

An Examination of a Two-Factor Model of Rumination and its Impact on the
Relationship between Posttraumatic Growth and Posttraumatic Stress Disorder (PTSD)

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By

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ABSTRACT

AN EXAMINATION OF A TWO-FACTOR MODEL OF RUMINATION AND ITS IMPACT ON THE RELATIONSHIP BETWEEN POSTTRAUMATIC GROWTH AND POSTTRAUMATIC STRESS DISORDER (PTSD)

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Research indicates that over half the US population will experience a trauma at some point during their lifetime (Kessler et al., 1995). Following traumatic events, individuals frequently experience a range of intrusion, avoidance, and arousal symptoms that fall on a continuum and can occur with such frequency and intensity that they meet the criteria for Posttraumatic Stress Disorder (PTSD; American Psychiatric Association, 2001). However, though many people experience traumas, only a small percentage develop PTSD. Research shows that many trauma survivors actually report benefit finding, or posttraumatic growth, after trauma. Currently, there is no clear understanding of the relationship between PTSD symptoms and posttraumatic growth. The current study hypothesized that two very different types of cognitive processing - reflection and brooding - would moderate the relationship between PTSD symptoms and posttraumatic growth, with reflection strengthening the relationship (making it more positive), and

brooding weakening the relationship. 270 University undergraduate students completed self-report questionnaires asking about their trauma history, PTSD symptoms, their use of reflection and brooding, and their perceptions of posttraumatic growth. Although reflection and brooding both moderated the relationship between PTSD symptoms and posttraumatic growth, both had the same antagonistic effects, switching the relationship between PTSD symptoms and posttraumatic growth from positive to negative. The current study concludes that: 1) Future studies should investigate the role of third variables in attempting to understand the relationship between PTSD symptoms and posttraumatic growth; 2) Cognitive processing variables appear to be excellent sources of information in this relationship; 3) Brooding and reflection may represent one way to investigate distinctions between adaptive and maladaptive forms of cognitive processing after trauma, if measurement tools are improved.

INTRODUCTION

“Why should we think upon things that are lovely? Because thinking determines life. It is a common habit to blame life upon the environment. Environment modifies life but does not govern life. The soul is stronger than its surroundings.” ~William James

In this passage James emphasizes the importance of thoughts and of the individual’s ability to rise above his or her circumstances. Though his words are relevant to many subjects, one area where it may be most apparent that the “soul is stronger than its surroundings” is recovery from trauma. *Traumatic events* are defined by the DSM-IV as experiences which involve actual or threatened death or serious injury or threat to one’s physical integrity; or witnessing an event that involves death, injury or threat to physical integrity; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or close associate, where the response involves intense fear, helplessness, or horror (American Psychiatric Association, 2001). Following traumatic events, individuals frequently experience a range of intrusion, avoidance, and arousal symptoms that fall on a continuum and can occur with such frequency and intensity that they meet the criteria for Posttraumatic Stress Disorder (PTSD; American Psychiatric Association, 2001).

Since its inception in the DSM-III in 1980, a debate over the diagnostic validity of PTSD as a DSM disorder has raged on. A recent review by Rosen and Lilienfeld (2008)

meticulously documents the problems present in the current diagnostic criteria of the PTSD construct. Their main concern lies in the unique fact that a PTSD diagnosis is based on the assumption that a particular event has occurred, with this experience being necessary for the diagnosis to be present. They review in detail the various forms of evidence of a PTSD diagnosis, particularly neurological evidence, and conclude that none of this evidence is compelling enough to support the existence of a distinct PTSD diagnosis.

Though important, Rosen and Lilenfield's criticisms do not discount the utility of examining PTSD symptoms as lying on a continuum. Accordingly, the present study examines PTSD not as a categorical diagnosis but rather as a set of symptoms representing common reactions to a trauma, which exist on a continuum and differ depending on environmental and individual characteristics. Research suggests that PTSD is better characterized as a dimensional construct rather than a categorical one (Ruscio, Ruscio, & Keane, 2002), and that evaluation of symptoms on a continuum may yield higher reliabilities and reflect the complete spectrum of a disorder (Brown, DiNardo, Lehman, & Campbell, 2001). Despite their criticism of the PTSD diagnosis, Rosen and Lilenfield as well as other longtime critics (Breslau & Davis, 1987) go to great pains to acknowledge that though the validity of the diagnostic category of PTSD as a DSM diagnosis may be questionable, the suffering of survivors of traumatic experiences is not. It is not only this suffering but also the ability of trauma survivors to rise above such suffering, which constitutes the focus of the current investigation.

Traumatic events are common experiences. In a national study of almost 6,000 individuals in the United States, approximately 61% of men and 51% of women reported experiencing at least one traumatic event during their lives, with traumatic events defined according to the DSM definition (Kessler, Sonnega, Bromet, Hughes and Nelson, 1995). Among college students, trauma is equally if not more common, with prevalence rates of traumatic events in the 70-90% range (Bernat, Ronfeldt, & Calhoun, 1998; Vrana & Lauterback, 1994). Vrana and Lauterback (1994) found that 84% of college students reported experiencing at least one traumatic event during their lives, and over one third experienced four or more lifetime traumatic events. In a study of 664 undergraduates Bernat et al. (1998) found that the most common traumatic experiences were natural disaster (35%), serious accidents (31%), witnessing serious injury or death (22%) and sexual assault (21%). In a more recent study Kubaney, Hanes, Leisen, Owens, Kaplan, & Watson (2000) found very similar reports of traumatic exposure in college students. In these studies as well, traumatic events were defined according to the DSM definition. Clearly, traumatic events are an alarmingly common experience for the general population as well as for college students.

However, despite these high prevalence rates, the estimated lifetime occurrence of PTSD in the United States ranges from 1 to 14%, with most estimates in the 6 to 9% range (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). Such estimates appear to hold for college samples as well (12%; Bernat et al., 1998). Studies on survivors of many traumas including prisoners of war and Holocaust survivors have found that survivors adjusted well and showed few differences between non-traumatized

control groups (Nice, Garland, Hilton, Baggett, & Mitchell, 1996; Shmotkin, Blumstein, & Modan, 2003). These figures indicate that despite broad trauma exposure, most people do not develop PTSD. Yet much of previous research has focused solely on the negative consequences of trauma, attempting to understand trauma recovery from a deficit-oriented model (Zoellner & Maercker, 2006).

More recently, researchers have moved away from an exclusive focus on these negative consequences toward a more comprehensive understanding of posttrauma reactions that includes both positive and negative outcomes (Helgeson, Reynolds, & Tomich, 2006). They suggest that it is not possible to fully understand recovery from trauma without an awareness that for some people this involves positive as well as negative changes (Joseph & Linley, 2008a). In line with such trends, the focus of the current investigation is on the potential for traumatic experiences to result in both positive and negative changes simultaneously in an individual's life. Thus, the present study sought a more comprehensive understanding of trauma recovery and examined not only benefits and costs of trauma exposure, but asked how the negative results of trauma such as PTSD symptoms may relate to reported benefits.

Posttraumatic Growth

One relatively new area of investigation focused on the benefits reported after trauma is *posttraumatic growth*, which is defined as the experience of positive changes that occur as a result of the struggle with a traumatic event (Tedeschi & Calhoun, 1996). The concept that something good can emerge from the struggle with something very difficult is ancient. However, it is only in the last 25 years that this phenomenon has

been the focus of systematic theorizing and empirical investigation (Affleck & Tennen, 1996; Cella & Tross, 1986; Tedeschi & Calhoun, 1996; Tedeschi, Calhoun, & Cann, 2007;). In defining posttraumatic growth, Tedeschi and Calhoun (1996) compare the trauma to an earthquake that shakes up a person's cognitive structures – their previously held beliefs and assumptions. The trauma must be “seismic” in nature, in order for it to cause survivors to question previous assumptions and therefore set into motion a rebuilding or restructuring of their lives. Growth, then, means that the individual has not only survived, but has experienced changes that they consider important and that go beyond the previous status quo (Tedeschi & Calhoun, 2004).

Tedeschi and Calhoun (1996) describe posttraumatic growth as consisting of five factors that represent the domains of life where growth manifests itself: greater appreciation of life and a changed sense of priorities; warmer, more intimate relationships; a greater sense of personal strength; recognition of new possibilities or paths for one's life; and spiritual development (Calhoun & Tedeschi, 1998). Present in all experiences of posttraumatic growth is a paradox: that out of loss there is gain (Tedeschi & Calhoun, 2004). The emphasis is on the presence of distress in combination with growth, an awareness of current challenges and losses resulting from the trauma along with newfound feelings of personal strength. This theorized relationship of posttraumatic growth to distress is key to the current investigation.

The research on posttraumatic growth is limited and much remains to be learned about how posttraumatic growth is best conceptualized (for example, is it an outcome, an attempt at coping, or a change process) and how it relates to other variables of interest

(Butler, 2007; Zoellner & Maercker, 2006). It is possible that “posttraumatic growth” is actually a variety of constructs, some of which have to do with coping processes, some of which represent a positive outcome, and others of which have to do with illusory self-enhancement strategies enacted by trauma survivors in order to alleviate distress (Helgeson et al., 2006; McFarland & Alvaro, 2000; Zoellner & Maercker, 2006). Utilization of the term “growth” itself presents a semantic difficulty in that it suggests that a change process is being studied. Though not conceptualized in this way here, it is possible that alternative types of growth as change processes do exist.

Tedeschi and Calhoun (2004) have recently refined their theory of posttraumatic growth, specifying that they conceptualize posttraumatic growth as an *outcome* of a traumatic experience. Following their lead, posttraumatic growth was studied here as an outcome, similar to other indicators of adjustment or well-being. Research supports the conceptualization of posttraumatic growth as a stable, valid outcome of traumatic experiences. For example, self-reports of growth have been corroborated against significant others’ reports of growth in their trauma-surviving partner (Park, Cohen, & Murch, 1996; Shakespeare-Finch, & Enders, 2008; Weiss, 2002) and actual physiological changes (Milam, 2004; Rabe, Zoellner, Maercker, & Karl, 2006). Reliability data suggest that posttraumatic growth has good reliability over two ($r = .71$) and four ($r = .81$) month intervals (Snape, 1997; Tedeschi & Calhoun, 1996).

Posttraumatic growth as an outcome of traumatic experiences appears to be common. A growing body of research suggests that the majority of people who have experienced a trauma also experience positive outcomes in response to the trauma

(Frazier & Kaler, 2006). For example, over 80% of women with cancer (Collins, Taylor, & Skokan, 1990; Fromm, Andrykowski & Hunt, 1996; Sears, Stanton, & Danoff-Burg, 2003) and HIV-AIDS (Siegel & Schrimshaw, 2003) reported at least one positive outcome resulting from their illness. Growth is experienced by survivors of a broad range of traumas, including death of a loved one (Davis, Nolen-Hoeksema & Larson., 1998), disasters (McMillen, Smith & Fisher, 1997) and sexual assault (Frazier, Conlon, & Glaser, 2001). Yet not all trauma survivors report posttraumatic growth. One potential way of understanding differences between those who are more likely to report growth and those who are not, is by understanding the relationship between PTSD symptoms and posttraumatic growth.

The Relationship between PTSD Symptoms and Posttraumatic Growth

Though one might assume that because posttraumatic growth is a positive outcome of a trauma it would be negatively related to PTSD symptoms, theories of posttraumatic growth suggest the opposite. Calhoun and Tedeschi (1998) suggest that precisely because the fundamental assumptions that have provided structure and meaning to life have been violated, and because it is the same trauma that sets in motion both PTSD and posttraumatic growth reactions, PTSD symptoms and posttraumatic growth often coexist in trauma survivors. However, though numerous studies have examined the relationship between PTSD symptoms and posttraumatic growth, findings have varied considerably, and no firm conclusions exist.

Several researchers have found that after trauma, those experiencing more PTSD symptoms also experience more posttraumatic growth, as defined by scores on the

Posttraumatic Growth Inventory (PTGI), Stress Related Growth Scale (SRGS) or other indicators of benefit finding after trauma (McMillin et al., 1997; Park, Aldwin, Fenster, & Snyder, 2008; Park et al., 1996; Schorr & Roemer, 2002; Shiri, Wexler, Alkalay, Meiner, & Kreitler, 2008; Snape, 1997). Other studies have found the opposite: that people experiencing more PTSD symptoms experience less growth (Aldwin, Levenson, & Spiro, 1994; Frazier et al., 2001; Ickovics, Meade, Kershaw, Milam, Lewis & Ethier, 2006). Some studies detect no relationship between posttraumatic growth and PTSD symptoms (Cordova, Cunningham, Carlson, 2001; Powell, Rosner, Butollo, Tedeschi & Calhoun, 2003). Finally, some researchers suggest that a curvilinear relationship may best explain how PTSD symptoms and posttraumatic growth relate, suggesting that some distress may be necessary for growth to occur, but high levels of PTSD symptoms make growth impossible (Butler., 2007; Lechner, Carver, Antoni, Weaver, & Phillips, 2006).

Recent meta-analyses have found no consistent relationship between PTSD symptoms and posttraumatic growth (Helgeson et al., 2006; Linley & Joseph, 2004; Stanton, Bower & Low, 2006; Zoellner & Maercker, 2006). In one of these analyses, Helgeson et al. (2006) found that people experiencing posttraumatic growth also experienced more positive affect and fewer depression symptoms than those not experiencing growth. However, those experiencing posttraumatic growth also indicated experiencing more intrusive and avoidant thoughts, which constitute the core symptoms of PTSD. Perceived posttraumatic growth also was unrelated to global indices of anxiety, distress, and quality of life. Thus, the empirical evidence for the relationship

between PTSD symptoms and posttraumatic growth is inconclusive (Tedeschi & Calhoun, 2004).

The research on posttraumatic growth clearly demonstrates that people who experience posttraumatic growth also recognize the many negative aspects of the trauma and report both positive and negative outcomes (Tedeschi et al., 2007). The mixed findings in the research thus far suggest that the relationship between PTSD symptoms and posttraumatic growth may be more nuanced than previously believed. Thus, this research may be improved by examining the relationship between PTSD symptoms and posttraumatic growth in a more multifaceted manner. Such investigations should include the potential for qualification of these relationships by mediator or moderator variables (Butler, 2007; