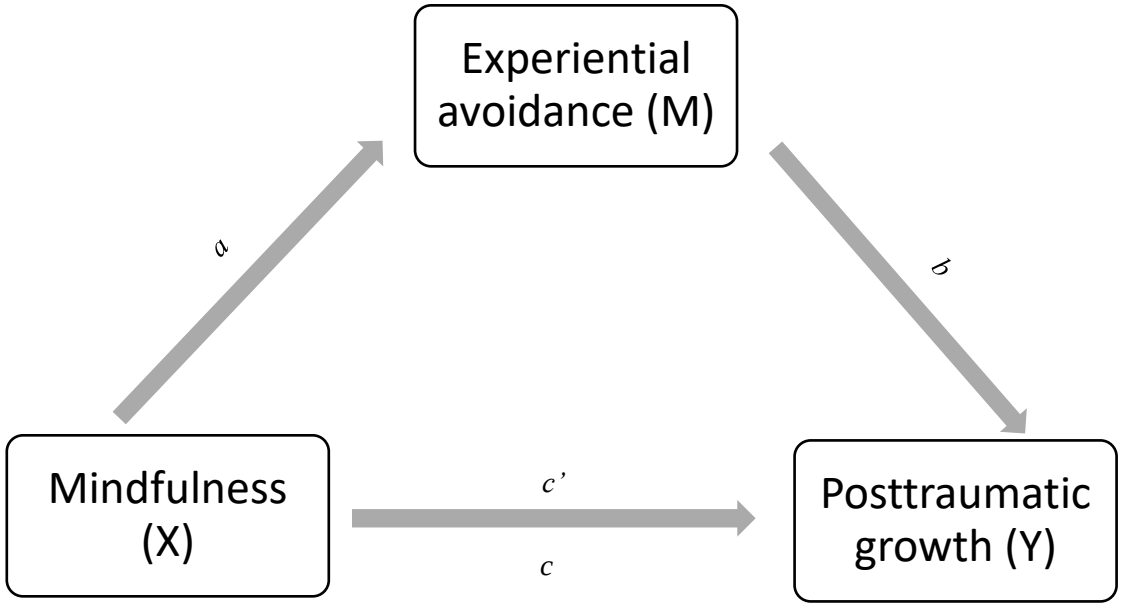

Figure 1. A model of mediation for the current study.

Summary

In Chapter Three, the focus was on offering information about the participants, procedures of the present study, instruments used to assess dispositional mindfulness, experiential avoidance, posttraumatic growth, and relevant demographic variables, and statistical

analyses to test the hypotheses of the current study. Finding experiential avoidance as a mediator of dispositional mindfulness and posttraumatic growth has important implications for enhancing growth in combat veterans. That is, the findings of the present study will provide a stronger theoretical basis for interventions aimed to enhance growth, since the current interventions lack an empirical basis, as discussed in Chapter Two. In further exploring the relationships among dispositional mindfulness, experiential avoidance, and posttraumatic growth, clinicians will be better able to tailor mindfulness-based interventions by having a better understanding about what these interventions are targeting. The findings of the present study will also expand treatment opportunities to be more inclusive of not only reducing symptoms of posttraumatic stress, but enhancing growth as well.

CHAPTER 4

RESULTS

In Chapter Three, methodology for the present study, including participants, procedures, measures used, and data analyses, was discussed. As discussed in previous chapters, the present study examined the relationships between dispositional mindfulness, experiential avoidance, and posttraumatic growth among combat veterans. Specifically, experiential avoidance was tested as a mediator of dispositional mindfulness and posttraumatic growth. It was hypothesized:(1) Dispositional mindfulness would be significantly positively correlated with PTG; (2) Dispositional mindfulness would be significantly negatively correlated with experiential avoidance; (3) Experiential avoidance would be significantly negatively correlated with PTG; and (4) The addition of experiential avoidance to the regression equation would significantly reduce the relationship between dispositional mindfulness and PTG.

Overview

The purpose of this chapter is to provide the results of the analyses used to test the hypotheses of the present study. The following information regarding the current study is presented: (a) preliminary data analyses; (b) primary data analyses; and (c) exploratory data analyses.

Preliminary Data Analyses

The descriptive profiles for the key variables of the current study (i.e., all measured variables in the analyses) are presented in Table 2. Overall, participants reported moderate degrees of PTG (M = 60.88, SD = 20.10), dispositional mindfulness (M = 111.99, SD = 23.22), and experiential avoidance (M = 29.60, SD = 11.30). Average scores on the screener used to diagnose PTSD (i.e., PCL-5) were past the cut-off range of 38 suggested by Hoge and others

(2014) as probable PTSD in veterans (M = 42.91, SD = 21.14). Pearson product-moment correlation coefficients of the key variables were also calculated (see Table 3). Consistent with previous research (e.g., Institute of Medicine, 2012; Wahbeh, Lu, & Oken, 2012), there was a statistically significant positive association between degree of combat exposure and PTSD symptoms, r = .315, p = .004. However, no such association was found between degree of combat exposure and PTG, r = -.121, p = .249. Likewise, while perceived postdeployment social support was significantly negatively associated with PTSD symptoms (r = -.545, p < .0001), it was not significantly associated with PTG, although the relationship was trending toward significance, r = .190, p = .076.

Internal consistency. The following Cronbach's coefficient alphas were computed for the entire sample. The PTGI (α = .92), FFMQ (α = .92), and AAQ-II (α =.94) each demonstrated excellent internal consistency for the current sample. PTGI subscales were Relating to Others (α = .84); New Possibilities (α = .80); Personal Strength (α = .78); Spiritual Change (α = .60); and Appreciation of Life (α = .53). FFMQ subscales were Observing (α = .81); Describing (α = .86); Acting with Awareness (α = .93); Nonjudging (α = .92); and Nonreactivity to Inner Experience (α = .78). Internal consistency for each of the demographic variables utilizing psychometric instruments was sufficient: Postdeployment Social Support (α = .87); PCL-5 (α = .97); and CES (α = .88).

Primary Analyses: Tests of Mediation for Experiential Avoidance

Regression analysis using Baron and Kenny's (1986) analysis scheme for establishing mediation was used to test the hypothesis that experiential avoidance mediates the relationship between dispositional mindfulness and posttraumatic growth. Results of Step 1 indicated that dispositional mindfulness was a marginally significant predictor of posttraumatic growth, b =

.202, $t(93) = 1.974$, $p = .051$. Step 2 showed that, consistent with Hypothesis 2, dispositional mindfulness was a predictor of experiential avoidance, $b = -.659$, $t(93) = -8.398$, $p < .0001$. However, Step 3 showed that when the mediator (i.e., experiential avoidance) was entered simultaneously into the multiple regression equation with dispositional mindfulness to predict posttraumatic growth, it was not a significant predictor of posttraumatic growth, $b = -.072$, $t(92) = -.531$, $p = .597$. In examining this regression equation for Step 4, the ability of dispositional mindfulness to predict PTG was reduced but not significant, $t(92) = -1.129$, $p = .262$. A test of the indirect effect using the Sobel test was not significant ($z = .53$, $p = .596$). Regression analysis using Preacher and Hayes' (2004) bootstrapping method revealed similar results. Results indicated that the bootstrapped unstandardized total effect was not significant, $t = 1.129$, $p = .262$, CI[-.101, .378]. Thus, overall results indicated that, contrary to the primary hypothesis of the present study, experiential avoidance did not significantly mediate the relationship between dispositional mindfulness and posttraumatic growth. The final model is displayed in Figure 2 below.

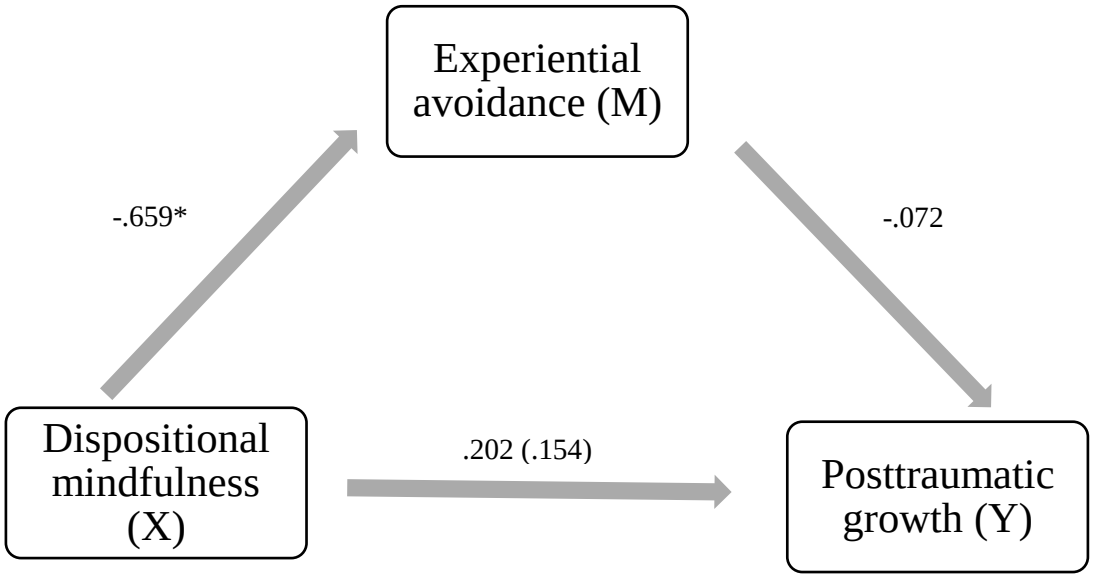

Figure 2. Experiential avoidance as a mediator of dispositional mindfulness and posttraumatic growth. *Note*: * $p < .0001$

Exploratory Analyses

Exploratory simple regression analyses were conducted in order to further explore relationships among key variables. The Pearson-product moment correlation coefficients that were calculated in the preliminary analyses (see Table 2) served as a guide for conducting regression analyses (i.e., on the basis of significant correlations). Regarding the use of the PTGI in military research, research supports measuring PTG as both a unidimensional construct as well as a five-factor multidimensional construct (Lee, Luxton, Reger, & Gahm, 2010). This was taken into consideration in choosing the exploratory analyses. Thus, simple regression analyses were conducted for the following: mindfulness predicting PTG; mindfulness predicting the New Possibilities facet of PTG; mindfulness predicting the Personal Strength facet of PTG; the Nonreactivity to Inner Experience facet of mindfulness predicting PTG, as well as each PTG subscale with the exception of Spiritual Change; the Observing facet of mindfulness predicting New Possibilities; and experiential avoidance predicting Personal Strength.

Mindfulness predicting posttraumatic growth. As found above, results of simple regression analysis indicated the ability of mindfulness to predict PTG was marginally significant, $R^2 = .041$, $F(1,93) = 3.895$, $p = .051$. However, when the Spiritual Change facet of the PTGI was removed, scores in mindfulness significantly predicted scores in the PTGI although the change in the effect size was not remarkable, $R^2 = .047$, $F(1,93) = 4.518$, $p = .036$. Looking at the influence of dispositional mindfulness on each of the facets of the PTGI, dispositional mindfulness was a significant predictor of the New Possibilities facet of PTG, $R^2 = .046$, $F(1,93) = 4.434$, $p = .038$. It also emerged as a significant contributor to the Personal Strength facet of PTG, $R^2 = .073$, $F(1,93) = 7.202$, $p = .009$. Regarding the influence of particular facets of dispositional mindfulness on PTG, the Nonreactivity to Inner Experience

facet of mindfulness significantly contributed to the variance in PTGI scores, R^2 = .072, F(1,93) = 7.124, p = .009. Nonreactivity also significantly contributed to the variance in four of the five PTGI facets: Relating to Others [R^2 =.041, F(1,93) = 3.978, p = .049]; New Possibilities [R^2 = .067, F(1,93) = 6.649, p = .012]; Personal Strength [R^2 = .098, F(1,93) = 10.033, p = .002]; and Appreciation of Life [R^2 = .047, F(1,93) = 4.537, p = .036]. Finally, the Observing facet accounted for a significant amount of variance in the New Possibilities facet of growth, R^2 = .059, F(1,93) = 5.746, p = .019.

Experiential avoidance predicting posttraumatic growth. With regard to the relationship between the proposed mediator variable (i.e., experiential avoidance) and criterion variable (i.e., posttraumatic growth), Pearson-product moment correlations indicated one significant, negative correlation between the AAQ-II and the Personal Strength subscale of the PTGI. Thus, a simple regression analysis was conducted. Results indicated that experiential avoidance was a significant predictor of Personal Strength, R^2 = .068, F(1,93) = 6.713, p = .011.

Mindfulness, experiential avoidance, and PTSD symptoms. Since the Pearson-product moment correlations revealed significant associations between mindfulness and PTSD, as well as experiential avoidance and PTSD, a mediation analysis was conducted to explore the significance of experiential avoidance as a mediator of dispositional mindfulness and posttraumatic stress disorder symptoms. This additional set of analyses was considered due to the unique and important relationship that has been described between symptoms of PTSD and PTG (e.g., Dekel, Mandl, & Solomon, 2011; Kashdan & Kane, 2011; Shakespeare-Finch & Lurie-Beck, 2014; Tsai et al., 2015). Results of Step 1 indicated that dispositional mindfulness was a significant predictor of posttraumatic stress disorder symptoms, t(79) = -10.584, p < .001. As revealed previously, Step 2 showed that dispositional mindfulness was a predictor of

experiential avoidance, $t(93) = -8.398$, $p < .0001$. Step 3 showed that when the mediator (i.e., experiential avoidance) was entered simultaneously into the multiple regression equation with dispositional mindfulness to predict posttraumatic stress disorder symptoms, it emerged as a significant predictor, $t(79) = 6.127$, $p < .0001$, and the ability of dispositional mindfulness to predict posttraumatic stress disorder symptoms was reduced but still significant, $t(78) = -3.832$, $p = .0003$. The indirect effect was tested using the Sobel (1982) test, which revealed significant results ($z = 4.950$, $p < .0001$). The indirect effect was also tested using Preacher and Hayes' (2004) bootstrap estimation approach with 5,000 samples and 95% confidence. These results indicated the indirect coefficient was significant, SE = .088, CI[-.587,-.246] (see Figure 3 below).

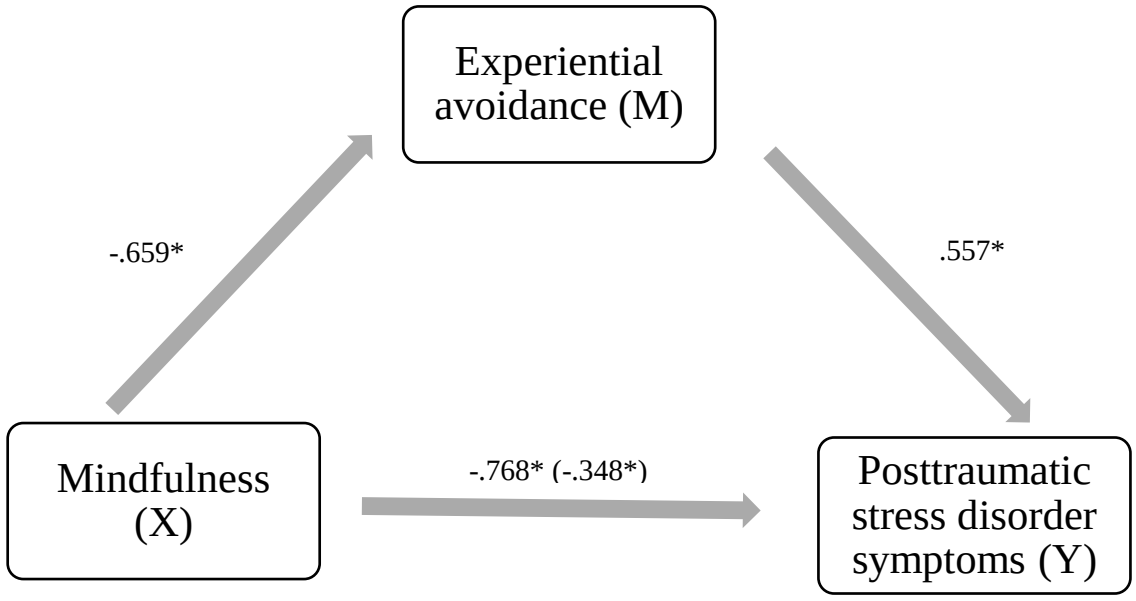

Figure 3. Experiential avoidance as a mediator of dispositional mindfulness and posttraumatic stress disorder symptoms. *Note*: * $p < .0001$

Summary

In Chapter Four, an overview of the hypotheses and analyses of the present study was presented. These hypotheses were reviewed in respective data analyses. While Hypotheses 1 and 2 were confirmed, Hypotheses 3 and 4 were not. Overall, the analyses thus disconfirmed the ability of experiential avoidance to mediate dispositional mindfulness and PTG. Exploratory analyses were conducted that further examined the ability of dispositional mindfulness and its facets to predict PTG and its facets, as well as the ability of experiential avoidance to predict PTG. A mediation analysis revealed that experiential avoidance emerged as a significant partial mediator of dispositional mindfulness and PTSD, an important related construct to PTG that was also measured in the present study.

CHAPTER 5

DISCUSSION

In Chapter Four, results of the present study, including preliminary, primary, and exploratory data analyses were presented. The purpose of this chapter is to provide an overview of the results as well as a discussion of the findings of the present study. General and specific findings related to the primary and exploratory analyses for the current study will be reviewed, along with a discussion of the implications of each of these results. The chapter will conclude with limitations of the present study as well as directions for future research.

Overview of the Present Study

The purpose of the present study was to examine the roles of dispositional mindfulness and experiential avoidance in contributing to posttraumatic growth (PTG) in a sample of combat veterans. As discussed in previous chapters, understanding PTG is particularly important to providing a holistic conceptualization of responses to trauma. For instance, while a significant number of veterans are likely to report symptoms of posttraumatic stress disorder (PTSD) following traumatic military experiences, an even larger number of veterans are likely to report "symptoms" of PTG following such experiences, especially in areas of growth related to feelings of personal strength and appreciation for life (Pietrzak et al., 2010; Tsai et al., 2015). Current gold standard treatments for veterans with combat trauma focus on alleviating symptoms of PTSD, but may further benefit from integrating a focus on enhancing PTG considering its protective elements against suicidal ideation for this population (Bush, Skopp, McCann, & Luxton, 2011). Mindfulness, an important construct that research has demonstrated is negatively associated with suicidal ideation (Tucker et al., 2014), may be an important component in facilitating the process towards PTG. While previous research has examined the relationship

between mindfulness and PTG (e.g., Chopko & Shwartz, 2009; Garland et al., 2007; Hanley, Peterson, Canto, & Garland, 2015; Kearney et al., 2012; Mackenzie et al., 2007), the current study is the first to examine this relationship among a veteran population. While preliminary research suggests that mindfulness can enhance PTG, the underlying process by which this occurs has not been studied to date. As McCracken and Vowles (2014) asserted, "When one can identify processes of change that are both sufficient and necessary for the benefit observed in treatment, and identify the methods that impact these processes, then one is able to optimize treatment impact" (p. 179). Thus, the present study further adds to the literature base by examining whether experiential avoidance, a core process in acceptance and commitment therapy (ACT) referring to one's deliberate attempts to change the form, frequency, or intensity of aversive internal experiences (Hayes et al., 1996), is a mechanism by which mindfulness may enhance PTG.

Consistent with previous research with veteran populations (Hijazi, Keith, & O'Brien, 2015; Pietrzak et al., 2010; Tsai et al., 2015), the current sample of combat veterans endorsed a moderate degree of PTG, with the greatest amount of growth reported in areas of appreciation for life and personal strength. Of note, the current sample also endorsed a significant level of PTSD symptoms, with the sample's average score just passing the cut-off score suggested for a probable PTSD diagnosis in veteran populations (Hoge et al., 2014). Also worthy of note is that among the combat veterans who participated in the current study, nearly 14% of the sample identified as female. Studies conducted with veterans typically have a sample consisting of less than 10% female (Hoge et al., 2004; Jakupcak et al., 2008; Thomas et al., 2010). Thus, having this larger percentage of female participants was a strength of the study, particularly considering the rapid growth of the number of female veterans serving in combat (National Center for

Veterans Analysis and Statistics, 2014; U.S. Department of Veterans Affairs, 2009), which will likely impact the existing differences between male and female veterans in the incidence of combat-related PTSD (e.g., Maguen et al., 2010; Vogt et al., 2011).

General Findings

A mediation analysis was conducted using Baron and Kenny's (1986) causal-steps test, followed by both the Sobel (1982) test and Preacher and Hayes' (2004) bootstrapping method to test the significance of the indirect effect. Overall findings indicated that, contrary to the major hypothesis, experiential avoidance did not significantly mediate the effects of dispositional mindfulness on PTG. This is likely attributable to the findings that (a) in Step 1 of the causal-steps test, the ability of mindfulness to predict PTG was only marginally significant ($p = .051$; i.e., there was relatively little relationship to mediate), and (b) in Step 3 of the causal-steps test, when experiential avoidance (i.e., the proposed mediator) was added to the regression equation with mindfulness to predict PTG, it was not significant ($p = .597$). To this latter point, the Pearson product-moment correlation coefficients conducted during the preliminary analyses revealed that the only facet of PTG that was significantly associated with experiential avoidance at all was the Personal Strength facet. Another interesting finding was that dispositional mindfulness did significantly contribute to PTG when the Spiritual Change facet was removed from the analysis ($p = .036$). The findings of the present study do not support experiential avoidance as a mechanism through which dispositional mindfulness enhances PTG; rather, they suggest that dispositional mindfulness may be acting directly on particular facets of PTG.

Additional exploratory analyses were employed to further examine the predictive ability of dispositional mindfulness on PTG by looking within particular facets of both. When separate simple regression analyses were conducted, dispositional mindfulness significantly contributed

to prediction of the New Possibilities and Personal Strength facets of PTG. Looking further within particular facets of dispositional mindfulness, separate simple regression analyses revealed that Nonreactivity to Inner Experience significantly contributed to PTG as a whole, as well as individual PTG facets with the exception of Spiritual Change. Lastly, the Observing facet of mindfulness was a particularly strong predictor of the New Possibilities facet of PTG.

Using significant correlations observed in the Pearson product-moment correlation coefficients as a guide, there were significant relationships between the predictor variables (i.e., dispositional mindfulness and experiential avoidance) and symptoms of PTSD as measured by the PTSD Symptom Checklist for *DSM-5* (PCL-5). Mindfulness has been suggested as a transdiagnostic factor for PTSD (Bernstein et al., 2011). Experiential avoidance has also been conceptualized as a transdiagnostic dimension underlying PTSD (Hayes et al., 1996) and, moreover, research supports that it appears to exacerbate or maintain PTSD symptoms over time (Thompson & Waltz, 2010; Tull et al., 2004). Thus, experiential avoidance was analyzed as a mediator to determine to what degree this variable influenced the relationship between dispositional mindfulness and PTSD symptoms. Findings indicated that experiential avoidance significantly mediated the relationship between dispositional mindfulness and PTSD symptoms in the current sample. This suggests that mindfulness decreases experiential avoidance, which in turn alleviates symptoms of PTSD in combat veterans. These findings emphasize the critical role experiential avoidance plays in mental health outcomes in combat veterans exhibiting PTSD symptomology.

Overall, the present study offers innovative findings by examining dispositional mindfulness, experiential avoidance, and PTG in a sample of combat veterans from mixed war eras. Additionally, this study extends previous literature by examining the mediational role of

experiential avoidance in accounting for the relationship between dispositional mindfulness and PTSD in combat veterans. These findings can serve as a catalyst for future research as well as provide support for the development of treatment interventions aimed at targeting dispositional mindfulness and experiential avoidance to promote PTG and alleviated PTSD symptoms, respectively, in combat veteran populations.

Specific Findings

Hypothesis 1: Findings related to mindfulness predicting PTG. The first step in Baron and Kenny's (1986) causal-steps test of mediation is to examine whether the predictor variable (i.e., dispositional mindfulness) significantly contributes to the variance in the outcome variable (i.e., PTG). Consistent with previous research examining the relationship between mindfulness and PTG among numerous populations (Chopko & Shwartz, 2009; Garland et al., 2007; Hanley, Peterson, Canto, & Garland, 2015; Mackenzie et al., 2007), results of the present study suggest that, to a certain degree, mindfulness can enhance PTG. As previously discussed, researchers have suggested that the active processing of trauma exposure through deliberate rumination and positive coping strategies is a major means by which PTG may be facilitated (Berger, 2015; Davis & Nolen-Hoeksema, 2009; Dekel, Mandl, & Solomon, 2011; Janoff-Bulman, 2006; Moran, Burker, & Schmidt, 2012, 2013; Tedeschi & Calhoun, 2004; Prati & Pietrantoni, 2009; Tedeschi & McNally, 2011; Triplett et al., 2011). Additionally, Prati and Pietrantoni (2009) importantly noted that the coping mechanism employed by the traumatized individual has a greater effect on the development of PTG than social support and personality variables; findings of the present study corroborated these assertions as participants' perceived social support was not significantly associated with PTG, unlike mindfulness. Lastly, several types of coping strategies used after trauma exposure have been shown to predict PTG

acquisition, including religious coping, positive reappraisal, and acceptance coping (Meisenhelder & Marcum, 2009; Prati & Pietrantoni, 2009). Taken together, these findings hold important implications for treatment interventions aimed to enhance PTG in combat veterans.

Findings of the present study suggest that dispositional mindfulness, or ‘‘the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145), may enable the active processing and acceptance coping that research suggests allows for the experience of various areas of growth following trauma exposure. Dispositional mindfulness has been shown to decrease intrusive rumination, or unwanted thoughts about a traumatic event (Im & Follette, 2016; Williams, 2008), which in turn has been found to be associated with ongoing distress (Im & Follette, 2016; Triplett et al., 2011) and may furthermore promote growth. A prominent feature following traumatic experiences is the experience of intrusive, distressing thoughts related to the trauma(s). Increased mindfulness can facilitate combat veterans’ nonjudgmental awareness and acceptance of those inner experiences as they occur, thereby changing how they relate to those experiences and allowing them to feel personally stronger, be open to new possibilities in life, feel more connected in their relationships, and gain a greater appreciation for life itself. As such, one component of Tedeschi and McNally’s (2011) outlined PTG program for service members involves learning emotional regulation enhancement strategies, and mindfulness training is likely to facilitate emotion regulation (e.g., Shapiro et al., 2006).

Exploratory simple regression analyses indicated that dispositional mindfulness significantly contributed to reports of personal strength as well as reports of new possibilities in life. The finding that these two domains of PTG were independently significantly predicted by dispositional mindfulness is interesting because it aligns with Janoff-Bulman’s (2006) first

process of "strength through suffering" in her proposed model of PTG. Janoff-Bulman suggested that the strength through suffering process in PTG development involves a reconstruction of one's assumptions through successful coping and adaptation and thus provides survivors with a foundation for recognizing personal strengths and new possibilities. Fundamental to this successful reconstruction is the adjustment of one's assumptions, from being overgeneralized and negative to more complex but positive, such that one's inner world is back to being secure. Coping that involves fully acknowledging, approaching, and confronting the traumatic experience is warranted in order to reach a once-again secure inner world (Janoff-Bulman, 2006). Findings of the present study suggest that coping that enhances dispositional mindfulness, such as mindfulness-based interventions (Gu et al., 2015), may enable the process towards reaching this once-again secure inner world.

There are several possible interpretations regarding the marginal significance (i.e., p = .051) of dispositional mindfulness predicting PTG in the current sample of combat veterans. In a sample of adults who experienced varying traumatic experiences, Hanley, Peterson, Canto, and Garland (2015) found that the relationship between mindfulness and PTG was stronger for contemplative practitioners (i.e., individuals who frequently practiced meditation, yoga, and/or prayer) compared to non-practitioners. As such, it is possible that the current sample of combat veterans was less likely to engage in regular forms of mindfulness practice, which contributed to the weaker relationship between dispositional mindfulness and PTG; however, information regarding participants' engagement in mindfulness practice was not collected for the present study, which makes it unclear as to whether this may be the case.

One important finding that may help interpret the marginal significance was that, when the two items that constitute the Spiritual Change facet of the PTGI were removed from the

analysis, the ability of mindfulness to predict PTG became fully significant (i.e., $p = .036$). These findings suggest that while increased mindfulness may enhance the other four growth areas (i.e., especially New Possibilities and Personal Strength), it does not appear to impact spirituality. One possible interpretation regarding this finding is that religious coping has been found to predict PTG following adversity (Prati & Pietrantoni, 2009). Additionally, it has been asserted that there is a connection between the combination of religious, spiritual, and existential concerns and the process of PTG (Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013). Together, these findings suggest that the positive change that trauma survivors find in spiritual domains may come from underlying processes counterintuitive to facets of mindfulness. In other words, religious coping may involve evaluative and reframing components (e.g., one study showed that people with stronger faith backgrounds may engage in coping strategies such as meaning making, which is likely to involve evaluating and formulating alternative explanations to original negative thoughts; Meisenhelder & Marcum, 2009), which work in opposition to the nonjudging and present-moment awareness that captures dispositional mindfulness.

Another possible interpretation of the lack of predictive ability of mindfulness on spiritual growth is the recently reported concerns with the two-item Spiritual Change subscale of the PTGI, with the first item focusing on religiosity (i.e., "I have a stronger religious faith) and the second focusing on spiritual understanding (i.e., "I have a better understanding of spiritual matters"; Tedeschi et al., 2017). A factor with only two items has been considered psychometrically weak (Jaarsma, Pool, Sanderman, & Ranchor, 2006). Furthermore, Tedeschi and colleagues (2017) argued that while the two items address growth that has a religious or spiritual component, they do not encapsulate growth that may be considered more existential in nature. Individuals facing traumatic situations who may not identify as religious or spiritual to

begin with may still be experiencing some form of existential growth: “Individuals who are not religious, or who are actively atheistic, can also experience growth in this domain. There can be a greater engagement with fundamental existential questions and that engagement in itself may be experienced as growth” (Tedeschi & Calhoun, 2004, p. 6). However, this cannot be captured by the current two-item Spiritual Change subscale, which still leaves into question whether or not mindfulness is possibly acting on this greater existential component of growth.

One last interpretation of the marginal significance that emerged when examining the ability of dispositional mindfulness in predicting PTG is in light of the guidelines that have been set forth with regard to enhancing PTG among trauma survivors. As Janoff-Bulman (2006) proposed, PTG is most likely to be experienced when the trauma-exposed person fully acknowledges, approaches, and confronts the traumatic experience and then reevaluates existential concerns. While findings of the present study suggest that utilizing mindfulness may be a component of this active coping (i.e., particularly in enhancing facets of personal strength and new possibilities), it is possible that other components different from, and even in opposition to, certain facets of mindfulness may be contributory components as well. For instance, it has been suggested that, following adversity, challenges to core beliefs that lead to constructive cognitive efforts are more likely to produce growth (Triplett et al., 2011). Such cognitive efforts might, at times, involve strategies to enhance mindfulness (i.e., some have suggested using mindfulness to regulate emotional states that influence growth processes; Joseph & Murphy, 2013); however, cognitive reappraisal strategies may also be necessary with regard to facilitating the positive reframing that might be necessary to reconstruct one’s shattered fundamental assumptions (Janoff-Bulman, 2006; Joseph & Murphy, 2013). This latter point is in accordance

with previous literature regarding the centrality of appraisal as a function of the PTG process (Pryzgoda, 2005).

The significant role of nonreactivity to inner experience in reports of PTG. A significant finding that emerged in the present study was the role of the Nonreactivity to Inner Experience facet of dispositional mindfulness in predicting PTG. Nonreactivity to inner experience refers to "the tendency to allow thoughts and feelings to come and go, without getting caught up in or carried away by them" (Baer et al., 2008, p. 330). Examples of items in this 7-item subscale include "I perceive my feelings and emotions without having to react to them," "When I have distressing thoughts or images, I just notice them and let them go," and "When I have distressing thoughts or images, I am able just to notice them without reacting" (Baer et al., 2006). Bränström, Kvillemo, Brandberg, and Moskowitz (2010) found that the Nonreactivity facet was most consistently related to positive psychological outcomes in comparison with the other facets, which is consistent with findings of the present study. Baer and others (2006) suggested that, in addition to the nonjudging facet, nonreactivity "…may be seen as ways of operationalizing acceptance. That is, to accept an experience, such as feeling anxious, might include refraining … from impulsive reactions to the experience (nonreactivity)" (p. 43). Shapiro, Carlson, Astin, and Freedman (2006) further asserted, as discussed in Chapter Two, that mindfulness allows for "reperceiving," or being able to view situations with a completely new perspective for the first time, and that self-regulation is a direct mechanism by which mindfulness may lead to positive change. Self-regulation relates to nonreactivity to inner experiences and may result from reperceiving, a process that in turn may pave the road to experiencing PTG.

One interpretation of the finding related to nonreactivity and PTG is that it has been suggested that although nonreactivity may be sometimes discussed as a component of mindfulness, it may be better conceptualized as an *outcome* of engaging in mindfulness practice (Bishop et al., 2004). This facet may actually, then, closely resemble the underlying processes that ACT targets, and may even do so better than the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011), which was the measure utilized to operationalize experiential avoidance for the present study. That is, taking a nonreactive stance to one's inner experiences is well-aligned with the interrelated ACT processes of acceptance and cognitive defusion, which emphasize the importance of changing one's relationship with internal experiences to be able to act in concordance with identified long-term goals and values. In the earlier phases following their traumatic military experiences, combat veterans may have strong internal reactions to which they engage in "maladaptive" behaviors (e.g., avoidance of situations, places, and people that trigger memories of their traumatic experiences); however, in engaging in mindfulness coping strategies they may learn, and ultimately master changing the way they relate to these aversive internal experiences. As a result of this changed relationship with inner distress (i.e., shifting from a relationship characterized by fear to one characterized by acceptance and love), they are able to experience growth. For instance, they may feel personally stronger, more appreciative of and open to new possibilities in life itself, and more connected with humanity.

As with the dispositional mindfulness measure as a whole, the Nonreactivity facet did not significantly predict the Spiritual Change facet of PTG. As mentioned above, nonreactivity may be more of an outcome than a process of mindfulness (Bishop et al., 2004), and likewise may be more related to outcomes and/or processes of self-regulation (Shapiro et al., 2006). Thus, while other facets of PTG may be experienced because of efforts targeting emotional reactivity, it is

possible that spiritual growth may be more likely to be experienced because of efforts targeting cognitions. That is, as discussed earlier, studies show that religious coping may contribute to the experience of PTG (Meisenhelder & Marcum, 2009; Prati & Pietrantoni, 2009). This meaning-making area of coping may be more focused on cognitive restructuring efforts and is aligned with Janoff-Bulman's (2006) assertion of existential re-evaluation as an underlying process by which spiritual change may be developed.

The significant role of observing in predicting reports of new possibilities in life.

Another significant finding was that the Observing facet of dispositional mindfulness significantly contributed to the New Possibilities facet of PTG, but not any other PTG facets (although its contribution to the Personal Strength facet was trending towards significance, p = .053). Tedeschi and Calhoun (2004) described this facet of PTG as "identification of new possibilities for one's life or of the possibility of taking a new and different path in life" (p. 6). Examples of items in the 5-item New Possibilities subscale include "I am able to do better things with my life," "I am more likely to try to change things which need changing," and "New opportunities are available which wouldn't have been otherwise" (Tedeschi & Calhoun, 1996). Baer and others (2008) described observing as "noticing or attending to internal and external experiences, such as sensations, cognitions, emotions, sights, sounds, and smells" (p. 330). Examples of items in the 8-item Observing subscale include "I notice the smells and aromas of things," "I pay attention to how my emotions affect my thoughts and behavior," and "I notice how foods and drinks affect my thoughts, bodily sensations, and emotions" (Baer et al., 2006). The significant relationship the present study found between observing and new possibilities is consistent with a study conducted with police officers who experienced traumatic incidents as first responders (Chopko & Shwartz, 2009), which found that the observing component of

mindfulness was significantly positively related to PTG. Additionally, other studies have found that the observing component of mindfulness seems to only influence positive states of mind and none of the negative emotional outcomes (Bränström, Kvillemo, Brandberg, & Moskowitz, 2010), which was consistent with findings of the present study. The Pearson-product moment correlations table (see Table 3) showed that the observing subscale was the only facet of mindfulness that was *not* significantly associated with PTSD symptoms as measured by the PCL-5. This suggests that being more observant of one's emotions and sensations might be important for overall well-being, but not necessarily for reducing psychological distress.

The finding related to the contribution of Observing to the New Possibilities growth domain further suggests that observing, noticing, or attending to stimuli may be necessary for the occurrence of PTG, specifically with regard to the area of growth capturing one's ability to be open to new opportunities in life as a result of a traumatic experience. This is in line with research indicating that combat veterans who engage in avoidance or control efforts to push away trauma-related material (i.e., instead of noticing and observing how they may impact the interplay between their emotions, thoughts, and behavior) may be further inhibiting their ability to properly self-regulate, thus interfering with possibilities for experiencing PTG (Kashdan, Breen, & Julian, 2010), including and especially, according to the present study's findings, an openness to new possibilities in life. As Shapiro and colleagues (2006) explained, an essential component of mindfulness is the axiom of attention, which they noted as "critical to the healing process" (p. 376). They further explained that the practice of paying attention requires observing one's internal and external experiences as they occur moment by moment. Thus, observing may allow for the cognitive processing and facing of the source of distress (i.e., trauma) that Janoff-Bulman (2006) proposed was necessary to find strength through suffering, a process in the

development of PTG. Observing requires awareness of the present moment, which mirrors a core process in ACT referred to as contact with the present moment (Hayes et al., 2006).

It is also important to note that nonreactivity to inner experience was found to significantly contribute to new possibilities. As discussed earlier, nonreactivity to inner experience has been argued to be more of an *outcome* of engaging in mindfulness practice (Bishop et al., 2004). Bränström and colleagues (2010) stated, "It is possible that the skills of observing and describing thoughts, sensations, and emotions are necessary in the process of being nonreactive to them … but being observant might not influence positive psychological functioning as much in itself" (p. 159). Thus, this line of research suggests that the two components of mindfulness—observing and nonreactivity—may go hand-in-hand, and the practice of observing and noticing internal and external stimuli may facilitate nonreactivity, which mirrors processes of self-regulation that Shapiro and others (2006) suggested are direct mechanisms by which mindfulness produces positive change.

Hypothesis 2: Findings related to mindfulness predicting experiential avoidance. The second step of Baron and Kenny's (1986) causal-steps test was to examine whether the predictor variable (i.e., dispositional mindfulness) significantly contributes to the variance in the mediator variable (i.e., experiential avoidance). If mindfulness is understood as attending to the present moment without judgment and experiential avoidance is understood as an unwillingness to experience particularly difficult internal experiences as they occur in the moment, it is plausible to infer that the two constructs have an inverse relationship with one another (i.e., mindfulness is associated with a lack of experiential avoidance, or a lack of mindfulness is associated with experiential avoidance). As anticipated, dispositional mindfulness significantly predicted experiential avoidance in the present study. Such findings are consistent with previous

research (e.g., Baer et al., 2006; Gu et al., 2015; Silberstein, Tirch, Leahy, & McGinn, 2012; Thompson & Waltz, 2010; Weinrib, 2011), which has examined the relationship between dispositional mindfulness and experiential avoidance in non-veteran, non-trauma, and trauma-exposed populations. Thus, the present study extends previous literature as it is the first to examine the predictive relationship between dispositional mindfulness and experiential avoidance among a sample of combat veterans.

Multiple studies (Boulanger, Hayes, & Pistorello, 2010; Hayes et al., 1996; Hayes et al., 2006; Marx & Sloan, 2005; Roemer & Orsillo, 1998; Spinhoven et al., 2014) have recognized experiential avoidance as a functional diagnostic dimension across multiple psychological disorders including, particularly for the focus of the present study, PTSD. While experiential avoidance may provide immediate, short-term relief of distressing symptoms of PTSD, if it becomes a prominent motivator of one's behavior, it can lead to long-term negative effects (i.e., chronic PTSD, depression, substance abuse and/or dependence, suicidality, etc.). This highlights the importance of targeting experiential avoidance in trauma-exposed populations such as combat veterans. The findings of the current study suggest that combat veterans' present-moment awareness, characterized by a nonjudgmental, non-reactive stance, may reduce or eliminate their experiential avoidance (i.e., their deliberate attempts to alter the form, frequency, or intensity of aversive inner experiences even when doing so is counterproductive to their values; Hayes et al., 1996). Possessing this disposition towards taking such a mindful stance, despite facing discomforting or unwanted internal experiences, may thus promote experiential "acceptance," or a willingness to engage in the present moment to be able to continue to act in a way that is consistent with one's long-term goals and values.

Hypothesis 3: Findings related to experiential avoidance predicting PTG. The third step of Baron and Kenny's (1986) causal-steps method was to examine whether the regression equation of dispositional mindfulness predicting PTG remained significant when the proposed mediator (i.e., experiential avoidance) was added to the regression equation. Contrary to the anticipated findings, the beta weight for the mediator, experiential avoidance, was not significant when it was entered into a multiple regression equation with dispositional mindfulness. In examining the Pearson-product moment correlation coefficients, experiential avoidance was not significantly associated with PTG when assessing it as a unidimensional construct, which may explain this finding.

The present study is the first to examine the relationship between experiential avoidance and PTG in a sample of combat veterans. While previous research has not examined the relationship between experiential avoidance and PTG (i.e., as measured in the present study) directly, there were several studies conducted that suggested that such a relationship may be present. Kashdan, Breen, and Julian (2010) found that combat veterans with PTSD, when compared to combat veterans without PTSD, were more likely to endorse control and avoidance strategies, which contributed to a reduced likelihood of experiencing joy or meaning in life. Conversely, combat veterans without PTSD were more likely to endorse strategies unrelated to avoidance and control efforts, and consequently experienced greater psychological benefits, suggesting that avoidance strategies—an inherent activity of experiential avoidance—may be interfering with possibilities for PTG. Another study found that cognitive flexibility, a construct the researchers noted was promoted in ACT and thus resembles psychological flexibility (i.e., a lack of experiential avoidance), significantly predicted PTG in a sample of combat veterans, indicating an important target of treatment interventions (Hijazi, Keith, & O'Brien, 2015).

Finally, another study found experiential avoidance to significantly moderate posttraumatic distress and PTG, indicating that psychological flexibility, or the opposite of experiential avoidance, may serve as a catalyst for the development of PTG (Kashdan & Kane, 2011).

Before turning to research that may point to the present study's findings of a lack of association between experiential avoidance and PTG, one important explanation regarding this unexpected finding may be found in ongoing criticisms of the prominent measure of experiential avoidance/psychological flexibility that was used in the present study—the AAQ-II (Bond et al., 2011). The original AAQ was criticized for its shortcomings regarding reliability and comprehensibility, which is what the AAQ-II purported to address (Bond et al., 2011). However, the AAQ-II has been subjected to the same criticism as the AAQ, namely in that while the instrument's items are supposed to measure experiential avoidance/psychological flexibility, responses to these items may also be grounded in maladaptive/adaptive outcomes with regard to psychological distress, well-being, or functioning (Wolgast, 2014). That is, the AAQ-II makes it difficult to discriminate between whether the items are capturing a *process* (i.e., experiential avoidance/psychological flexibility as a trait, as intended to capture) rather than an *outcome* as a result of engaging in this process or having this trait.

Furthermore, Wolgast (2014) conducted exploratory factor analysis on an item pool containing the AAQ-II items as well as items designed to measure distress and acceptance/non-acceptance, to examine what factors are identified and on which factor(s) the AAQ-II items had the highest factor loadings. The analysis found that AAQ-II items were more strongly related to items designed to measure distress than items designed to measure acceptance/non-acceptance (Wolgast, 2014). This interesting finding is compatible with findings of the present study, in which AAQ-II items were found to significantly correlate with PTSD symptoms (i.e., items

capturing distress) but not with PTG (i.e., items capturing acceptance/non-acceptance). In sum, it is possible that the AAQ-II is not capturing the true process of experiential avoidance/psychological flexibility as described by ACT, thus explaining the unanticipated non-significant finding in the present study between experiential avoidance, as measured by the AAQ-II, and PTG.

Other research may explain the finding in the present study of a lack of significant association between experiential avoidance and PTG. In one study, PTG was negatively associated with avoidance behaviors, but not with re-experiencing and arousal related to the trauma (Hagenaars & van Minnen, 2010). In another study, non-judgmental acceptance was negatively correlated with PTG (Chopko & Shwartz, 2009). This finding was interpreted as evidence that PTG requires cognitive processing (e.g., Janoff-Bulman, 2006; Joseph & Murphy, 2013; Tedeschi & Calhoun, 2004), which supports previous research regarding the centrality of appraisal as a function of the PTG process (Pryzgoda, 2005). This relates to a discussion above of the role of religious coping and positive reappraisal in facilitating PTG (Joseph & Murphy, 2013; Meisenhelder & Marcum, 2009; Prati & Pietrantoni, 2009), which are coping strategies that involve analyzing and evaluating one's thoughts (i.e., as opposed to the nonjudgmental attitude taken in mindfulness-related coping). That is, this line of literature suggests that the ability to engage in cognitive restructuring and/or positive reframing of trauma-related thoughts may be more important than acceptance of such thoughts in the development of PTG, which may contribute to understanding the lack of association between experiential avoidance and PTG in the present study.

The significant role of experiential avoidance in predicting reports of personal strength. Although experiential avoidance was not significantly predictive of PTG when

examining the latter as a unidimensional construct, when measuring PTG as a five-factor multidimensional construct (i.e., which research conducted with military populations indicates is supported; Lee, Luxton, Reger, & Gahm, 2010), experiential avoidance was found to significantly contribute to the Personal Strength facet of PTG. Tedeschi and Calhoun (2004) described this domain of PTG to be "experienced as a combination of the clear knowledge that bad things can and do happen and the discovery that 'if I handled this then I can handle just about anything'" (p. 6). They furthermore asserted that this recognition of possessing personal strength is often correlated with an increased sense of being vulnerable. Examples of items in this 4-item subscale include "I know better that I can handle difficulties," "I am better able to accept the way things work out," and "I discovered that I'm stronger than I thought I was."

This significant finding has important implications for treatment interventions for combat veterans, as research indicates that combat veterans are more likely to report PTG in the domain of personal strength (Pietrzak et al., 2010; Tsai et al., 2015), as was found to be the case in the current study. This finding suggests that targeting experiential avoidance may be useful in enhancing a combat veteran's discovery that they possess personal strength. As discussed earlier in findings related to the second hypothesis of the present study, mindfulness plays an important role in reducing experiential avoidance. In ACT, the alternative to experiential avoidance is acceptance, described as the active embracing of private events in the absence of attempts to alter their form or frequency, especially when doing so would cause psychological harm (Hayes et al., 2006).

The interventions recommended by Tedeschi and McNally (2011) for enhancing PTG in combat veterans emphasize the importance of acceptance to facilitate growth outcomes as a result of combat exposure. Jason and Lillis (2012) noted that acceptance is to be distinguished

from tolerating pain, liking pain, wanting discomfort, or a forceful process. Instead, it encourages "exposure to previously avoided experiences, such as anxiety, by focusing full attention sequentially on each of its elements (e.g., sweaty palms, rapid heart rate) and noticing the characteristics of each sensation and the possibility of experiencing it without avoidance or harm" (Baer & Krietemeyer, 2006, p. 24). Eventually this exposure, when met with the openness, awareness, and nonjudgmental stance that mindfulness embodies (Shapiro et al., 2006), may allow combat veterans to change the way they relate to such internal distress, and as a result of this changed, more accepting relationship, they may discover that they are stronger than they initially thought they were.

Hypothesis 4: Findings related to experiential avoidance as a mediator. The final step in Baron and Kenny's (1986) causal-steps method of mediation is to examine whether the standardized regression coefficient for the predictor variable (i.e., dispositional mindfulness) has significantly decreased in size when the mediator (i.e., experiential avoidance) is added to the regression equation predicting PTG. As just discussed in review of the third hypothesis of the present study, experiential avoidance did not significantly predict PTG; therefore, the indirect effect of dispositional mindfulness on PTG through experiential avoidance was not significant either. Interpretations of this finding have been offered in the above discussion of the lack of association between experiential avoidance and PTG. These interpretations overall suggest the following: The AAQ-II measure used for the present study may not truly capture experiential avoidance/psychological flexibility as understood by ACT (Wolgast, 2014); the AAQ-II items are more likely to strongly relate to items capturing distress versus acceptance/non-acceptance (Wolgast, 2014); and the development of PTG requires cognitive processing that involves components antithetical to mindfulness and acceptance coping strategies (e.g., religious coping,

positive reappraisal, and reframing; Meisenhelder & Marcum, 2009; Prati & Pietrantoni, 2009; Pryzgoda, 2005). Interpretations of this finding were also offered in reviewing the first hypothesis of the present study, which suggests that dispositional mindfulness may be directly impacting PTG rather than indirectly impacting it through experiential avoidance. Nevertheless, exploratory analyses revealed that experiential avoidance significantly partially mediated the relationship between mindfulness and PTSD symptoms and, as discussed in Chapter Two, PTSD and PTG have a unique relationship that warrant understanding the role of PTSD symptoms in the development of PTG (e.g., Kashdan & Kane, 2010; Shakespeare-Finch & Lurie-Beck, 2014; Tsai et al., 2015).

Dispositional mindfulness, experiential avoidance, and PTSD. The follow-up mediation analysis conducted suggests that dispositional mindfulness influences PTSD indirectly through experiential avoidance. Previous research indicates that mindfulness is significantly, negatively associated with PTSD symptoms in veteran populations (e.g., Kearney et al., 2012; King et al., 2013; Niles et al., 2012; Wahbeh, Lu, & Oken, 2011), which was consistent with findings of the present study. Additionally, as discussed in review of the second hypothesis of the present study, dispositional mindfulness has been found to have a significant, negative association with experiential avoidance (e.g., Baer et al., 2006; Gu et al., 2015; Silberstein, Tirch, Leahy, & McGinn, 2012; Thompson & Waltz, 2010; Weinrib, 2011), although the present study is the first to support this relationship in combat veterans. Finally, previous research has recognized experiential avoidance as an underlying mechanism that contributes to and maintains symptoms of PTSD (Hayes et al., 2006; Marx & Sloan, 2005; Thompson & Waltz, 2010), and a recent meta-analysis of mindfulness mediation studies indicates that experiential avoidance/psychological flexibility may be an underlying mechanism by which mindfulness

contributes to improved stress and mood states (Gu et al., 2015), which findings of the present study support. The present study is unique in that it is the first of its kind to provide support for experiential avoidance as a partial mediator of dispositional mindfulness and PTSD symptoms in a combat veteran population.

Research suggests that the experience of PTG is most likely to occur when a moderate amount of PTSD symptoms exist (Shakespeare-Finch & Lurie-Beck, 2014, Tsai et al., 2015). Coupled with the finding that individuals reporting posttraumatic distress are most likely to experience PTG in the absence of experiential avoidance (Kashdan & Kane, 2011), this indicates that interventions aimed to enhance PTG are likely to involve, at least initially, alleviating PTSD symptoms. Thus, findings of the present study, while suggesting that experiential avoidance does not directly act on PTG, highlight experiential avoidance as an important target of interventions aimed ultimately at enhancing PTG to the extent that it appears to directly alleviate symptoms of PTSD (and, as discussed above, influences the personal growth facet of PTG). Moreover, results of the present study suggest that dispositional mindfulness directly impacts experiential avoidance, which thereby reduces PTSD symptoms. Such findings have important implications for existing "gold standard" treatments for combat-related PTSD, which are cognitive-behavioral therapies that involve analyzing, evaluating, and challenging distressing thoughts and core beliefs as opposed to mindfully observing and accepting them.

Implications for Treatment

The Institute of Medicine (2012) stated, "Of the U.S. service members and veterans who served in Iraq and Afghanistan and have screened positive for PTSD, only slightly more than half of those have received treatment" (p. 12). The number of OEF and OIF soldiers returning home from combat has been increasing within recent years, and thus the number of veterans

seeking mental health services will likely continue to increase as well (Tanielian & Jaycox, 2008). Although empirically supported, "gold standard" treatments for combat PTSD exist, research indicates that between a third and a half of patients receiving empirically supported treatments for PTSD do not fully respond to treatment, at least on some measures (Schottenbauer et al., 2008). Similarly, the average drop-out rate in trials of exposure-based and cognitive interventions for PTSD is in the 20% to 25% range (Hembree et al., 2003). Steenkamp and Litz (2014) further argued that minimal treatment outcome studies of gold standard treatments disseminated specifically for combat PTSD (i.e., prolonged exposure and cognitive processing therapy) have actually been published, calling into question that strong and sufficient evidence exists to support the use of these therapies for combat trauma. It is also important to note that targeting and treating symptoms of PTSD alone do not necessarily facilitate growth, as standard PTSD treatments are aimed to promote recovery and thus return trauma-exposed clients to their pre-trauma baseline (Berger, 2015; Lyons, 2008). This warrants the need for expanding treatment opportunities to include components that facilitate PTG in such a way that it allows survivors to exceed their pre-trauma baselines.

The findings of the present study hold important implications for targeting dispositional mindfulness as a whole, but also specific components of mindfulness in facilitating particular facets of PTG. Mindfulness-based interventions have been shown to increase dispositional mindfulness, which thereby promotes both well-being and the reduction of psychological symptoms (Gu et al., 2015). Furthermore, research exploring non-response to existing trauma treatments (i.e., as indicated above) has suggested that the inclusion of mindfulness skills in interventions may increase treatment acceptability and efficacy (Follette, Palm, & Pearson, 2006). As Follette, Palm, and Pearson (2006) stated, "The use of mindfulness as an intervention

would theoretically break the behavioral loop of avoidance and increase attention and purposeful behavior that is often a deficit in those individuals with trauma histories" (p. 56). Findings of the present study support and extend their statement to suggest that the use of mindfulness as an intervention would not only help alleviate PTSD symptoms through targeting experiential avoidance, but would also directly impact processes of PTG in combat veterans.

While mindfulness-based interventions (MBIs) such as mindfulness-based stress reduction (Kabat-Zinn, 1982, 1990) and mindfulness-based cognitive therapy (Segal, Williams, & Teasdale, 2002) have been utilized with combat veterans with PTSD and have shown promising results (i.e., improvement in distressing symptoms; Kearney et al., 2012; King et al., 2013; Niles et al., 2012), evidence is needed to examine the influence of MBIs such as these on reports of PTG. Nevertheless, findings of the present study suggest such interventions may be more useful than other MBIs such as ACT (Hayes et al., 1996), which was originally proposed for the present study because of its underlying process of experiential avoidance. This is because MBIs such as ACT, as well as others like dialectical behavior therapy (Linehan, 1993), have a broader focus on behavioral change even though they highly emphasize the use of mindfulness skills and techniques in being able to make such behavioral changes.

Findings of the present study related to experiential avoidance mediating dispositional mindfulness and PTSD suggest, however, that ACT *would* be a useful intervention for combat veterans exhibiting symptoms of posttraumatic stress (i.e., particularly elevated avoidance symptoms), since experiential avoidance is a major process that ACT targets. It may in fact be an important *initial* intervention for combat PTSD (i.e., and eventual combat PTG) due to several reasons. One is that experiential avoidance does, as the present study's findings indicate, appear to significantly contribute to the personal strength facet of PTG, which research has consistently

shown is a domain of growth combat veterans are most likely to report (Pietrzak et al., 2010; Tsai et al., 2015). Another reason is research that suggests that symptoms of PTSD are most likely to facilitate PTG development when (a) a moderate amount of PTSD symptoms exist (Dekel, Mandl, & Solomon, 2011; Shakespeare-Finch & Lurie-Beck, 2014; Tsai et al., 2015) and (b) experiential avoidance is minimized (Kashdan & Kane, 2011).

