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The Dimensions of Hardiness and Resiliency for Combat PTSD

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Dedication

Dedicated to all the men and women who risk their lives to preserve our freedom. This study is also dedicated to Rosalie Muce and the spirit of healing that she always championed.

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"I have always believed that whatever good or bad fortune may come our way we can always give it meaning and transform it into something of value."

– Hermann Hesse

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Abstract

Research suggests that the personality factor *hardiness* may aid in resilience to combat PTSD. The need to understand resiliency factors like hardiness becomes more urgent as the depth of the epidemic of combat PTSD among veterans becomes more evident. Hardiness consists of three dimensions: (a) commitment, (b) control, and (c) challenge. This study was designed to explore the relationship between the dimensions of hardiness and combat PTSD in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans. Participants were contacted through college veterans offices across the nation, and measures were anonymously completed online. Veterans who participated in the study were asked to complete measures of demographics, hardiness, PTSD, and combat exposure. Correlations suggest that commitment hardiness is a better predictor of resilience to combat PTSD, than challenge or control hardiness. A significant correlation of lesser magnitude was also found for challenge hardiness and combat PTSD. The relationship between control hardiness and combat PTSD was nonsignificant. The relationship between commitment hardiness and combat PTSD is consistent across relevant studies. Further research is needed to clarify the reliability of the relationship between challenge and control hardiness, and to learn whether interventions to increase commitment hardiness result in lower levels of PTSD in veterans.

Keywords: Hardiness, resiliency, PTSD, combat, commitment, challenge, control.

The Dimensions of Hardiness and Resiliency for Combat PTSD

Post-traumatic stress disorder (PTSD) impacts an alarming number of people. Estimates of the prevalence rates of PTSD run as high as 10% of the general population (Breslau, Davis, Andreski, & Peterson, 1991). The rates of PTSD are even higher in combat veterans. Rates of PTSD in Gulf War combat veterans have been estimated at around 19% upon return from a war zone (Sutker, Uddo, Brailey, & Allain, 1993), and as high as 30% over the lifetime of Vietnam veterans (Weiss, 1992).

Most people recover from exposure to the kinds of trauma that promote the development of PTSD (Bonnano, 2004). Likewise, the average soldier does not acquire PTSD even after exposure to severe combat related trauma (Chemtob et al., 1990). There is a body of evidence that suggests that hardiness is a personality characteristic which aids veterans in this resiliency for PTSD (Bartone, 1993, 1996, 1999, 2000; Bartone, Ursano, Wright, & Ingraham, 1989; King, King, Fairbank, Keane, & Adams, 1998; Sutker, Davis, Uddo, & Ditta, 1995).

Hardiness has been defined as a "pattern of attitudes and skills that facilitates turning adversity into opportunity, thereby enhancing performance and health" (Maddi & Khoshaba, 2003, p.43). Commitment, control, and challenge are the three dimensions which constitute hardiness (Kobasa, Maddi, & Kahn, 1982). Sutker et al. (1995) have defined the dimensions of hardiness succinctly: commitment as a "sense of meaning," control as a "sense of autonomy," and challenge as "perceptions of change as exciting growth opportunities" (p. 445).

Achieving a better understanding of the effective dimensions of hardiness in the prevention of PTSD is a vital part of protecting and treating veterans. Determining the relationship between hardiness and combat PTSD may aid in creating "fitness for combat"

screening methods, influence pre-combat resiliency training, and enable researchers and clinicians to focus efficiently on activities that increase resilience. Recruiters, trainers, and clinicians working with combat veterans would have additional information in deciding where to place their efforts. They would know whether to focus on activities that emphasize a deeper level of commitment, a sense of a control, or the ability to see the experience as a challenge.

This study is an examination of the relationship between the dimensions of hardiness and combat PTSD. Sutker et al. (1995) examined the connection between hardiness and combat PTSD in Persian Gulf War veterans and found that commitment and control were the primary hardiness factors that aided military personnel in resilience for PTSD. This study examined the relationship between hardiness and PTSD with Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) veterans. Results have the potential to contribute to the continued evolution of the research and applications of resiliency to combat trauma.

Commitment Hardiness and Combat-PTSD

When examining the underlying definitions of the dimensions of hardiness it becomes clear why commitment may be the primary factor in resilience for combat trauma. In war time commitment is a vital coping mechanism, while attempting to gain a sense of control or trying to reframe the event as simply a challenge may be impossible, or even lethal in this environment.

Antonovsky (1979) has compared the dimension of commitment to meaningfulness. Commitment enables a person to see the meaning in their experiences (Bigbee, 1985; Huang, 1995; Hull, Van Treuren, & Virnelli, 1987, Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). Commitment may insulate the veteran from trauma by allowing them to ascribe meaning to their experience such that they are able to perceive the benefits of participation in stressful military operations (Bartone, 1999; Britt et al. 2001).

A high level of commitment, relative to degree of control and challenge, may be the constellation of dimensions which constitute "combat hardiness." Maddi (2004) characterized the high commitment individual in the following manner:

> Now, imagine people high in commitment but simultaneously low in control and challenge. They would be completely enmeshed with people, things, and events around them, never thinking to have an influence through or to reflect on their experience in their interactions. They would have little or no individuality, and their sense of meaning would be contributed completely by the social institutions in which they would lose themselves. (p. 287)

Maddi characterized this kind of individual as someone who would be out of balance and lacking in genuine hardiness. However, what can decrease hardiness in the average citizen may increase "combat hardiness" in the soldier. While lack of introspection, conformism, and an externalized sense of meaning may lower resiliency for non-combat trauma, these things might just be the elements that increase resiliency for combat-trauma. It might be that for the soldier these things translate to an ability to stay attuned to a hostile environment, to work effectively with fellow soldiers, and the capacity to maintain a sense of meaning for a combat mission.

The sense of meaning in the mission may also aid the soldier in maintaining their mental health after they have returned home. Veterans who report a sense of meaningfulness in their combat experience reported lower levels of distress (Britt et al., 2001; Britt, Dickinson, Moore, et al., 2007). Soldiers on peace keeping missions who reported a sense of meaningfulness in the positive aspects of their mission, like a sense of pride, were shown to have lower incidences of PTSD (Litz et al., 1997).

Commitment may also emerge as the essential resiliency factor in combat PTSD because it is not possible to make use of the dimensions of control and challenge. It is not hard to imagine that in many combat situations maintaining a sense of control would be impossible and that treating the situation as a challenge could prove dangerous. For example, combatants are pinned down in a fire fight by encroaching enemies without hope of imminent rescue. In this kind of situation the individual has to rely on the eventual relief of reinforcements or may have to reconcile with the possibility of impending extinction. It would be hard to access a sense of control, in that it would be difficult to sustain the belief that one's actions have some influence (Sullivan, 1993) and work to reduce stressors (Bigbee, 1985; Huang, 1995; Hull et al., 1987; Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991).

The ability to maintain a perception of adversity as a challenge, may also be absent from the battlefield. An individual would have to believe that change is not a threat to their personal security (Bigbee, 1985; Huang, 1995; Hull et al., 1987; Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). Further, challenge may not be a combat resiliency factor because this dimension means that the person believes that both failure and success present opportunities for personal growth (Brooks, 1994). Obviously, changes in combat can be a serious threat to an individual's security and failure can be fatal.

Utility of the Study

The utility of this study lies primarily in the possibility that new wars may yield new information into how soldiers respond to participation in these conflicts or reinforce the results of prior studies of veterans in previous warfare. This kind of research is essential because it can be adapted to improve the treatments available to veterans or influence how the resources allocated to veterans are invested.

Hoge et al. (2004) outline the many factors, when taken together, that make OIF and OEF distinct from previous engagements and the factors that differentiate these particular wars from one another. These factors include unique combat environments, involvement in guerilla warfare, the use of a volunteer military, duration of the wars, and the influence of public acceptance. The war in Iraqi and Afghanistan presented veterans with very different levels of exposure in regard to combat stressors. In most cases the soldiers in Iraq were more than twice as likely to experience the deleterious stressors that have been found to influence the development of PTSD than their fellow soldiers in Afghanistan. It is not surprising that veterans of OIF have been found to have almost twice the rate of PTSD.

Given the high rates of PTSD and other comorbid mental health issues that our returning soldiers are experiencing, it is crucial that we find ways to help them (Amir, Kaplan, Efroni, & Kotler, 1999; Ben-Ya'acov, & Amir, 2004; Kotler, Iancu, Efroni, & Amir, 2001). While psychological therapies appear to be effective, at present psychopharmacological interventions are acutely limited in their effectiveness (Sheerin, Seim, & Spates, 2012). Thus, it makes sense to work to continue to advance both types of interventions.

In regard to psychological interventions, it may be that therapies that guide the veteran in processing and focusing on the personal meaning of their mission can aid to increase the effectiveness of treatment or provide the motivation for the creation of new interventions. While some veterans will respond to the inherited meaning of the mission conferred by command, others may benefit by focusing on the meaning they derive from the commitment they had to helping their fellow soldiers (Litz et al., 1997). While still others may show improvement in PTSD symptoms when exposed to community members who see the positive meaning in their service (Bolton et al., 2002).

Military Applications of Hardiness

Research indicating hardiness as a primary resiliency factor in relation to combat-PTSD has prompted the creation of various military applications (Bartone, 1993, 1999, 2000; King et al., 1998; Sutker et al., 1995). Maddi (2007) proposed programs in "hardiness training" to help soldiers develop qualities that would aid in their survival and inoculation against PTSD. The US Army has responded to calls for hardiness training by creating a number of their own programs, the most comprehensive of which focuses on the control of thoughts and behaviors related to combat PTSD (Seligman & McBride, 2011).

Military testing for hardiness has also shown potential for improving the selection of candidates for extremely rigorous officers training at West Point (Bartone & Snook, 1999; Bartone, Roland, Picano, & Williams, 2008; Westman, 1990). Data from Israeli training programs also point to hardiness as a sound predictor of individuals who are able to endure the acute stressors of becoming an officer in a traditionally demanding military unit (Benyamini, Tsachi, Karni, & Zahava, 2009).

After actual combat and peacekeeper duties, troops displaying the greatest resiliency to PTSD scored high on measures of hardiness (Bartone, 1996; Bartone, Ursano, Wright, & Ingraham, 1989). Gulf War combat veterans with high levels of hardiness exhibited a resistance to the development of PTSD (Bartone, 1993, 1999, 2000). Vietnam veterans with high hardiness scores indicated a resiliency to PTSD and an enhanced ability to recover from this disorder (King et al., 1998).

Bartone (1999) posited that a soldier's relative level of hardiness may provide a means of identifying soldiers who are most susceptible to developing PTSD. The link between PTSD and hardiness may provide the foundation needed to create more accurate methods to detect soldiers

who require additional resiliency training prior to combat and combat veterans who will require treatment for this disorder (Sutker et al., 1995). Due to the high rate of troops from Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) who develop combat PTSD, in combination with the low rate of treatment seeking among these veterans, it is vital to develop accurate and efficient screening methods (Erbes, Westermeyer, Engdahl, & Johnsen, 2007).

Rates of Combat PTSD and Comorbid Illnesses

PTSD treatment is a particularly acute issue for combat veterans because of the percentage of soldiers initially affected, the alarming increase of cases over time, and the comorbid illnesses which may develop (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). While the rate of PTSD in the general population averages around 6.8% (Kessler et al., 2005), studies of Gulf War veterans reveal almost twice that rate at 12.1% (Kang, Natelson, Mahan, Lee, & Murphy, 2003). The definitive study of combat veterans, the National Vietnam Veterans Readjustment Study (NVVRS), reported an even higher rate of PTSD (15.2%) for returning soldiers (Kulka et al., 1990).

Effective detection methods for combat PTSD are crucial because the disorder progresses both upon returning home and over the lifetime of the soldier. After one month upon returning home, 4% of OEF and OIF veterans were diagnosed with PTSD (Hoge et al., 2007). While just after three months the reported rate of PTSD in this cohort reached 18% (Hoge et al., 2004).

Lifetime estimates of PTSD for veterans reveal a grim trajectory. Researchers from the NVVRS reported an estimated 30.9% lifetime prevalence of combat PTSD among veterans (Khuznik, Speed, Van Velkenberg, & MacGraw, 1986; Kulka et al., 1990). When factoring in multiple deployments, projections of PTSD rates for veterans of the war in Iraq run as high as 35% (Atkinson, Guetz, & Wein, 2009) to 40% (Hoge & Castro, 2005). General studies of at-risk

individuals, like combat veterans, predict prevalence rates as high as 58% (American Psychiatric Association, DSM-IV-TR, 2000).

The overwhelming numbers of veterans being diagnosed with PTSD is especially troubling given that individuals with this disorder are at much greater risk of developing a range of other mental health disorders (Breslau, Davis, Peterson, & Schultz, 2000). Individuals with PTSD are at increased risk for Substance Related Disorders (Breslau et al., 1991; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), and anxiety disorders such as Panic Disorder, Agoraphobia, Obsessive-Compulsive Disorder, Generalized Anxiety Disorder, and Social Phobia, as well as somatic complaints (American Psychiatric Association, DSM-IV- TR, 2000).

Combat-PTSD also increases the risk of developing Major Depressive Disorder (Breslau et al., 2000), with a marked occurrence of suicidal ideation (Amir et al., 1999; Ben-Ya'acov & Amir, 2004; Kotler et al., 2001). Suicide and suicidal behavior is elevated for combat veterans with PTSD (Amir, Kaplan, Efroni, & Kotler, 1999; Ben-Ya'acov & Amir, 2004; Kotler, Iancu, Efroni, & Amir, 2001). One of the most heartbreaking statistics is that suicide claimed more veterans between 2001 and 2008, than did battles in Iraq and Afghanistan during that time (Insel, 2008).

In time, the veteran with PTSD is also at greater risk for an array of life threatening physical ailments (Benyamini et al., 2009; Boscarino, 1997; MacKenzie, 2005). The consequences of combat PTSD continue throughout the life of the veteran through a variety of physical illnesses. When compared to the general public, combat veterans with PTSD are twice as likely to develop cardiovascular disease, diabetes, and even cancer.

PTSD Definition

PTSD will be defined in accordance with DSM criteria (American Psychiatric Association, 2000). The necessary features of PTSD is the development of characteristic symptoms following exposure to an extreme traumatic stressor involving direct personal experience, witnessing, or learning of an event that involves actual or threatened death or serious injury to the individual or someone close to that individual. The primary symptoms of PTSD are reexperience, avoidance, and arousal related to a life threatening traumatic event leading to a clinically significant impairment in functioning.

Hardiness Definition

Resiliency is the ability to recover from adversity without the experience of significant distress (Everly, Welzant, & Jacobson, 2008). Resiliency can be defined as "effective coping and adaptation" in managing personal hardship (Tugade & Fredickson, 2004, p. 320).

Hardiness is a personality variable that promotes resiliency (Bartone et al., 2008. Maddi, 2007). Hardiness is a set of attitudes, or disposition that motivates an individual to the kind of positive action that aids in converting personal tragedy into a growth experience (Kobasa, 1979; Maddi, 2002; Maddi & Kobasa, 1984).

The individual possessing hardiness has "existential courage," an ability to make meaning out of tragedy, and the attributes needed to persevere in the face of the pain and futility of life (Bartone, 2006, p. 137). This type of person develops an "Ideal Identity," defined by Maddi (1967) as a proactive person with a sense of purpose and belief in their own effectiveness. A fundamental sense of one's worth, purpose, and accountability comes with a personality high in hardiness (Bigbee, 1985; Pollock, 1989; Sullivan, 1993). Hardiness is the kind of inner fortitude that supports a positive world view where adversity is seen as an opportunity for growth

(Brooks, 1994; Huang, 1995; Kobasa et al., 1982; Maddi & Kobasa, 1984; Moss, 1973; Tartasky, 1993; Wagnild & Young, 1991).

Hardiness Mechanisms of Operation

When one possesses hardiness as part of their identity, trauma is converted into a meaningful experience (Maddi & Kobasa, 1984). This kind of transformational coping is activated through positive cognitive appraisal (Allred & Smith, 1989), the application of active problem solving (Maddi, 1999; Maddi & Hightower, 1999), and positive action through the maintenance of healthy behaviors and social support seeking (Maddi, 2002; Weibe & McCallum, 1986).

Cognitive appraisal. Hardiness promotes resiliency in individuals through positive cognitive appraisal of stressful events and the perceived utility of potential coping strategies (Kobasa, 1979). Kobasa's early work with hardiness found that reactions to high stress situations were mediated by the individual's cognitive appraisal of the experience and the perceived efficacy of coping strategies. People with high levels of hardiness, are more likely than people with low hardiness levels, to see any event as positive (Rhodewalt & Agustsdottir, 1984). The hardy person thinks of a potentially negative experience as a chance to learn (Bigbee, 1985; Florian, Mikulincer, & Yaubmand, 1995; Funk, 1982). Hardiness influences an individual to feel less threatened by events and have more confidence that their efforts to cope will be successful (Tartasky, 1993).

Problem-solving. Positive cognitive appraisal of an event influences a person to use a problem-solving approach to hardship, instead of using ineffective denial and avoidance strategies (Maddi, 2002; Weibe & McCallum, 1986). People who use problem-focused active coping strategies are better adjusted and demonstrate fewer indicators of distress (Breslin,

O'Keefe, Burrell, Ratcliff-Crain, & Baum, 1995; Cooper, Russell, & George, 1988; Cooper, Russell, Skinner, Frone, & Mudar, 1992; Evans & Dunn, 1995).

Problem-focused, active coping strategies are adaptive methods of managing trauma (Breslin et al., 1995; Cooper et al., 1988, Cooper et al., 1992; Evans & Dunn, 1995). There is evidence that problem-centered coping strategies are the most effective in managing traumatic stress (Folkman & Moskowitz, 2000; Wilson, Marel, Kahan, 1988; Wilson & Raphael, 1993; Zeidner & Endler, 1996). Conversely, coping strategies involving the avoidance of trauma related affect, memories, and behaviors are implicated in the development of PTSD (Boeschen, Koss, Figueredo, & Coan, 2001).

Positive action: Healthy behaviors and social support. Hardiness is a personality factor that helps to protect against the effects of stress (Antonovsky, 1987; Howard, Cunningham, & Rechnitzer, 1986) through the activation of healthy behaviors and support-seeking coping strategies (Gentry & Kobasa, 1984; Kobasa, 1982; Pollock, 1989; Williams, Wiebe, & Smith, 1992). This is essential because when high levels of stress are not moderated, the individual experiences critical breakdowns in mental and physical performance (Selye, 1979).

It appears that hardy people may stay healthy because they are more apt to maintain healthy practices when under stress (Pardine, Napoli, & Dytell, 1983; Wiebe & McCallum, 1986). In the face of stress, they are more likely to continue to maintain a healthy diet, exercise, and continue to participate in activities that promote relaxation (Maddi, 2002, 2007).

Under certain conditions hardiness can be used as a predictor of future health (Kobasa, Maddi, & Courington, 1981; Kobasa et al., 1982). Some of the earliest studies of hardiness focused on the relationship between health and stress (Jennings & Staggers, 1994; Kobasa,

1979). They found that individuals with high levels of hardiness were less ill when under acute stress than those with low hardiness. Fusilier (1999) asserts that the reduced stress and increased health of hardy people may increase the possibility that they will be able to carry out necessary coping strategies such as making efforts to engage in social interactions.

Social support is a critical factor in managing stress (Antonovsky, 1979). When one has hardiness as part of their personality, they work with others in a way that fosters social support through behaviors like encouragement and reciprocal assistance (Maddi, 2007). According to Schnurr, Lunney, and Sengupta (2004), social support can act as a protective factor in preventing the development of combat related PTSD. In fact, hardiness and related social support seeking behavior may be the primary factors in resistance to and recovery from combat PTSD (King et al., 1998).

Hardiness: Convergent and Discriminant Constructs

The construct of hardiness shares convergent properties with a number of related personality constructs. There are similarities between hardiness and locus of control (Rotter, 1966), optimism (Scheier, Carver, & Bridges, 2001), and self-efficacy (Bandura, 1997). In contrast, the construct of hardiness is the most distinct from the construct of helplessness (Raps, Reinhard, & Seligman, 1980).

Optimism has similarities both to the overall construct of hardiness and the subdimension control. Optimism is largely identical to the driving mechanism underlying hardiness. Optimism is the expectation of good outcomes (Scheier et al., 2001). Positive cognitive appraisal, an underlying mechanism of hardiness, has been defined as the belief that one's efforts will result in success (Tartasky, 1993).

Data on optimism and control suggest that the two constructs are positively correlated. The similarities between the two constructs are evident, in that control has been defined as the belief that a relationship exists between one's actions and external events (Sullivan, 1993). The perception of being in control promotes optimism. In research with children it was found that mastery experiences and opportunities to model effective action lead to optimism (Brooks, 1994). Children who were reinforced in relation to their effectiveness in task completion demonstrated increased motivation in confronting tasks that they found challenging (Whalen et al., 1994). The children's belief in their ability to control the situation bred an optimistic stance.

The concept of self-efficacy also has similarities to the overall construct of hardiness and a relationship to the subdimension of control. When an individual possesses self-efficacy they have a sense of meaning and a belief that tasks are manageable (Antonovsky, 1987). This is much like the commitment and control factors of hardiness. The difference is that the individual has a consistent set of abilities and is not as concerned with the difficulties of change that are managed by the factor of challenge.

It makes sense that an individual would experience control as part of the process of developing self-efficacy. In one study, subjects were exposed to experiences designed to create a feeling of control and they later reported enhanced feelings of self-efficacy (Masten, Best, & Garmezy, 1990; Rutter, 1987).

The relationship between hardiness and helplessness is based solely in the dimension of control. Control is the opposite of helplessness (Raps et al., 1980). When the organism experiences a lack of control helplessness is learned (Seligman, 1995). In their well known

experiment, Seligman and Maier (1967) demonstrated that dogs trained to associate an electrical shock with an inescapable condition gave up trying to avoid the shock.

The Dimensions of Hardiness: Commitment, Control, & Challenge

Hardiness, according to Kobasa et al. (1982), has three components: (a) commitment, (b) control, and (c) challenge. These characteristics promote behaviors that aid in producing a highly resilient human. This kind of person has a sense of agency wherein they believe that their actions have an effect on the world (Sullivan, 1993).

A person with a high degree of hardiness has a commitment to life expressed through an involvement in maintaining self-worth, participating in the social environment, and the world at large (Kobasa et al., 1982). The hardy person is actively involved in relationships with others (Huang, 1995; Tartasky, 1993; Wagnild & Young, 1991). People with a high level of hardiness commitment feel responsible to maintain their participation in the community (Weissberg, Caplan, & Sivo, 1989).

People who believe they are in control of their lives exhibit a sense of agency, resourcefulness, and an absence of feelings of powerlessness. The hardy person is confident that through their own efforts, they can manage any adversity (Huang, 1995; Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). In the hardy individual, adversities are managed resourcefully with the person using their intelligence, imagination, and skill to maintain an optimal level of autonomy (Kobasa et al., 1982). Whatever hardship life presents to the hardy individual, they maintain a sense of personal control and are convinced that they have the power to influence the course of their life. Individuals with hardiness seek to maximize their self-sufficiency and are not burdened with feelings of powerlessness (Bigbee, 1985).

When a person is more flexible and open to new experiences, hardships are framed as a challenge (Moss, 1973). Adversity is viewed as a normal part of life, an existential challenge which is acknowledged as the natural order of the universe (Kobasa et al., 1982). With the "challenge mindset" of hardiness, changes are welcomed as a chance for personal development (Bigbee, 1985; Huang, 1995; Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). All the mistakes, embarrassments, and failures in life are converted into experiences that enhance an overriding sense of inner strength (Brooks, 1994).

Criticisms on the Construct and the Study of Hardiness

Initial hardiness investigations employed the original Personal Views Survey (PVS) in a business environment with working adults (Kobasa et al., 1982). The first criticism of the construct was based on the results from a subsequent study that used college undergraduates as subjects. Measurement problems emerged due to insufficient intercorrelations of the three dimensions of hardiness. This was said to invalidate the empirical use of a total hardiness score (Funk & Houston, 1987; Hull et al., 1987). Through revisions and additional data collection (Maddi, 2002), hardiness measures were further developed, correcting for this limitation (Maddi, 1997; Sinclair & Tetrick, 2000). The PVS II-R was found to yield sufficient intercorrelations for the three hardiness components with subject pools that included both undergraduates and high school students (Maddi & Khoshaba, 2001).

While a survey of the literature supported the importance of the overall construct (Hull et al., 1987), there was lingering controversy over whether hardiness is best represented by one or more dimensions (Tartasky, 1993; Williams et al., 1992). Research that demonstrated the limited contribution of the dimension of challenge motivated a number of researchers to even call for the removal of this component from the concept of hardiness all together (Hull et al.,

1987). Maddi (1999) has addressed these criticisms with a study utilizing a live sampling method wherein subjects were paged at random to give experiential feedback on whatever activity they were engaged in. At the conclusion of the study a positive relationship was found between hardiness and each of the dimensions commitment, control, and challenge.

Another criticism of the construct of hardiness is that it is simply the opposite of negative affectivity or neuroticism. This criticism was based in the fact that the original measure was comprised mostly of negatively worded items (Hull et al., 1987). Again measures of hardiness were improved. In this case, negatively worded items were balanced with positively worded items (Bartone, 1989).

In testing the assertion that hardiness is only the opposite of negative affectivity comparisons to personality inventories provided evidence to counter this claim. In comparing the Minnesota Multiphasic Personality Inventory, Maddi and Khoshaba (1994) found that when negative affectivity was controlled for, a negative relationship with clinical disorders remained. In comparing hardiness to the Neuroticism, Extraversion, Openness Five Factor Inventory, it was found that hardiness was negatively correlated with neuroticism and yielded a degree of variance indicating that the construct is not confined to the parameters outlined in the five-factor model (Maddi et al., 2002).

In research with measures of hardiness, the construct was found again to be something more than just the absence of negative affectivity (Sinclair & Tetrick, 2000). This study also provided additional support for the presence of the three distinct facets of hardiness. The researchers reached the conclusion that commitment, control, and challenge are a factor structure of three dimensions subsumed under the more general construct of hardiness.

While there is an impressive body of studies which distinguish hardiness from over simplifications of this construct, there is equal number of studies designed to validate the actual nature of the construct. Hardiness is based in the concept that the individual summons the courage to face problems and overcome any urge to hide from problems. Maddi, Khoshaba et al. (2002), found that hardiness is negatively related to repressiveness and positively related to innovativeness. Hardiness is also positively related to problem-solving behaviors and negatively related to regressive efforts like denial and avoidance (Maddi & Hightower, 1999). Additional validation for this concept includes research that revealed a negative relationship between hardiness and the perception of stressful circumstances as a threat (Allred & Smith, 1989), as well as a negative relationship between hardiness and neurological "fight or flight" reactions (Maddi, 1999).

Hypothesis: Commitment and Combat Hardiness

Prior research has indicated that commitment may in fact be the primary hardiness resiliency factor for combat PTSD. The current research question concerns whether the hardiness dimensions of control and challenge add any predictive power, beyond the facet of commitment, in predicting symptoms of PTSD. Sutker et al. (1995) examined multiple resiliency factors for PTSD including hardiness. In their initial analysis the hardiness factor of challenge was removed due to low correlations with the other dimensions of hardiness and the other resiliency measures tested. The dimension of control was removed from the final analysis because of the high correlation with the dimension of commitment.

Method

This study used a series of objective inventories to examine the correlation between hardiness and PTSD scores for OIF and OEF veterans, who were recruited through veteran's

organizations and asked to complete an online survey. The survey included a demographic questionnaire (see Appendix A), as well as measures of hardiness, PTSD status, and combat exposure.

Participants

Participants included OIF and OEF veterans, who at the time of data collection were associated with a college veteran center. Participants were asked to verify participation in OIF or OEF. Due to the tendency of PTSD symptoms to naturally remit after a three to six-month period (Rothbaum, Foa, Murdock, Riggs, & Walsh, 1992; Shalev et al., 1998), participants were asked the amount of time that has passed since their last active duty or first combat exposure. Subject's whose last active duty or first combat exposure was less than six months prior to participating in the study were excluded from the study. Demographic information was captured in the questionnaire described in the next section.

Measures

Demographics. Participants were given an informed consent form (see Appendix B) and the criteria for taking part in the study. Participants were then given a questionnaire asking the following: age, gender, race, ethnicity, rank, years of service, military branch, number of deployments, and time since last active duty.

Dispositional Resilience Scale-15 (DRS15; Bartone, 1995). Participants were asked to complete Bartone's (1995) Dispositional Resilience Scale-15 (DRS15), a 15-item adaptation of a hardiness scale that has undergone multiple revisions. Bartone modified Maddi and Kobasa's (1984) original 53-item scale several times. Working with bus drivers, Bartone (1989) was able to create a 50-item scale. In work with military samples, further psychometric improvements resulted in a 45-item scale and then a 30-item scale (Bartone et al., 1989; Bartone, 1991).

Bartone (1995) has further developed the measure with the DRS15, a 15-item scale that was used in this study. In developing the DRS15, Bartone examined hardiness levels in a large sample (N = 787) of Army Reservists who served in the Gulf War. In addition to reducing the number of overall items, Bartone balanced the number of items addressing each of the three dimensions of hardiness.

Measures of internal reliability for the DRS15 yielded a sufficient Cronbach's Alpha coefficient score (α = .83; Bartone, 1995). Scores of internal reliability for the three dimensions of hardiness, commitment (α = .77), control (α = .71), and challenge (α = .70) were slightly less than that for the total hardiness score. Test-retest reliability at three months was moderate (α =.52). Examples of items for the DRS15 included, "Most of my life gets spent doing things that are worthwhile" and "Planning ahead can help avoid most future problems." Possible responses to the DRS15 were *not at all true* (Likert score = 0), *a little true* (Likert score = 1), *quite true* (Likert score = 2), and *completely true* (Likert score = 3). Total possible scores ranged from zero to 45.

In examining the relationship between overall health and performance when under extreme stress, the DRS15 scale has demonstrated adequate criterion and predictive validity for a variety of samples. Hardiness scores were predictive of symptomatic criteria, illness, and health behaviors in Gulf War soldiers (Bartone, 1995). Similar results were found in Army medical workers in Croatia (Bartone et al., 1989). Hardiness scores were also predictive of success in the highly stressful selection process during Army Special Forces training (Bartone, 1999; 2000).

PTSD Check List - Military (PCL-M; **Weathers, Litz, Herman, Huska, & Keane, 1993).** Participants were asked to complete the PTSD Check List - Military (PCL-M), a 17-item self-report measure consistent with DSM-IV criteria for PTSD (American Psychiatric

Association, 1994). The PCL-M, a version of the PCL, was created for military use (Weathers, Litz, Herman, Huska, & Keane, 1993). Weathers et al. developed the PCL in two studies with Vietnam (N = 123) and Gulf War veterans (N = 1006). Estimates of reliability for both studies yielded a more than sufficient score for internal consistency (study 1; $\alpha = .97$; study 2; $\alpha = .96$). Test-retest reliability scores for military applications were only available for one study with Vietnam veterans after two to three days ($r = .96$; Blanchard, Jones, Buckley, & Forneris, 1996).

In completing the PCL-M, participants were asked to indicate the extent to which each symptom has impacted their lives in the past month for items like "Feeling *very upset* when *something reminded you* of a stressful military experience" and "Repeated, disturbing *dreams* of a stressful military experience." Responses for items were presented in a five-point Likert scale with responses which include: *Not at all* (Likert = 0), *a little bit* (Likert = 1), *moderately* (Likert = 3), *quite a bit* (Likert = 4), *Extremely* (Likert = 5). The possible total scores ranged from a minimum of zero to a maximum of 85.

There was also significant evidence for the validity of the PCL based on positive correlates with other measures of PTSD. Weathers et al. (1993) found a strong positive correlation between the PCL and The Mississippi Scale ($r = .85$-$.93$). The PCL also demonstrated positive correlations with the MMPI-2 Keane PTSD scale ($r = .77$), the Impact Event Scale (.90), and the Clinician Administered PTSD Scale (CAPS; $r = .92$; Blanchard, Jones, Buckley, & Forneris, 1996). Scores from the PCL also displayed high levels of diagnostic accuracy when compared to well established clinical interview measures, like the Structured Clinical Interview (Spitzer, Williams, Gibbon, & First, 1995) and the CAPS (Blake et al., 1990). There was also evidence that the PCL is a valid measure for post-deployment screening for PTSD (Bliese, Wright, Adler, Cabrera, Castrol, & Hoge, 2008).

The Combat Exposure Scale (CES; Keane, Fairbank, Caddell, Zimering, Taylor, & Mora, 1989). Participants were asked to complete the Combat Exposure Scale (CES), a 7-item scale that assesses combatants' experience of wartime stressors (Keane, Fairbank, Caddell, Zimering, Taylor, & Mora, 1989). The psychometric properties of the CES were established using separate groups of Vietnam veterans. The scale had satisfactory internal consistency ($\alpha = .85$; $N = 362$) using Cronbach's alpha. Test-retest measures demonstrated impressive results at a one week readministration ($r = .97$; $N = 39$).

Items on the CES asked participants their degree of exposure to situations like, "Were you ever under enemy fire?" and "How often did you fire rounds at the enemy?" Responses were rated on scores in four areas which include: high frequency events, low frequency events, duration, and degree of loss. Responses for high frequency items were presented in a five-point Likert scale with responses which range from 1 = *no or never* to 5 = *more than 50 times*. Responses for low frequency events items were presented in a four-point Likert scale with responses which range from 1 = *no* to 4 = *more than 12 times.* Responses for duration items were presented in a five-point Likert scale with responses which range from 1 = *never* to 5 = *more than 6 months*. Responses for degree of loss items were presented in a four-point Likert scale with responses which range from 1 = *no one* to 5 = *more than 50%.* The possible total weighted CES scores range from zero to 41 and was classified into five categories ranging from "light" to "heavy" exposure.

Information on the validation of the CES is limited. Results did reach statistical significance in regard to ability to distinguish combat exposure military participants from non-combat exposure civilian participants (Keane et al., 1989).

Procedures

In recruiting participants, a wide sampling of VA centers across the country agreed to provide participants with information about the study. Participants were recruited through email contact with administrators at veteran's centers. Veteran's centers administrators that elected to have their center participate were sent an additional email giving printable instructions and flyers for distribution to potential participants and posted in common areas. Instructions included a recruitment message explaining study goals, potential benefits, participant requirements, and the web address where the participant signed on to take the survey (Appendix C). Participants who responded to the flyer were given information on how to log onto the survey website, where all of the above mentioned information was repeated.

Once the participant navigated the recruitment message and instruction page, they were given information on their rights, information on getting assistance if any issues arose while taking the survey, and how to opt out of the study at anytime. When participants log on they were asked to fill out a demographic sheet, the DRS15, the PCL-M, and the CES. The estimated completion time for all survey material was approximately 15 minutes. Subjects were able to complete the survey at the location of their choice.

At the end of the survey participants were provided contact information, instructions on how to enter a drawing for an Amazon.com gift card, and debriefing information. Participants were given my email in order to gain additional study information or for later follow-up on study results. Subjects were given the option to enter into a drawing for a $100 Amazon.com gift card. Debriefing information included detailed instructions and information on how to contact emergency services through a national crisis hotline number.

The website Surveymonkey.com was used to conduct the internet survey. This website allowed participants to input data anonymously and to enter the lottery for the gift card without revealing any identifying information. Surveymonkey.com also provided the means of collecting email addresses of drawing winners into a separate database, without revealing any responses to the survey, in order to send out the gift card. Surveymonkey.com tools were also used to aggregate data for analysis.

Results

Participants

Participants were 130 combat veterans who fought in OIF or OEF who responded to the survey. Most respondents were male (74.6%), non-Hispanic (86.6%), and white (86.7%; see Table 1). Slightly more than half were married (51.2%) and 34.9% were never married. The remaining 14% of respondents were divorced or separated (see Table 1).

Table 1

Sample Demographics

Gender	Frequency	Percent
Male	97	74.6
Female	33	25.4
Totals (N = 130)		
Ethnicity		
Hispanic or Latino	17	13.4
Not Hispanic or Latino	110	86.6
Totals (N = 127)		
Race		
American Indian/Alaska Native	3	2.3
Asian	10	7.8
African American	2	1.6
Native Hawaiian/Pacific Islander	2	1.6
White	111	86.7
Totals (N = 128)		
Now Married	66	51.2
Divorced	16	12.4
Separated	2	1.6
Never Married	45	34.9
Totals (N = 129)		

Most participants had some college education: 3.8% completed an Associate's degree, 30.8% completed at least one year of college, 28.5% completed a Bachelor's degree, and 11.5% completed a Master's or professional degree. Almost half of the respondents considered themselves to be students (47.7%) or were employed for wages (38.5%), whereas the remaining nonstudent respondents were self-employed (2.3%), looking for work (6.2%), or a homemaker (0.8%; see Table 2). Whether a respondent was "working and a student" was not assessed in this study.

Table 2

Education & Employment Status

Education	Frequency	Percent
High School or GED	2	1.5
Less than 1 Year College	5	3.8
More than 1 Year College	40	30.8
Associates Degree	31	23.8
Bachelor's Degree	37	28.5
Master's Degree	13	10.0
Professional Degree	2	1.5
Totals (N = 129)		
Employment Status		
Employed for Wages	50	38.5
Self-Employed	3	2.3
Out of Work and Looking	8	6.2
Homemaker	1	.8
Student	62	47.7
Retired	2	1.5
Unable to Work	4	3.1
Totals (N = 129)		

A little over half of respondents served in the Army (58.5%), with 23.1% in the Marines, 10% in the Navy, and 7.7% in the Air Force. There was also one (0.7%) respondent from the Coast Guard (see Table 3).

Table 3

Military Experience

Still in Military?	Frequency	Percent
Yes	27	20.8
No	103	79.2
Branch		
Army	76	58.5
Air Force	10	7.7
Navy	13	10.0
Marine Corps	30	23.1
Coast Guard	1	.07

Ages ranged from 20 to 53 (M = 30.90, SD = 7.44). Years of service ranged from 1 to 34 (M = 8.15, SD = 6.22). The number of deployments ranged from 1 to 6 (M = 1.78, SD = 1.15). The time since the last deployment ranged from 2 to 4 years (M = 3.94, SD = .31; see Table 4).

Table 4

Summary Statistics

	Min	Max	M	SD
Age	20	53	30.90	7.44
Years of Service	1	34	8.15	6.22
Number of Deployments	1	6	1.78	1.15
Time Since Last Deployment	2	4	3.94	.31

Research Question

The results suggested a moderate relationship between hardiness, as measured by the DRS15, and PTSD as measured by the PCL-M; As hardiness increased, PTSD scores tended to decrease. There was a significant negative correlation between hardiness and PTSD (r = -.48, $p < .05$), indicating a moderate to strong relationship between hardiness and PTSD (Cohen, 1988); those with higher hardiness scores endorsed less severe PTSD symptoms (see Table 5).

Table 5

Correlations Among Predictors

			DRS			
	CES	PTSD	Total	Commitment	Control	Challenge
CES		.49	-.12	-.13	.004	-.12
PTSD			-.48	-.47	-.16	-.33
DRS Total				.81	.63	.71
Commitment					.54	.24
Control						.09
Challenge						

* p < 0.05

A correlation matrix was constructed using all of the variables: combat exposure, PTSD, DRS-Total, DRS-control, DRS-commitment, and DRS-challenge. As has been found in prior research, combat exposure correlated positively with PTSD (r = .49, p < .05). In addition, there was a significant negative correlation between PTSD and most of the hardiness measures including significant negative correlations between PTSD and the DRS total score (r = -.48, p < .05), commitment (r = -.48, p < .05), and challenge (r = -.33, p < .05). The only nonsignificant correlation between PTSD and hardiness was with the control subscale (r = -.16, p > .05; see Table 5).

An examination of the correlations among the DRS subscales revealed that commitment had a strong positive relationship with control (r = .56, p < .05) and a weaker, but still significant, positive relationship with challenge (r = .24, p < .05). However, challenge did not correlate significantly with control (r = .09, p > .05; see Table 5).

Multivariate Results

To control for possible overlapping effects among the variables, a multiple regression was conducted in which PTSD was regressed on the three hardiness subscales (i.e., commitment, control, and challenge) as well as combat exposure. The results remained consistent with the findings from the simple correlations. Commitment ($b = .11$, $p < .05$), challenge ($b = .05$, $p < .05$), and combat exposure ($b = .36$, $p < .05$) all contributed significantly to the regression equation. The only predictor that was not significant was control ($b = .01$, $p > .05$; see Table 6). Together, these variables explained 38.3% of the total variance in PTSD. The multiple regression model as a whole was statistically significant ($F = 16.69$, $df = 4, 27$, $p < .05$; see Table 6).

Table 6

Multiple Regression Analysis

	B	SE	Beta	T	P
(Constant)	2.79	.39		7.18	<.05
Commitment	-.10	.03	-.39	-3.99	<.05
Control	.01	.04	.02	.25	.805
Challenge	-.05	.02	-.19	-2.40	.018
Combat Exposure	.36	.07	.39	4.95	<.05

Note. Multiple R Squared = .38 * p < .05.

The shape of the distribution did approach normality, but there was a larger peak just below the mean than one would expect if the distribution were truly normal. Nonetheless, the distribution was sufficiently close to normality that one can have confidence in the results.

The control facet of hardiness did not significantly contribute to the variance. Dropping this variable from the second multiple regression model led to a slight improvement in model fit. The remaining predictor variables accounted for 38.9% of the total variance. The second multiple regression model as a whole was also statistically significant ($F = 22.45$, $df = 3, 27$, $p < .05$; see Table 7).

Table 7

Multiple Regression Results – Control Removed

	B	SE	Beta	T	p
(Constant)	2.85	.296		9.65	.000
Commitment	-0.10	.021	-.379	-4.74	.000
Challenge	-0.05	.020	-.193	-2.42	.017
Combat Exposure	0.36	.073	.391	4.99	.000

Note. Multiple R Squared = .39 * p < .05

In addition, the substantive effects of each of the other variables included in the analysis were very close to the previous model, and all were statistically significant: Including Commitment (b = .10, p < .05); Challenge (b = .05, p = .017); and Combat Exposure (b = .36, p < .05; see Table 7).

The same residual analysis was carried out for the second multiple regression model. The results indicated some minor deviation from normality, but there was no evidence that this adversely affected the analysis.

The question this study sought to assess the relationships of commitment, control, and challenge hardiness with PTSD. The results suggest that the primary influences on of PTSD scores were combat experience and commitment, but that challenge also had a significant relationship with PTSD even after controlling for these other two factors. In this study control was nonsignificant, suggesting that for this sample the relationship to PTSD and control hardiness was limited.

Discussion

The United States military is in crisis. Due to extreme combat conditions, the mental health needs of OIF and OEF veterans are greater than seen in previous cohorts of veterans (Marx, 2009). In fact, the number of veterans with combat related PTSD is at an unprecedented level and expected to increase (Hoge et al., 2004). This becomes even more alarming given the failure of conventional interventions, like medication, for combat PTSD (Davidson et al., 2005; Friedman et al., 2007; Zohar et al., 2002). Thus, it is crucial that we better understand what promotes resiliency for combat related PTSD.

Hardiness has been identified as one of the factors related to resiliency for combat PTSD (Sutker et al., 1995). Each of the three components of hardiness represents distinct personal characteristics with the potential to foster resiliency to trauma. The individual possessing a high level of the characteristic of commitment processes adverse situations in a way that the events are eventually seen as meaningful (Maddi & Kobasa, 1984). The individual high in the challenge dimension of hardiness views negative experiences as an opportunity for growth (Bigbee, 1985; Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). The individual high in control hardiness believes events can be made more manageable through individual effort (Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991).

While there are clear definitions of the dimensions of hardiness, the relationship of components to PTSD is not as straight forward. There is controversy over which dimensions of hardiness actually promote resiliency (Funk & Houston, 1987; Hull et al., 1987). More specifically, the question remains as to which dimensions of hardiness support resiliency to combat PTSD.

Discussion of Findings

Hypothesis and summary of findings. The hypothesis which guided this research was that the commitment component of hardiness would be a better predictor of combat PTSD than challenge or control. The results of this study suggest that commitment and challenge are significant predictors of combat PTSD and that the dimension of control is not. Sutker et al. (1995) also found that commitment was a better predictor of combat PTSD than challenge. However, they found that control was also a better predictor of combat PTSD than challenge.

In support of the hypothesis of this study, commitment did have a stronger negative correlation with PTSD than control or challenge. While both commitment and challenge were found to have significant negative correlations with PTSD, commitment accounted for more of the variance than either challenge or control. Control was shown to have a nonsignificant correlation with the PTSD measure.

Sutker et al. (1995) tested several resiliency factors for combat PTSD including hardiness. Among their findings was a significant negative correlation for both commitment and control with combat PTSD. They did not find a significant relationship between challenge hardiness and combat PTSD. They did find a high correlation between commitment and control. Because they were researching multiple resiliency factors in addition to hardiness, they choose to remove one of these highly correlated hardiness factors from the final analysis of the data. They choose to remove control and again out of multiple resiliency factors a significant relationship between commitment hardiness and combat PTSD emerged.

This study supports the hypothesis that commitment hardiness is the primary component which promotes resiliency for combat PTSD. Nonetheless, the findings of this study indicate a potential relationship between challenge and resiliency to combat PTSD. Likewise, a previous

study implicates a possible relationship between control and resiliency to combat PTSD. The role of commitment appears consistent and clear. The role of challenge and control require further study.

Explanation of findings. The underlying mechanisms of hardiness lend insight into potential explanations for the findings of this study. Hardiness promotes resiliency for PTSD through active problem solving (Maddi, 1999; Maddi & Hightower, 1999) and positive cognitive appraisal (Allred & Smith, 1989). It seems logical to conclude that for any one dimension of hardiness to support resiliency to combat PTSD, that hardiness dimension would have to activate a problem solving approach and positive cognitive appraisal of the combat trauma.

A problem solving approach to traumatic experience involves the active processing of trauma related affect, memories, and behaviors (Boeschen et al., 2001). Instead of using ineffective denial and avoidance strategies, the individual with hardiness builds resiliency to PTSD through an active, problem-solving approach to the traumatic material (Maddi, 2002; Weibe & McCallum, 1986).

Positive cognitive appraisal promotes resiliency for PTSD in the hardy individual by converting trauma into a meaningful experience (Maddi & Kobasa, 1984). Thus, if one of the dimensions of hardiness is to promote resiliency to PTSD that hardiness dimension would have to support the active and positive processing of the combat trauma.

Commitment. Maddi (2004) described people high in commitment hardiness as not having to reflect on their experience because the meaning of that experience would come from the social institutions in which they participate. This high commitment individual would engage problem solving and cognitive appraisal by defaulting to the meaning imbued by external sources.

The committed soldier would reflexively activate a problem focused approach and positive cognitive appraisal of combat related trauma through the meaning provided by the military. These kinds of soldiers would not suppress combat related trauma, instead they would achieve a positive cognitive appraisal of the trauma through a focus on the external, institutional, meaning of that event. For example, a veteran could resolve the trauma of losing his comrades through a default to the meaning provided through participation in the military like "sacrifices are necessary to preserve freedom."

The external meaning supplies the trauma survivor with an avenue for actively processing the experience in a positive way. This process may account for the strong negative correlation that was found between commitment hardiness and PTSD in this study.

Challenge. The individual possessing challenge hardiness gains an enhanced sense of inner strength from negative experiences (Bigbee, 1985; Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). The dimension of challenge is the actualization of active problem solving and positive cognitive appraisal of aversive events. High challenge people are vigilant in confronting and processing traumatic experiences in positive ways that reinforce their ability to cope with these traumas.

In this study challenge was found to have a significant negative correlation with PTSD. However, this correlation was of a much lesser magnitude than the correlation between commitment and PTSD. The limits of this finding may be the product of the limits to which challenge can be employed to manage combat related trauma.

It is possible to imagine traumatic war time events that could be successfully processed as a challenge and bolster a soldier's sense of inner strength. For example, surviving a fire fight could aid soldiers in believing that they have the ability to live through heavy combat.

It is also possible to imagine war time traumas that are simply tragic without any utility in promoting personal growth. For example, a soldier is forced to kill a child. While the solider may be able to process this traumatic material, it is hard to imagine this kind of traumatic event being processed in a positive, strength promoting way.

Challenge hardiness may only support resiliency for certain kinds of combat trauma. So, the magnitude of the relationship between challenge and PTSD could be moderated by the kinds of trauma experienced by study participants. This relationship could be "averaged out" in the statistical analysis or present as nonsignificant in samples with participants who experienced predominantly "challenge resistant" traumas.

Control. In this study the control dimension of hardiness was found to have a nonsignificant correlation with PTSD. This lack of a relationship may have to explained by the absence of problem solving and cognitive appraisal in activating the control dimension of hardiness.

The individual with the control facet of hardiness believes they have the ability to make an event more manageable (Maddi & Kobasa, 1984; Pollock, 1989; Tartasky, 1993; Wagnild & Young, 1991). In this way control hardiness is about taking charge of the present situation, not processing past events. The traumatic experience is never processed or appraised because the individual is focused on controlling the present situation.

In some respects control hardiness is a form of avoidance because a problem solving approach to the combat trauma and the cognitive appraisal of the trauma are never engaged. Take the veteran who is working to control the anger issues that have arisen after returning home. He could learn to control the negative behaviors related to the anger without ever processing the underlying source of the anger. Perhaps this veteran learns to control his anger

through breathing and relaxation techniques, but never processes the ongoing anger he feels related to the combat trauma. In this case, where the soldier attempts to apply control hardiness retrospectively to past combat trauma, the individual might not be able to achieve a sense of control over that trauma.

Bigbee (1985) defined control as the absence of a feeling of powerlessness. Soldiers may experience combat traumas where they are not in control of the situation and they are genuinely powerless. The solider who experienced a combat trauma in a situation where they were out numbered, surrounded, out of ammunition, or cut off from their forces without any reinforcements would reasonably feel a certain amount of powerlessness. When combat trauma occurs under these kinds of conditions, it may be impossible to process this event in a way that gives the individual a sense of control.

For this study, commitment may have emerged as the primary predictor of PTSD because certain cognitive processes promote resiliency to combat trauma. It is also possible that results of this study represent the actual relationship between hardiness and resilience for combat PTSD. It may be that commitment and challenge are the hardiness components that support resiliency for combat PTSD. In the final analysis the results of this study, like any body of research, must be considered in the light of potential limitations.

Findings: Convergence and divergence with past literature. Consistencies between the findings of this study and literature on combat trauma include expected results as well as support for the emergence of commitment and challenge as predictors of combat related PTSD. Inconsistencies between this study and the most relevant study, Sutker et al. (1995), provide a backdrop for assessing both pieces of research. Both the convergence and divergence between

this study and past research have important implications for people working to understand combat PTSD.

In this study, the results for the overall hardiness measure (DRS15) and the combat exposure measure (CES) were expected. Prior research had established the negative correlation between measures of high hardiness on the DRS15 and the presence of combat PTSD (Bartone, 1995). Likewise, the replication of the positive correlation between high scores on the CES and the presence of combat PTSD had already been established (Keane et al., 1989).

Past research on hardiness and combat PTSD indicate a relationship between PTSD and both commitment and challenge. Wilson (1995) provides evidence for commitment hardiness as a resiliency factor, in that the process of meaning making from negative experience was found to be a protective factor for war related PTSD. Similarly, Bartone (1999) found a strong correlation between the perceived levels of meaningful work while deployed on a military operation with positive ratings of that experience.

There is also a body of research that indicates a relationship between challenge hardiness and combat PTSD. Britt, Adler, and Bartone (2001) found an association between resilience and deriving benefits from stressful military operations. Lev-Wiesel and Amir (2006) also reported a positive correlation between finding benefit from war related trauma and overall resilience.

In this study, commitment and challenge hardiness both were found to be predictors of PTSD. Sutker et al. (1995) found a significant relationship between PTSD and both commitment and control. Differences in the sample and methods employed by each study may account for the differing results.

Sutker et al. (1995) reported that their sample consisted “predominantly of men” and that “minorities were over represented” (p.446). They also stated that the members of the sample had

less formal education and officers were under represented. The sample for this study demonstrated a comparatively high level of diversity for gender, race, and ethnicity status. In contrast to Sutker et al.'s research, this study was made up of participants who were mostly officers with a high level of education.

Both studies found commitment to be a significant predictor of combat PTSD. Differing results for challenge and control may have been moderated by demographic factors. For example, challenge may act as a resiliency factor for the college educated officer and for the high school educated enlisted soldier control may act as a resiliency factor.

However, Sutker et al. (1995) did report that demographic factors were statistically eliminated and these factors "did not alter results significantly" (p. 444). Even if demographics fail to account for the differences in results, there is still the issue of the difference in methods.

Sutker et al. (1995) administered their testing during a debriefing for participants who were still attached to the military. For this study participants were contacted through college veteran centers and completed testing batteries online. These vastly different settings and military status may have influenced the hardiness components found to be associated with PTSD.

It is not hard to imagine that the "captive audience" versus the virtually no-contact approach to testing could influence participant responses. The active soldier may have felt pressured to appear more in control to their superiors or the veteran may have wanted to appear better able to meet challenges to the graduate researcher. In addition, prior studies may have been conducted closer in time to the occurrence of the combat trauma.

It is also a reasonable expectation that an active duty soldier and a veteran might utilize different aspects of hardiness. It may be that the PTSD resistant soldier maintains this status by

feeling in control of his environment. It is equally possible that the trauma resistant veteran remains resilient by embracing and living up to the challenges of his new life.

The commonalities and differences between this study and past research underscore the need to assess the limitations of existing research and the need for further research to address these limitations. An examination of the potentially confounding variables for this study provides an outline for some of the research that could advance the understanding of hardiness as resiliency factor for combat PTSD.

General Implications and Application of Findings

The results of this study suggest that a focus on the commitment and challenge dimensions of hardiness has the potential to improve the effectiveness of clinical interventions for combat PTSD and current military resiliency training programs. The design of the military funded Posttraumatic Growth program (Tedeschi & McNally, 2011; Zoellner & Maercker, 2006), discussed below, incorporates the elements of commitment and challenge hardiness in a way that could achieve this objective.

Clinical applications. If commitment and challenge are the hardiness factors that support resiliency to combat PTSD, then it follows that the clinical modalities employed to treat this kind of trauma should be interventions that are consistent with the principles of these factors. This would also posit the assumption that control based interventions would be counter-indicated for the treatment of combat related trauma.

Clinical interventions that incorporate the principles of commitment would have to include meaning making around the trauma. Therapeutic modalities like Narrative Therapy, which aid in developing meaning making may be useful in achieving this goal (Brown & Augusta-Scott, 2006). Successful trauma treatments that work with the trauma narrative aid the

client in developing personal meaning behind the adverse experience (Foa, Molnar, & Cashman, 1995).

Challenge promoting interventions would need to help frame the trauma as a strength building experience. One of the tenets of Existential Therapy is the personal strength that comes from overcoming adversity (Frankl, 1986). The use of Existential Therapy could assist veterans to develop resilience to PTSD by exhuming the inner resources the individual needed to survive the combat trauma or the personal resources that developed in the experience of the trauma.

If the results of this study hold, then interventions that work to strengthen a sense of control might be ineffective in the treatment of combat trauma. In addition to hardiness factors, Sutker et al. (1995) also examined the concept of self-blame in relation to combat trauma. They found veterans who engaged in self-blame were more likely to have PTSD. In this case, a veteran's attempt to gain a sense of control over the combat trauma experience may actually lower resilience to PTSD.

Janoff-Bulman (2004) made use of the concept of self-blame to aid victims of sexual assault to increase their sense of control. Successful treatment guided clients in assessing the trauma experience and determining what was within their power to change. For example, a sexual assault survivor may have felt physically vulnerable during the trauma and, in part, avoid the development of PTSD by developing an inventory of ways they can reduce this sense of vulnerability.

If different components of hardiness are more effective in promoting resiliency to certain kinds of trauma, it would follow that the clinical treatment of each type of trauma should emphasize the components of hardiness most effective in resolving that trauma. A clinical

emphasis on commitment and challenge should further the treatment of combat trauma, while working on control may be detrimental.

Resiliency training. The effective treatment of combat PTSD requires that the veteran process the trauma experience (Cooper & Clum, 1989; Fairbank & Keane, 1982; Johnson et al., 1982; van der Kolk, 1996). A closer examination of the military resiliency program, Program Comprehensive Soldier Fitness program (CSF; Seligman & McBride, 2011), demonstrates how a focus on commitment and challenge hardiness could facilitate the necessary processing of the event.

Failure to process the underlying trauma can be detrimental to individuals with PTSD. According to van der Kolk (1996), avoidance of the negative emotions propelling the trauma may perpetuate the development of PTSD and result in pervasive emotional issues. Avoidance of the aversive affect by PTSD patients has been linked to increased physiological arousal and psychosomatic problems (Litz et al., 1995). Often the avoidant individual with PTSD experiences withdrawal, detachment, and feelings of emptiness (Tichener, 1986).

The processing of traumatic material can aid in recovery from combat PTSD. In work with veterans, a good number of the programs have used interventions with exposure treatments as a foundation for processing the traumatic experience (Cooper & Clum, 1989; Fairbank & Keane, 1982; Foa & Riggs, 1993; Johnson et al., 1982; Resnick & Schicke, 1992; van der Kolk, 1996). Judith Herman's (2001) work with combat PTSD clients includes the processing of traumatic memories and creating meaning around the trauma in the context of the individual's overall life.

Resnick and Schicke (1992) found that therapeutic work involving the reprocessing of the trauma experience to be vital in the recovery from PTSD. The reworking of the memory of a

traumatic experience, through prolonged exposure therapy, has also been found to assist in significant symptom reduction for individuals with PTSD (Foa & Riggs, 1993).

Processing the negative experience may be an essential part of recovery for veterans with combat PTSD. The processing of trauma through exposure therapies are promising treatments for combat PTSD (van der Kolk, 1996). Veterans treated for PTSD with both imaginational flooding (Cooper & Clum, 1989; Fairbank & Keane, 1982) and in vivo flooding (Johnson et al., 1982) showed considerable clinical improvements.

Further research with these programs should reveal a greater success rate with programs that expand the exposure treatments with work that aids in the individual in making meaning from the traumatic experience. Conversely, it would be expected that any of these programs that did not implement work on uncovering meaning could recreate the adverse experience and run into issues like retraumatization and intervention failure.

Herman (2001) has designed a therapeutic program for combat PTSD that separates interventions into three stages of recovery. In the first stage of therapeutic work, the individual is guided in establishing safety. The clinician and client work on building therapeutic rapport, stability, and self-regulation skills in order to reduce the chance of retraumatization. There is also work on identifying and developing inner strengths that mirror elements of challenge hardiness.

In the second stage, the remembrance and mourning phase, clients begin to rework the traumatic material in order to create new meaning around that experience. Therapeutic work focused on meaning is consistent with the commitment dimension of hardiness. Once a sense of safety and strength are developed, the reworking of the trauma aids the individual through a revision of the experience in the context of their life and sense of identity. Processing based in meaning making allows for work with commitment through the creation of a new worldview and

understanding of self. This kind of therapeutic intervention also allows for the application of challenge hardiness in that the experience can be transmuted into a source of personal strength.

The need for processing the negative features of a trauma presents a problem for the CSF because it is based on the principles of Positive Psychology (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009), which emphasize the development and focus on positive experiences (Seligman, 2011) and is based on the concept of control (Raps, Reinhard, & Seligman, 1980). Therapeutic work in the field of Positive Psychology enhances the development of positive experience (Seligman, 2011). This kind of clinical focus eschews the processing of the negative aspects of an experience in favor of work to promote positive cognitions. For example, Positive Psychology often includes daily gratitude exercises which entail reflection on the positive events of the day. While a focus on positives may be helpful in some ways, the neglect of processing negative affect may be detrimental to recovery from PTSD (van der Kolk, 1996).

Military resiliency programs often incorporate Positive Psychology, and are highly focused on the development of a positive perspective and issues of control in assigning therapeutic interventions. Thus, military resiliency programs like the CSF are driven by principles that could interfere with the processing of the combat related trauma and hamper the recovery from PTSD by neglecting the essential therapeutic activities that can promote meaning making and the development of inner strengths related to the trauma. Specifically, the promotion of the concept control is a focus of the CSF program (Seligman & McBride, 2011). Each participant is instructed in interventions designed to aid them in increasing self-efficacy, self-regulation, and impulse control. While these are critical therapeutic activities it is important to note that these interventions are focused on managing present behaviors and not processing past trauma. It would be expected that the failure to process the trauma would result in failure to

aid in the recovery from combat PTSD. A possible solution could be a shift to an emphasis on clinical interventions, already present in the programs that work to support commitment and challenge hardiness, while providing a forum for processing the negative experiences attached to the trauma.

A closer look at the primary military resiliency program, the CSF (Seligman & McBride, 2011), demonstrates how a clinical concentration on commitment and challenge hardiness could present a forum for the requisite processing of the trauma. The CSF contains elements of both commitment and challenge in that work with soldiers strives to aid them to "derive meaning and personal growth from their combat experience" (Cornum, Matthews, Seligman, 2011, p. 6).

The hardiness dimension commitment and the processing of combat trauma are integral parts of the CSF. Soldiers are guided in building foundation resiliency skills including the development of a sense of meaning for combat experiences (Master & Reed, 2002). For example, veterans receive support in the constructive self-disclosure and meaning making around the loss of fellow soldiers (Klass, Silverman, & Nickman, 1996). Working with the commitment dimension of hardiness provides an avenue for processing the negative features of the traumatic loss of comrades through the creation of meaning around this experience and should foster recovery from combat PTSD.

The processing of combat trauma through interventions consistent with the principles of challenge hardiness is also an essential component of the CSF. In treatment soldiers are encouraged to learn ways to "persist in the face of challenges and to bounce back from adversity" (Seligman & McBride, 2011, p. 25). For example, veterans are guided through the processing of combat trauma with a focus on coming to see the experience as a source of

strength and change (Tedeschi & Calhoun, 2006). It is expected that clinical work with the commitment dimension of hardiness would also foster recovery from combat PTSD through the processing of the traumatic event and building a sense of inner strength relative to the trauma.

Posttraumatic Growth program. The Posttraumatic Growth program is also designed to incorporate elements of commitment and challenge hardiness in a way that may assist veterans in processing the PTSD-related negative emotions through meaning making and building inner strength. This program, like the CSF, would be improved through a shift in emphasis to activities that work with commitment and challenge in a way that enables the veteran to process the negative features of the trauma.

The Posttraumatic Growth Program contains work with commitment in that it was designed to promote meaning making and to support change through the processing of the combat experience (Zoellner & Maercker, 2006). The Posttraumatic Growth Program contains elements of challenge hardiness through an emphasis on "strength through suffering, existential reevaluation, and psychological preparedness" (Tedeschi & McNally, 2011, p. 19).

The Posttraumatic Growth program is designed to actualize these hardiness principles, in a manner that has the potential to aid veterans in the processing of the negative PTSD related emotions, through the use of specific exercises. For example, the Posttraumatic Growth program includes exercises which concentrate on making meaning (i.e., commitment) of traumatic combat experiences and facilitate the processing negative emotions connected to that experience. Veterans will be directed in constructive self-disclosure exercises that focus on the connection the veteran had with their fallen comrades (Klass et al., 1996). In the disclosure of their combat experience the veteran is guided in developing a personal sense of meaning around the loss of

their fellow soldiers through the elaboration and processing of the negative emotions behind the traumatic experience.

Limitations of Study

This study presented some limitations inherent to the use a correlational design and limits based on the extent to which the construct of hardiness was represented in this research. There are also some limitations specific to this study which became evident upon the completion of the study.

Correlational research. As with all correlational research, the direction of causation among variables cannot be determined and it is not possible to conclude that hardiness causes lower levels of PTSD. The possibility that the results are due to reverse causation or moderated by a third variable must be considered (Pearl, 2000). Further research is needed to evaluate whether interventions that increase commitment and challenge hardiness are effective in reducing the severity of PTSD.

Crucial factors in the study of trauma. There are multiple factors to account for in any research of trauma. Inevitably, there are factors that are beyond the scope of any study. For this study the level of prior sensitization of participants was unknown. In the study of trauma, sensitization refers to vulnerability to PTSD due to prior mental health history (Lee, Vaillant, Torry, & Elder, 1996).

The available research on sensitization demonstrates that a prior PTSD diagnosis increases susceptibility to PTSD after exposure to a new trauma (Lee et al., 1996). In a 50-year prospective study of War World II veterans, there was a sensitization effect when the soldier had a prior PTSD diagnosis. These results were also observed in Vietnam veterans (Bremner, Southwick, Johnson, Yehuda, & Charney, 1993; Breslau, Chilcoat, Kessler, & Davis, 1999).

The mental health history of participants prior to their combat experience was not information that was assessed in this study. Future research might this background information.

Hardiness as a construct. The definition of hardiness as a construct has sometimes been expanded to include behaviors that support physical health (Rhodewalt & Zone, 1989) and maintenance of interpersonal relationships (Low, 1996). Early hardiness researchers asserted that hardiness was a predictor of future health (Kobasa et al., 1981; Kobasa et al., 1982). Bigbee (1985) presented research to support the idea that hardiness was a health promoting factor.

Some researchers have further operationalized the construct of hardiness as the tendency to engage social supports actively (Huang, 1995; Kobasa et al., 1982; Tartasky, 1993; Wagnild & Young, 1991; Weissberg et al., 1989). King et al. (1985) conducted a large scale and comprehensive study of Vietnam veterans which suggested that hardiness assisted in establishing relationships for resilient individuals. Wheeler and Frank (1988) had gone so far as to advocate that the definition of hardiness be limited to locus of control and level of social support.

This study is consistent with the interpretations of hardiness as captured by the DRS15 (Bartone, 1995). The DRS15 does not contain any items that measure health promoting habits or directly assess the quality of personal relationships. Any possible interpretation of the results of this research should be limited to the construct of hardiness as used in developing the DRS15.

Limitations specific to this study. The interpretation of the findings of this study requires the examination of the potential limitations in the overall design and make up of the sample. Possible limitations in design include the methods and limited standardization in the administration of the measures. Limitations related to the study sample involve the level of combat exposure and PTSD revealed in the results as well as the limits that were deliberately imposed in the recruitment of participants. In the administration of measures, tests were not

randomized and relied upon self-report. The lack of randomization may have prejudiced how participants responded. The issue with self-report is that there is always some question in the accuracy of reporting (Anastasi & Urbina, 1997).

In the present study, participants were given information on the study and allowed to complete the survey on their own. Hence, there were limits in the standardization of the administration of the measures. The results of this study could have been influenced by the lack of standardization in things like setting and completion time.

Some of the limitations in the sample were demonstrated in the results of the study and others were imposed upon study pool prior to the recruitment of participants. The participants in the sample trended toward the lighter end of the combat exposure scale and demonstrated some skew toward the less severe end of the PTSD measure. This trend may have had some impact on the results in general. It is important to note that statistical analysis revealed that these tendencies in the sample had only a marginal impact on the data and did not invalidate the results.

There may have been some limitations in the sample, in that only veterans of IOF and EOF were allowed to participate and all of these participants were recruited through college veteran centers. This study was concerned with IOF and EOF veterans and the results may or may not generalize to veterans of other wars. Further, there was no differentiation between IOF and EOF veterans in the analysis of the data. This latter issue may have resulted in some limitations in the data analysis given the much higher rates of combat exposure for EOF veterans (Hoge et al., 2004).

Participants were recruited through college veteran centers. Thus, this was not a random sample of OIF and OEF veterans, and it is important to interpret the results of this study cautiously. Recruiting through college veteran centers meant that most participants had at least

some college education. In addition, college students and others with higher education may have more resources than others in the general population. More education and access to other resources may have resulted in relatively low PTSD scores when compared to other veterans. For example, Breslau and Davis (1992) established link between resiliency for PTSD and education.

The possible pool of participants was also limited by the centers that agreed to participate. It is important to note that at least one program in all of the 50 states was solicited for participants and all five of the branches of military service are represented in this study.

Future Directions and Research

Possible research areas to advance the study of hardiness and trauma include the use of a range of experimental designs, experimentation with additional dimensions of the construct of hardiness, and the exploration of the relationship between hardiness and different types of trauma. Further research to extend the findings of this study and research based on the clinical implications of this study are also suggested below.

Experimental design. Additional experimental designs that could advance the understanding of hardiness and trauma include time-lagged correlational studies, experimental designs that manipulate the components of hardiness, and hardiness based outcome studies. Time-lagged correlational studies could aid in understanding the relationship between hardiness and PTSD over time. It would allow for the collection of essential information like pre- and post-combat measures of hardiness. It could also address some of the confounding variables inherent in trauma research. For example, the issue of sensitization could be managed through the collection of information on mental health history prior to combat exposure.

Research that seeks to manipulate a subject's experience of the different dimensions of hardiness may provide additional insight into the nature of resiliency. Testing an individual's

level of resiliency before and after exposing them to material that bolsters their sense of commitment, challenge, or control could clarify the relationship between resilience and these variables.

Outcome studies that enlist participants in different treatment modalities could also provide insight into the relationship between hardiness and resiliency. Participants would receive treatments aimed at promoting the different dimensions of hardiness to see if these resulted in different levels of resilience for PTSD.

The construct of hardiness. Studies that seek to incorporate health related behaviors and the engagement of social supports into the construct of hardiness are inconsistent. One researcher working with hardiness found there was no effect on health related behaviors (Hannah, 1988). Later research found evidence that hardiness activated cognitive processes that reduce stress, thereby enhancing health (Manning, Williams, & Wolfe, 1998).

The experimental support for relational factors as a part of the concept of hardiness is also inconsistent. At least one group of researchers found a lack of connection between hardiness and social engagement (Hull et al., 1987). Other research teams found a strong connection between social resources, hardiness, and resilience for combat trauma. Resilient veterans reported placing a higher value on relationships with family and friends after experiencing combat trauma (Bonanno et al., 2007).

Further research on the interactions between hardiness, health, social participation, and resilience could help to clarify the interaction of these variables. Empirical studies that take pre- and post-measures of health and social behaviors after hardiness based interventions is one way to pursue this goal.

Hardiness and different types of trauma. Research on hardiness and different types of trauma could further the understanding of resiliency for these traumas. One area yet to be investigated is the complex interactions of sexual victimization and combat trauma. The need for research in this area becomes apparent given the increasing number of reports of sexual assault while in the military (Cronk, 2013).

Gender differences, hardiness, and resilience for combat PTSD is a much needed area for future research. The need for this kind of research is especially urgent given the increases in reports of sexual assaults by female soldiers while in the military (Cronk, 2013). Future research should also look at issues like sensitization from prior trauma and vulnerability to the development of PTSD as well as the impact of multiple, concurrent traumas.

Further research on gender, hardiness, and resilience for combat PTSD is also needed because of the possible gender based differences in resiliency (Breslau & Davis, 1992). Dobie et al. (2004) found that female veterans are more likely than male veterans to develop combat PTSD. There is also a body of research that suggests that hardiness may function differently in men and women (Funk, 1992; Jennings & Staggers, 1994; Williams et al., 1992). This study did contain female participants. However, the targeted assessment of these participants was beyond the scope of this study and the need to create research on hardiness and gender will require further study.

Childhood sexual abuse, grief and loss, vehicular trauma, and physical assault are among the many traumatic experiences that could be alleviated through a better understanding of how hardiness may influence resiliency for these traumas. Each kind of trauma represents a unique set of personal hardships and possibly relationship to the development of PTSD. Like the combat survivor, the dimensions of hardiness that promote resilience to PTSD may be different for

different types of trauma. Finding the factors of hardiness which promote resiliency would help in determining the most efficacious area to focus resources used in treating combat PTSD.

Another of area of potentially useful research would involve determining whether hardiness is most efficacious before or after a trauma. This is important in determining hardiness interventions are more effective as prevention of the treatment of combat PTSD.

Further research to extend findings of this study. Additional studies that utilize alternative designs and expanded samples may support the findings of this study. Some possible alterations in design include how the measures are presented and the gathering of information from collateral sources. Randomization of the presentation of measures and standardization of conditions could assist in clarifying the unresolved questions concerning hardiness and resilience. In regard to standardization, increased control of conditions could be achieved through things like group administration in the same setting with a set time limit.

The additional clarification of the role of hardiness in the development of PTSD may also be advanced by research that gathers information from various sources. Collateral sources of information like family members, service records, or clinical notes could provide additional insight into participant use of hardiness components and manifestation of PTSD symptoms.

Expanding the diversity in samples used to investigate hardiness would necessitate outreach to populations that have had a wider variety of experience and background. It will be important for future researchers to recruit participants with a range of combat exposure and exhibiting more variation in PTSD symptoms. It would also be important to go beyond recruiting subjects who are connected to educational centers and finding a way to connect with participants not connected with veteran resources.

Increasing the diversity of research samples would also require recruitment from other populations subject to combat trauma. In addition to a reexamination of IOF and EOF veterans, it would be informative to conduct hardiness research with veterans of other wars. Likewise, research with different populations susceptible to combat trauma should advance our understanding of combat PTSD. Some of these combat exposed populations include active service people who are being redeployed, civilians in combat zones including children, and child soldiers.

Future research based on the clinical implications of this study. The research implications of this study also present a number of empirical issues which have to be addressed. The primary issue is the need to determine the clinical impact of the dimensions of hardiness. Future prevention and intervention research should test the effect of working with clients on each of the three different dimensions of hardiness. Alternating treatments that promote commitment, control, or challenge could create a better picture of which dimensions are the most effective in aiding in recovery from PTSD.

The outcome of these kinds of studies should be used to shape the clinical work that is done with PTSD clients. Based on the finding that commitment was significantly related to resiliency for combat PTSD, clinicians should focus on meaning making by using interventions which guide the client creating deeper, personal understanding of the experience. In addition, given the relationship of challenge to resiliency for combat PTSD, clinicians should focus on developing the client's inner resources through interventions that help the veteran come to understand their combat experience as source of personal strength.

Although control hardiness was not significant in this study, findings of other studies imply that stabilizing the client's condition should not be ignored, clinicians might work on

assisting the client with therapeutic tasks like emotional regulation, any substance abuse issues, and anger management. By focusing on meaning making and building inner strength with a clinical foundation that stabilizes the client, the clinician should have greater success in promoting recovery form combat PTSD.

Conclusion

Over a hundred years of research has underscored the essential function of meaning making in the recovery from trauma. Janet (1889) found that the treatment of trauma requires an integration of the experience into the patient's personality. This integration of trauma involves the creation of a new understanding of the experience. This generation of new meaning has been found to be integral in the treatment of childhood sexual abuse (Herman, 2001), complex PTSD (Brown & Fromm, 1986), and Dissociative Identity Disorder (Putnam, 1989). Meaning making is also linked to the recovery from the pathology generated from combat exposure (Scurfield, 1985).

For the next hundred years, some of the veterans coming home today may require treatment (Lee et al., 1996). OIF and OEF veterans will need more effective screening methods and clinical treatments for PTSD. Veterans of future wars will benefit from these kinds of advancements as well as improved resiliency training prior to deployment. The creation of research into the dimensions of hardiness and resiliency will aid in these pursuits.

Further empirical exploration into the dimensions of hardiness may improve and expand prior hardiness research in a multitude of clinical areas. This includes the potential for hardiness to be a moderator of feelings of shame related to childhood sexual abuse (Fienauer, Hilton & Callahan, 2010). Research on the dimensions of hardiness could also enhance the work of past studies which found a connection between improved coping in parents with intellectually

disabled children (Hassall & Rose, 2005), resilience to stressors for adolescents in urban environments (Lockwood, 2006), and hardiness as a factor that supports successful aging in HIV patients (Vance, Struzick, Masten, 2008). Additional work on the dimensions of hardiness could also expand research that has found a link between hardiness and coping with the stressors of discrimination (Dion, Dion, & Pak, 1992).

The dimensions of hardiness may also be useful in selecting candidates for academic programs. For example, Mintz-Binder (2014) has found a link between hardiness and the challenges of succeeding in a nursing program. Exploring the potential influence of the different parameters of hardiness could improve academic and job screening devices and may provide an opportunity to create training programs that bolster the areas where candidates may be lacking.

Another exciting area where work on hardiness could be improved and expanded are studies that have investigated ways to maximize personal potential. Shifting the emphasis to commitment and challenge could enhance work that has found a relationship between hardiness, increased interpersonal performance, and stress reduction (Funk, 1992). It is possible that an examination of the dimensions of hardiness may lead to ways to aid in emotional regulation and the regulation of circadian rhythms (Rossi, 1991). A focus on certain facets of hardiness may even advance work which found a correlation between hardiness and maintaining a sense of "spiritual well being" when ill (Carson & Green, 1992).

Understanding the role of hardiness in resiliency for combat PTSD may one day provide a means for helping to heal combat veterans or even prevent the development of PTSD. The ability to employ commitment hardiness, to make meaning from a traumatic combat experience, is central to this recovery process. The study of hardiness and the dimension of hardiness have potential for a wide range of clinical and nonclinical applications.

Future research into commitment hardiness and resilience has both military and civilian applications that may assist in moving beyond the recovery from trauma. In processing the negative memories of trauma, the individual can recover from the pathology of PTSD. In giving these memories meaning, the individual can transcend pathology, and achieve their maximum potential.

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Appendix A

Demographic Coding

1. Age.

Please enter a whole number (Not date of birth).

2. Gender

1 - Male

2- Female

3. Ethnicity

1- Hispanic or Latino

2- Not Hispanic or Latino

4. Race?

1 - American Indian or Alaska Native

2- Asian

3- Black or African American

4- Native Hawaiian or Other Pacific Islander

5 – White

5. Marital Status. What is your marital status?

1- Now married

2 - Widowed

3- Divorced

4- Separated

5 -Never married

6. What is the highest level of education you have completed?

1- No schooling completed

2- Nursery school to 8th grade

3 - 9th, 10th or 11th grade

4- 12th grade, no diploma

5- High school graduate - high school diploma or the equivalent (for example: GED)

6 -Some college credit, but less than 1 year

7 - 1 or more years of college, no degree

8- Associate degree (for example: AA, AS)

9 - Bachelor's degree (for example: BA, AB, BS)

10- Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)

11- Professional degree (for example: MD, DDS, DVM, LLB, JD)

12- Doctorate degree (for example: PhD, EdD)

7. Employment Status. Are you currently...?

1- Employed for wages

2- Self-employed

3 - Out of work and looking for work

4- Out of work but not currently looking for work

5- A homemaker

6- A student

7- Retired

8 -Unable to work

8. Are you still in the military?

1- Yes

2- No

9. Rank

10. Years of service

Please enter a whole number.

11. Military branch Army

1 – Army

2- Air Force

3- Navy

4 - Marine Corps

5 - Coast Guard

12. Number of deployments

Please enter a whole number.

13. Time since last deployment?

1 - Less than 6 months.

2- More than 6 months.

3- Less than 1 year.

4- More than 1 year.

Appendix B

ANTIOCH UNIVERSITY NEW ENGLAND

DEPARTMENT OF CLINICAL PSYCHOLOGY

CONSENT FORM

Combat Research Study

My name is Warren Avery, and I am a doctoral student in psychology at Antioch University New England. As part of my studies, I am conducting a research project to better understand why some people get PTSD, and others don't. You are being invited to participate in this project because you are a veteran of Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) and have been relieved from active duty for at least 6 months. You do not have to have PTSD to participate.

What you are being asked to do.
If you choose to participate in this project, you will complete an on-line survey that others have completed in about 15 minutes. The survey includes about 45 multiple choice questions, in the following sections:

- a few questions about yourself and your military service (we will not ask for any information that would identify you).
- 7 questions about your military combat experience.
- 18 questions about whether and how much you experience symptoms of PTSD (Post – Traumatic Stress).
- 15 questions about your general outlook on life and coping with stress.

Risks of participating in this study.
Thinking about their military experience makes some veterans uncomfortable, and it's possible that this could happen to you. Sometimes this discomfort can rise to the level of really disturbing memories, like flashbacks. If you are worried about this happening to you, you can decide not to participate in this study. If you begin to participate in this study, and you become uncomfortable, you can just stop the survey at any time. If you feel you are in crisis we encourage you to call 211 and request the number for your local Emergency Services in order to obtain assistance.

Intended Benefits of this study.
The results of the survey have the potential to improve the way in which military personnel are screened and treated for PTSD. In addition, anyone who begins the survey – whether or not they answer all of the questions – will be invited to enter a lottery for a $100 Amazon gift card. The odds of winning are 1 in 150 or better depending on participation (it is expected that it will be

less than 1 in 100). Instructions for entering the lottery will be provided at the end of the on-line survey.

Your privacy will be protected.
Because this is an on-line survey, there will be no way for me to know who participated in the survey, and there will be no identifying information attached to your survey responses. My reports about this research will focus on trends from all participants, not on individual responses.

Your participation is completely voluntary.
You can choose to stop filling out the survey at any time, and doing that will not impact any treatment you are receiving or your involvement in veterans' activities or benefits. Even if you don't complete the survey, you may still enter the gift card lottery by clicking on the link at the end of the survey.
If you do fill out the survey, you may leave any question blank, but please answer as many questions as you can.

If you have any questions about the study, you may contact
Warren J. Avery, MA, MS (wavery@antioch.edu).

If you have any questions about your rights as a research participant, you may contact Katherine Clarke, Chair of the Antioch University New England Institutional Review Board, (kclarke@antioch.edu; 603–283-2162).

Appendix C

INSTRUCTION SHEET: COMBAT RESEARCH STUDY

Introduction

I am a doctoral student in psychology at Antioch University New England. As part of my studies, I am conducting a research project to better understand why some people get PTSD, and others don't. You are being asked to help recruit participants.

Participants

This survey is open to veterans of Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF), who have been relieved from active duty for at least 6 months.
Participants do not have to have PTSD to participate.

Requirements

I am asking that you provide OIF and OEF veterans with either a print out of the attached flyer, an email with the flyer attached, or printing the flyer and posting it in a common area. The flyer provides participants with information to logon to the survey.

When participants logon to the website for the survey, they will be provided with a consent form, a more detailed description of the study, and instructions on participating in the survey (Please see all three documents which are attached to this email).

Benefits

The results of the survey have the potential to improve the way in which military personnel are screened and treated for PTSD. In addition, participants are eligible to enter a lottery for a $100 gift card.

Contact Information

If you have any questions about the study, you may contact
Warren J. Avery, MA, MS (wavery@antioch.edu).