For the purposes of the present study, however, which focuses on augmenting combat veterans' reports of PTG, results highlight the importance of targeting dispositional mindfulness directly, rather than experiential avoidance (i.e., as initially proposed), in order to facilitate PTG development in combat veterans. Thus, it would be beneficial to develop interventions that focus explicitly on developing mindfulness, rather than as a component of another treatment (e.g., ACT). Specifically, findings suggest that focusing on developing observing and nonreactivity components of dispositional mindfulness may most strongly contribute to PTG development in areas of new possibilities and personal strength, although dispositional mindfulness as a whole appears to be helpful in the process of PTG development. Particularly since research, including the present study, has consistently found that combat veterans report the most growth in the domain of personal strength (Pietrzak et al., 2010; Tsai et al., 2015), this emphasizes the importance of helping combat veterans develop nonreactivity to inner experiences, particularly those which may be related to their traumatic experiences during deployment.

As discussed earlier, it has been proposed that observation of one's internal experiences may be necessary in the process of becoming nonreactive to them (Bränström et al., 2010). In order to facilitate the observing component of mindfulness, clinicians may encourage the importance of attending to internal stimuli, including bodily sensations and cognitions, and external stimuli such as sights, sounds, and smells (Baer et al., 2004). Allowing an individual to

simply notice one's internal stimuli, especially when met with attitudes of nonjudgment and simply describing experiences, may facilitate self-regulation and exposure processes, including nonreactivity, that directly influence positive change (Shapiro et al., 2006). Continued practice of changing the way one relates to ongoing internal and external stimuli may help observing and nonreactive traits of mindfulness to develop, which will in turn lead to development of facets of growth in combat veterans, particularly a discovery of personal strengths and an openness to new possibilities in life.

Implications for Future Research

The present study has several limitations that are worthy of discussion and denote implications for future research. First, the present study utilized a convenience sample to obtain combat veteran participants. Coupled with the small sample size of combat veterans (N = 94), efforts to broaden external validity are recommended for future research (Heppner, Wampold, Owen, Thompson, & Wang, 2016). Although efforts were made to broaden external validity through the use of multiple online methods, including combat veteran web forums, Veterans of Foreign Wars online posts, and a multitude of social media pages and support groups, future research may wish to recruit participants through methods in addition to these, including recruiting from Veterans Administration hospitals and medical centers and other outlets that may be able to reach a broader, more diverse sample that is characteristic of the combat veteran population.

Second, while it may be considered a strength of the present study, it may also be considered a limitation that the study recruited combat veterans of multiple war zones who may differ with regard to deployment and non-deployment related experiences as both a service member and a veteran. For instance, Vietnam veterans were historically treated considerably

differently upon their return from deployment as compared to today's OEF/OIF/Operation New Dawn (OND) veterans, which may contribute to considerable differences in scores on the Postdeployment Social Support scale (e.g., as it contains items such as "The American people made me feel at home when I returned"). Furthermore, OEF/OIF/OND veterans are generally older than Vietnam veterans were at the time of their exposure to combat, and research suggests that differences in psychosocial development may contribute to trauma reactions (Marotta-Walters, Choi, & Shaine, 2015; Taylor & Baker, 2007). Also, Tedeschi, Calhoun, and Cann (2007) noted that PTG can follow various trajectories, and thus the amount of time that has elapsed since a veteran's latest deployment may have been a confounding variable that was not assessed in the present study. While data did not suggest that reports of growth differed between participants deployed to Iraq/Afghanistan versus those not deployed to Iraq/Afghanistan, it may be necessary in future research to restrict samples to combat veterans deployed to specific war zones and/or eras. Of note, however, restricting samples of combat veterans may also in turn restrict the age range of the sample, and a recent study of combat veterans utilized multiwar veterans in their sample (Hizaji, Keith, & O'Brien, 2015), which promoted the decision in the current study to do so.

Third, due to the current sample primarily consisting of Caucasian, male combat veterans, between-group differences for cultural variables such as race/ethnicity and gender could not be assessed. Research suggests that ethnic minority status in combat veterans is a predictor of PTG (Hijazi, Keith, & O'Brien, 2015), however, due to low variation in the reported race/ethnicity of the current sample (i.e., $N = 68$ for White/Caucasian compared to $N = 13$ for ethnic minority status), between-group differences were not able to be explored. Differences in religious and spiritual beliefs may have also impacted reports of PTG between these groups.

Although the current sample obtained a greater percentage of female veterans than previous samples conducting research with veterans (nearly 14% compared to less than 10%; Hoge et al., 2004; Jakupcak et al., 2008; Thomas et al., 2010), between-group differences could still not be assessed, and it may be unclear how well these patterns of PTG generalize to them. The same concerns regarding generalizability are raised for transgender veterans, as the current sample contained less than 4% of transgender male-to-female identifying veterans. Similarly, data containing information about sexual minority and religiousness/degree of spirituality was not collected for the present sample, which may have had important implications for PTG development. Overall, further research should strive to recruit a more ethnically, religiously, spiritually, and sexually diverse sample of participants to examine the impact of such cultural factors on PTG development.

Fourth, the current study did not assess for other forms of trauma that participants may have experienced outside of their military/combat deployments and experiences, such as childhood or interpersonal trauma. Additionally, although symptoms of PTSD were assessed in the current sample, other psychological symptoms, such as substance misuse, depression, generalized anxiety, somatic complaints, and the presence of traumatic brain injuries or cognitive dysfunction were not assessed, which may have been useful to explore how they impact reports of PTG. Research indicates that having a prior trauma history influences the development of combat-related PTSD (Institute of Medicine, 2012; Ozer, Best, Lipsey, & Weiss, 2003), suggesting that it may also influence PTG development. However, in the present study participants were asked to specifically refer to their traumatic military experiences when answering questions about growth domains. Nonetheless, future research may benefit from exploring differences in reports of PTG and other related variables between participants

reporting previous trauma (i.e., non-military related trauma) and those without prior trauma histories to gain a better understanding of treatment implications. Relatedly, although a combat exposure scale was used to assess the degree of combat exposure veterans experienced, this variable was not assessed further to determine how reports of PTG may differ as a result of combat exposure type (e.g., killing others vs. losing a member in one's unit vs. being exposed to fires/land mines). Lastly, participants were not asked whether they had engaged in, or were currently engaging in, treatment for combat-related distress. Research has suggested that the relationship between dispositional mindfulness and PTG is stronger for individuals who engage in forms of mindfulness practice (Hanley et al., 2015). Thus, future studies examining dispositional mindfulness and PTG in combat veterans should strive to gain an understanding of how this relationship may differ as a result of greater mindfulness practice, which is likely impacted by prior or current engagement in psychological treatment.

Fifth, as discussed previously, criticisms have been brought forth regarding some of the measures that were used in the present study, namely those used to measure the key variables. For instance, Wolgast (2014) reported that the widely used AAQ-II measure for experiential avoidance is considered questionable with regard to whether it is actually assessing the true process of experiential avoidance as proposed by ACT, which may have confounded the true findings of the present study. Future studies may wish to utilize other measures of experiential avoidance, such as the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez et al., 2011) and especially the brief version of the MEAQ (Gámez et al., 2014), which, although they might "suffer" from some of the same limitations as the AAQ-II, appear to be truer measures of experiential avoidance/psychological inflexibility (Wolgast, 2014). Likewise, although the FFMQ was specifically chosen among the multitude of measures of dispositional

mindfulness because of its comprehensiveness and strong psychometric properties (Baer et al., 2006), difficulties exist in general in the measurement of mindfulness, including an unclear definition of mindfulness, lack of knowledge regarding Buddhist thinking among the Western psychologists who develop the mindfulness instruments, and differences among participants in their semantic understanding of mindfulness concepts and questionnaire items, partly attributable to their varying mindfulness experience (Grossman, 2008).

Although the PTGI is regarded as the most commonly used self-report measure to assess PTG (Steffens & Andrykowski, 2015), it has not come without criticisms. Such criticisms have directly targeted whether PTG is a valid construct (e.g., "PTG is an illusion which is a product of self-enhancing cognitive biases"; Shakespeare-Finch & Enders, 2008, p. 422). Most recently, criticisms have been made regarding the Spiritual Change subscale of the PTGI, as discussed earlier in this review. To address these criticisms, Tedeschi and others (2017) have developed a revised PTGI measure (PTGI-X) that has added 4 newly developed items to the previous 2-item subscale with promising results. Thus, future research should examine PTG utilizing this updated measure to capture a more comprehensive spirituality domain of growth that the original PTGI, used for the present study, did not capture.

Another limitation related to how PTG was measured in the present study was a lack of attending to the important theoretical consideration that PTG occurs following a challenge to and re-examination of one's core beliefs (Janoff-Bulman, 2006; Tedeschi, Calhoun, & Cann, 2007), and an attempt to research the claim that those with greater core belief disruption had higher reports of PTG (Cann et al., 2010; Roepke & Seligman, 2015). In the present study, it was assumed that participants experienced a disruption to their core beliefs when they answered "yes" to having experienced or witnessed traumatic events during their military deployments.

Thus, future studies should incorporate a core belief disruption measure, such as the Core Beliefs Inventory (Cann et al., 2010), to maximize the accuracy of reported PTG in samples with combat veterans.

An additional limitation of the present study is that several peritraumatic factors were not assessed, such as social support during deployment and active coping during deployment or combat experiences. Although research indicates, consistent with the present study's findings, that posttrauma social support is a predictor of PTSD (Ozer, Best, Lipsey, & Weiss, 2003), it was not found to predict PTG in the present study. This latter finding is both consistent (e.g., Dekel, Mandl, & Solomon, 2011; Pietrzak et al., 2010) and inconsistent with previous research with veterans (Tsai et al., 2015). It is possible, however, that unit support during deployment to war zones may be more relevant to PTG than posttrauma support, which the present study did not assess. For instance, results of a previous study (Pietrzak et al., 2010) found that, in a sample of OEF/OIF veterans, greater perceptions of received unit member support but not other types of social support, including postdeployment social support, were associated with PTG. This finding suggests that efforts to bolster unit member support and camaraderie may help to promote PTG following military deployment, and thus assessing peritraumatic unit support is an important direction for future research.

Other peritraumatic factors such as peritraumatic emotional responses and dissociation have been found to predict PTSD (Ozer, Best, Lipsey, & Weiss, 2003) and thus may also be related to PTG. In addition to the benefits of utilizing coping strategies following trauma exposure to augment PTG (Prati & Pietrantoni, 2009; Triplett et al., 2011), for instance, research has found that active coping and perceived self-controllability predicted PTG above and beyond PTSD in a sample of veterans (Dekel, Mandl, & Solomon, 2011). Active coping in this study

was defined as "exercising efforts to manage a taxing stressor" (Dekel, Mandl, & Solomon, 2011, p. 248), which is rather vague with regard to teasing apart whether mindfulness, cognitive restructuring, or a combination of both skills were utilized by service members during their traumatic deployment experiences. Future research may benefit from further assessing the active coping service members engaged in that seems both most and least beneficial in terms of enhancing reports of PTG. Qualitative approaches may also provide useful information regarding relevant active coping strategies in addition to other predictors of PTG such as those mentioned above (i.e., unit support).

While the present study examined one possible mechanism by which mindfulness enhances growth processes, future research should examine other possible mechanisms. Shapiro and others (2006) hypothesized that direct mechanisms by which mindfulness leads to positive change are self-regulation, values clarification, cognitive-behavioral flexibility, and exposure. For instance, experiential avoidance or psychological inflexibility may be construed as similar to cognitive-behavioral flexibility. Findings of the present study, however, suggest that nonreactivity to inner experience was the strongest contributor to PTG in the current sample. Nonreactivity relates strongly to emotion regulation; thus, future research should particularly explore whether self-regulation is a mechanism by which nonreactivity enhances growth in combat veterans.

Findings related to the lack of association between dispositional mindfulness and Spiritual Change warrant future research exploration. Future studies should begin incorporating the revised version of the PTGI (PTGI-X; Tedeschi et al., 2017), which includes a greater number of items in the Spiritual Change subscale purported to better capture the existential nature that characterizes this growth domain. As discussed earlier in this review, it is possible

that spiritual growth may differ from other growth domains due to a greater likelihood of being enhanced from efforts targeting cognitions (i.e., rather than efforts targeting emotional reactivity). Additionally, religious/spiritual identities were not assessed in the present study, which may influence the religious coping that has been found to be linked to PTG (Meisenhelder & Marcum, 2009; Prati & Pietrantoni, 2009). Both qualitative and quantitative research would be useful to better understand how combat veterans utilize their spirituality, both during and after traumatic experiences, and how this contributes to this growth domain.

Finally, the present study assessed dispositional or trait mindfulness, which a review of mindfulness mediation studies has shown mediates the impact of mindfulness-based interventions on stress and mood states (Gu et al., 2015). While relatively recent studies have shown improvements in veterans' PTSD symptoms and experiential avoidance following engagement in mindfulness-based interventions (Kearney et al., 2012; King et al., 2013; Niles et al., 2012), future research should examine the impact of mindfulness-based interventions and techniques on enhancing both dispositional mindfulness and PTG in combat veterans, and gather qualitative feedback from participants in such clinical interventions to examine possible converging and diverging evidence with existing theories of PTG development (e.g., Janoff-Bulman, 2006; Joseph & Murphy, 2013). Such research should assess these variables throughout the intervention as well as during immediate and long-term post-intervention times. Joseph and Murphy (2013) highlighted the importance of the therapeutic relationship in PTG development, and thus these clinical intervention studies would also benefit from incorporating measures of the therapeutic alliance (and group cohesion, if clinical interventions conducted are in group modalities) to examine its role in therapeutic outcomes.

Summary and Conclusion

In Chapter Five, a comprehensive discussion of the findings of the present study was presented. General and specific findings related to the primary and exploratory analyses were reviewed, along with a discussion of the interpretations of each of these findings. The chapter concluded with discussing limitations of the present study and thus directions for future research. Overall, the present study offers innovative findings to military research by examining dispositional mindfulness, experiential avoidance, and PTG in a sample of mixed-war combat veterans. Additionally, this study extends previous literature by examining the mediational role of experiential avoidance in dispositional mindfulness and PTSD in combat veterans. These findings can serve as a catalyst for future research as well as provide support for the development of treatment interventions aimed at targeting dispositional mindfulness and experiential avoidance to promote PTG and alleviated PTSD symptoms, respectively, in combat veteran populations.

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APPENDIX A

VOLUNTEERS NEEDED FOR RESEARCH STUDY.

Posttraumatic Growth in Combat Veterans: The Roles of Mindfulness and Experiential Avoidance

Be part of an important veteran research study!

- Are you a U.S. combat veteran who is at least 18 years of age?
- Have you experienced and/or witnessed a traumatic event(s) during your experiences in combat?

If you answered YES to these questions, you may be eligible to participate in a research survey.

The purpose of this study is to better understand factors and processes that can facilitate growth and positive outcomes in combat veterans following their traumatic experiences in combat. While you may not directly benefit from taking part in the study, the knowledge gained from your participation will better inform current treatments for combat veterans and thus benefit others. Completion of the survey will take between 15 to 20 minutes. Upon completion of the survey you may opt to enter a drawing to win one of three Visa gift card awards valued at $25, $75, and $125.

For questions or concerns, please contact Sarah Hastings (Principal Investigator) at slhasting@radford.edu or Lara Barbir (Student Researcher) at lbarbir@radford.edu.

APPENDIX B

RADFORD UNIVERSITY

Informed Consent for Clinical Research

You are invited to participate in a research survey, entitled "*Posttraumatic Growth in Combat Veterans: The Roles of Mindfulness and Experiential Avoidance*." The study is being conducted by Sarah Hastings (Principal Investigator; Department of Psychology), of Radford University, P.O. Box 6946, Radford, VA 24141, (540) 831-6169, slhasting@radford.edu. Please take your time to make your decision. It is important that you read and understand several general principles that apply to all who take part in our studies:

(a) Taking part in the study is entirely voluntary;
(b) Personal benefit to you may or may not result from taking part in the study, but knowledge may be gained from your participation that will benefit others;
(c) You may withdraw from the study at any time without any of the benefits you would have received normally being limited or taken away.

The purpose of this study is to examine factors and processes that contribute to growth following combat veterans' traumatic experiences during their military service(s). Thus, participating in this survey requires that *you are a U.S. combat veteran and have directly experienced and/or witnessed a traumatic event(s) during your experiences in combat*. Your participation in the survey will contribute to a better understanding of mechanisms of change of therapeutic interventions that are aimed to enhance growth in combat veterans, which will ultimately expand and improve treatment opportunities among this population. It is estimated that it will take 15-20 minutes of your time to complete the questionnaire. You are free to contact the investigator at the above address and phone number to discuss the survey.

Risks to participants are considered minimal. There will be no costs for participating, nor will you directly benefit from participating. IP addresses will not be recorded. A limited number of researchers will have access to the data during data collection. Identifying information will be stripped from the final dataset.

Your participation in this survey is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time without penalty. If you wish to withdraw from the study or have any questions, contact the investigator listed above. You may also request a hard copy of the survey from the contact information above.

If you decide to participate, upon completion of the survey, you will have the option to enter a drawing for a chance to win one of three Visa gift cards valued at $25, $75, and $125. The odds of being selected for the drawing are about 1 in 35. If you choose to enter the drawing, you will be directed to a link that constitutes a separate survey so that the contact information you enter cannot be linked to your research survey.

If you have questions about your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact Dr. Dennis Grady, Dean, College of Graduate and Professional Studies, Radford University, dgrady4@radford.edu, (540) 831-7163.

If you agree to participate, please **press the arrow button at the bottom right of the screen**. Otherwise, use the X at the upper right corner to close this window and disconnect.

Thank you.

APPENDIX C

Thank you for your interest in this study. Before proceeding to the questions, please be aware that some of the questions ask you to refer to your traumatic experiences in the military. Your responses will be recorded in an anonymous manner that will not associate them with you in any way. Additionally, all survey responses are stored in a secure file on the primary investigator's computer and are not available to anyone outside of the researchers. Should you experience any distress during this study, you are free to stop participating at any time. This questionnaire should take 15-20 minutes to complete. This study poses no more risk than you would face in everyday life, however, if you experience any distress or discomfort following completion of the study, please refer to the following resources that can provide immediate assistance to you:

- Veterans Crisis Line: 1-800-273-8255, press 1 (text 838255) or Confidential Veterans Chat with a counselor
- Call the 24/7 Veteran Combat Call Center 1-877-WAR-VETS (1-877-927-8387) to talk to another combat Veteran
- Military Helpline: 1-888-HLP-4-VET (1-888-457-4838) – Anonymous, free help for veterans, members of the military and their families

APPENDIX D

POSTTRAUMATIC GROWTH INVENTORY

INSTRUCTIONS: Indicate for each of the following statements the degree to which the change reflected in the question is true in your life as a result of your traumatic military combat experiences, using the following scale:

(0) No change = I did not experience this change as a result of my traumatic military combat experiences
(1) Very small change = I experienced this change to a very small degree as a result of my traumatic military combat experiences
(2) Small change = I experienced this change to a small degree as a result of my traumatic military combat experiences
(3) Moderate change = I experienced this change to a moderate degree as a result of my traumatic military combat experiences
(4) Great change = I experienced this change to a great degree as a result of my traumatic military combat experiences
(5) Very great change = I experienced this change to a very great degree as a result of my traumatic military combat experiences

1. I changed my priorities about what is important in life.
2. I have a greater appreciation for the value of my own life.
3. I developed new interests.
4. I have a greater feeling of self-reliance.
5. I have a better understanding of spiritual matters.
6. I more clearly see that I can count on people in times of trouble.
7. I established a new path for my life.
8. I have a greater sense of closeness with others.
9. I am more willing to express my emotions.
10. I know better that I can handle difficulties.
11. I am able to do better things with my life.
12. I am better able to accept the way things work out.
13. I can better appreciate each day.
14. New opportunities are available which wouldn't have been otherwise.
15. I have more compassion for others.
16. I put more effort into my relationships.
17. I am more likely to try to change things which need changing.
18. I have a stronger religious faith.
19. I discovered that I'm stronger than I thought I was.
20. I learned a great deal about how wonderful people are.
21. I better accept needing others.

APPENDIX E

FIVE-FACET MINDFULNESS QUESTIONNAIRE

Please rate each of the following statements with the number that best describes your own opinion of what is generally true for you.

1	2	3	4	5
Never 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.
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 F

ACCEPTANCE AND ACTION QUESTIONNAIRE-II

Below you will find a list of statements. Please rate how true each statement is for you by filling in the bubble that best describes your answer. Use the scale below to make your choice.

1	2	3	4	5	6	7
Never true	Very seldom true	Seldom true	Sometimes true	Frequently true	Almost always true	Always true

1. My painful experiences and memories make it difficult for me to live a life that I would value.
2. I'm afraid of my feelings.
3. I worry about not being able to control my worries and feelings.
4. My painful memories prevent me from having a fulfilling life.
5. Emotions cause problems in my life.
6. It seems like most people are handling their lives better than I am.
7. Worries get in the way of my success.

APPENDIX G

DEMOGRAPHIC QUESTIONNAIRE

What is your gender?
- ❍ Male
- ❍ Female
- ❍ Transgender (M to F)
- ❍ Transgender (F to M)
- ❍ Other (please specify): _____
- ❍ Prefer not to answer

How old are you? ___

Which of the following best describes your current relationship status?
- ❍ Single, not dating
- ❍ Single, in casual relationship
- ❍ Single, in serious relationship
- ❍ Engaged to be married
- ❍ Married, living with spouse
- ❍ Married, geographically separated
- ❍ Married, separated
- ❍ Divorced
- ❍ Widowed

Which of the following best describes your highest level of education?
- ❍ some High School
- ❍ High School Diploma or GED
- ❍ some College, no degree
- ❍ Associate's Degree
- ❍ Technical School Certification
- ❍ Bachelor's Degree
- ❍ Some Graduate School
- ❍ Graduate Degree

Which of the following best describes your current employment status?
- ❍ Employed (full-time)
- ❍ Employed (part-time)
- ❍ Disabled
- ❍ Retired
- ❍ Full-Time Student
- ❍ Full-Time Homemaker
- ❍ Unemployed (looking for work)
- ❍ Unemployed (not actively looking for work)

What is your current annual income (last 12 months)?

- ❍ $0 - $14,999
- ❍ $15,000 - $29,999
- ❍ $30,000 - $44,999
- ❍ $45,000 - $59,999
- ❍ $60,000 - $74,999
- ❍ $75,000 - $89,999
- ❍ $90,000 or higher
- ❍ Prefer not to answer

What is your race/ethnicity?
- ❍ American Indian or Alaska Native
- ❍ Asian or Asian-American
- ❍ Black or African-American
- ❍ Hispanic or Latino
- ❍ Native Hawaiian or other Pacific Islander
- ❍ White or Caucasian
- ❍ Other (please specify): _____
- ❍ Prefer not to answer

At what age did you enlist in the military? ___

In which branch(es) of the military did you serve? (select all that apply)
- ❑ Air Force
- ❑ Army
- ❑ Marine Corps
- ❑ National Guard
- ❑ Navy
- ❑ Coast Guard

At what age were you discharged from the military?

What is your discharge status? (select all that apply)
- ❑ Honorable
- ❑ General
- ❑ Medical
- ❑ Retired
- ❑ Dishonorable
- ❑ Other (please specify): _____

How many times were you deployed? ___

To what military theatres/countries/war zones were you deployed? (select all that apply)
- ❑ Afghanistan
- ❑ Iraq
- ❑ Vietnam
- ❑ Laos

- ❑ Cambodia
- ❑ Kosovo
- ❑ Bosnia
- ❑ Somalia
- ❑ Bahrain
- ❑ Egypt
- ❑ Iran
- ❑ Israel
- ❑ Jordan
- ❑ Kazakhstan
- ❑ Kuwait
- ❑ Kyrgyzstan
- ❑ Lebanon
- ❑ Oman
- ❑ Pakistan
- ❑ Qatar
- ❑ Saudi Arabia
- ❑ Syria
- ❑ Libya
- ❑ Nigeria
- ❑ Tajikistan
- ❑ Turkmenistan
- ❑ U.A.E.
- ❑ Uzbekistan
- ❑ Yemen
- ❑ Others (please specify): _____

APPENDIX H

COMBAT EXPOSURE SCALE

Please select the answer that best describes your experience.

1. Did you ever go on combat patrols or have other dangerous duty?

1	2	3	4	5
No	1-3 times	4-12 times	13-50 times	51+ times

2. Were you ever under enemy fire?

1	2	3	4	5
Never	<1 month	1-3 months	4-6 months	7+ months

3. Were you ever surrounded by the enemy?

1	2	3	4	5
No	1-2 times	3-12 times	13-25 times	26+ times

4. What percentage of the soldiers in your unit were killed (KIA), wounded or missing in action (MIA)?

1	2	3	4	5
None	1-25%	26-50%	51-75%	76% or more

5. How often did you fire rounds at the enemy?

1	2	3	4	5
Never	1-2 times	3-12 times	13-50 times	51+ times

6. How often did you see someone hit by incoming or outgoing rounds?

1	2	3	4	5
Never	1-2 times	3-12 times	13-50 times	51+ times

7. How often were you in danger of being injured or killed (i.e., being pinned down, overrun, ambushed, near miss, etc.?)

1	2	3	4	5
Never	1-2 times	3-12 times	13-50 times	51+ times

APPENDIX I

Posttraumatic Stress Disorder Checklist for DSM-5

Below is a list of problems that people sometimes have in response to a very stressful experience. Keeping your worst military event in mind, please read each problem carefully and then select one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	**Not at all**	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut of from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4

16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being “superalert” or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

APPENDIX J

Postdeployment Social Support Scale

The next set of statements refers to social support AFTER YOUR MOST RECENT DEPLOYMENT, as well as current social support. Please mark how much you agree or disagree with each statement.

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree

1. The American people made me feel at home when I returned.
2. When I returned, people made me feel proud to have served my country in the Armed Forces.
3. My family members and/or friends make me feel better when I am down.
4. I can go to family members or friends when I need good advice.
5. My family and friends understand what I have been through in the Armed Forces.
6. There are family and/or friends with whom I can talk about my deployment experiences.
7. My family members or friends would lend me money if I needed it.
8. My family members or friends would help me move my belongings if I needed help.
9. If I were unable to attend to daily chores, there is someone who would help me with these tasks.
10. When I am ill, family members or friends will help out until I am well.

Table 1.

Demographic profile of participants.

Demographic Information	N (%)
Gender	
Male	70 (74.5%)
Female	13 (13.8%)
Transgender MtF	3 (3.2%)
Age Group	
20-30	14 (14.9%)
31-40	19 (20.2%)
41-50	27 (28.7%)
51-60	11 (11.7%)
60+	16 (17.0%)
Race/Ethnicity	
White/Caucasian	68 (72.3%)
Black/African-American	4 (4.3%)
Hispanic/Latino	6 (6.4%)
Asian/Asian-American	1 (1.1%)
Other Pacific Islander/Other	2 (2.1%)
Relationship Status	
Single	14 (14.9%)
Married or engaged to be married	57 (60.6%)
Separated	4 (4.3%)
Divorced	10 (10.6%)
Widowed	1 (1.1%)
Educational Achievement	
High school diploma or GED	13 (13.8%)
Some college	27 (28.7%)
Associate's Degree or trade's school	13 (13.8%)
Bachelor's Degree or some grad school	21 (22.3%)
Graduate Degree	12 (12.8%)
Employment Status	
Employed (full- or part-time)	37 (39.4%)
Unemployed	8 (8.5%)
Disabled	19 (20.2%)
Full-time student	9 (9.6%)
Retired	13 (13.8%)
Annual Income	
$0-$14,999	16 (17.0%)
$15,000-$29,999	14 (14.9%)
$30,000-$44,999	12 (12.8%)

$45,000-$59,999	21 (22.3%)
$60,000+	18 (19.1%)
Branch(es) Served	
Army	50 (53.2%)
Air Force	12 (12.8%)
Marine Corps	15 (16.0%)
National Guard	12 (12.8%)
Navy	8 (8.5%)
Discharge Status(es)	
Honorable	71 (75.5%)
General or Medical	10 (10.6%)
Retired	14 (14.9%)
Dishonorable	1 (1.1%)
Area(s) Deployed	
Iraq	52 (55.3%)
Afghanistan	23 (24.5%)
Kuwait	28 (29.8%)
Saudi Arabia	22 (23.4%)
Vietnam	12 (12.8%)
Bahrain	8 (8.5%)
Kosovo	7 (7.4%)
Others	51 (53.7%)
Combat Exposure	
Light (0-8)	18 (18.9%)
Light-Moderate (9-16)	23 (24.2%)
Moderate (17-24)	17 (17.9%)
Moderate-Heavy (25-32)	21 (22.1%)
Heavy (33-41)	14 (14.7%)

Table 2.

Descriptive data for predictor and criterion variables.

Variable name[a]	*M* (*SD*)	*Range*
FFMQ	111.99 (23.22)	39.0-195.0
FFMQ – observing	24.41 (6.36)	8.0-40.0
FFMQ – describing	21.78 (6.77)	8.0-40.0
FFMQ – awareness	22.86 (7.82)	8.0-40.0
FFMQ – nonjudging	23.93 (7.97)	8.0-40.0
FFMQ – nonreactivity	19.01 (5.18)	7.0-35.0
AAQ-II	29.60 (11.30)	7.0-49.0
PTGI	60.88 (20.10)	0.0-105.0
PTGI – relationships	11.78 (8.25)	0.0-35.0
PTGI – possibilities	9.56 (5.91)	0.0-25.0
PTGI – personal strength	9.80 (5.08)	0.0-20.0
PTGI – spirituality	3.02 (2.85)	0.0-10.0
PTGI – appreciation	8.28 (3.47)	0.0-15.0
PCL-5	42.91 (21.14)	0.0-80.0

[a] FFMQ: Five-Facet Mindfulness Questionnaire; FFMQ – observing: Five-Facet Mindfulness Questionnaire, Observing subscale; FFMQ – describing: Five-Facet Mindfulness Questionnaire, Describing subscale; FFMQ – awareness: Five-Facet Mindfulness Questionnaire, Acting with Awareness subscale; FFMQ – nonjudging: Five-Facet Mindfulness Questionnaire, Nonjudging of Inner Experience subscale; FFMQ – nonreactivity: Five-Facet Mindfulness Questionnaire, Nonreactivity to Inner Experience subscale (Baer et al., 2006); AAQ-II: Acceptance and Action Questionnaire-II (Bond et al., 2011); PTGI: Posttraumatic Growth Inventory; PTGI – relationships: Posttraumatic Growth Inventory, Relating to Others subscale; PTGI – possibilities: Posttraumatic Growth Inventory, New Possibilities subscale; PTGI – personal strength: Posttraumatic Growth Inventory, Personal Strength subscale; PTGI – spirituality: Posttraumatic Growth Inventory, Spiritual Change subscale; PTGI – appreciation: Posttraumatic Growth Inventory, Appreciation of Life subscale (Tedeschi & Calhoun, 1996).

Table 3.

Pearson product-moment correlations for the current sample (N = 94).

Measures[a]	1	2	3	4	5	6	7	8	9	10	11	12	13
1. FFMQ	–												
2. FFMQ – observing	.37**	–											
3. FFMQ – describing	.75**	.16	–										
4. FFMQ – awareness	.79**	-.04	.47**	–									
5. FFMQ – nonjudging	.79**	-.09	.53**	.74**	–								
6. FFMQ – nonreactivity	.65**	.40**	.35**	.32**	.29**	–							
7. AAQ-II	-.66**	.05	-.57**	-.55**	-.67**	-.41**	–						
8. PTGI	.20	.19	.18	.03	.08	.27**	-.17	–					
9. PTGI – relationships	.15	.07	.17	.04	.06	.20*	-.15	.86**	–				
10. PTGI – possibilities	.21*	.24*	.18	.05	.06	.26*	-.19	.91**	.69**	–			
11. PTGI – strength	.27**	.20	.20	.11	.15	.31**	-.26*	.83**	.58**	.73**	–		
12. PTGI – spirituality	-.06	.16	-.02	-.15	-.13	-.01	.05	.59**	.41**	.47**	.38**	–	
13. PTGI – appreciation	.11	.16	.11	-.07	.04	.22*	-.01	.78**	.57**	.67**	.63**	.42**	–
14. PCL-5	-.77**	.07	-.59**	-.73**	-.74**	-.38**	.82**	-.03	.01	-.06	-.18	.10	.14

[a] FFMQ: Five-Facet Mindfulness Questionnaire; FFMQ – observing: Five-Facet Mindfulness Questionnaire, Observing subscale; FFMQ – describing: Five-Facet Mindfulness Questionnaire, Describing subscale; FFMQ – awareness: Five-Facet Mindfulness Questionnaire, Acting with Awareness subscale; FFMQ – nonjudging: Five-Facet Mindfulness Questionnaire, Nonjudging of Inner Experience subscale; FFMQ – nonreactivity: Five-Facet Mindfulness Questionnaire, Nonreactivity to Inner Experience subscale (Baer et al., 2006); AAQ-II: Acceptance and Action Questionnaire-II (Bond et al., 2011); PTGI: Posttraumatic Growth Inventory; PTGI – relationships: Posttraumatic Growth Inventory, Relating to Others subscale; PTGI – possibilities: Posttraumatic Growth Inventory, New Possibilities subscale; PTGI – strength: Posttraumatic Growth Inventory, Personal Strength subscale; PTGI – spirituality: Posttraumatic Growth Inventory, Spiritual Change subscale; PTGI – appreciation: Posttraumatic Growth Inventory, Appreciation of Life subscale (Tedeschi & Calhoun, 1996).

* $p < .05$

** $p < .01$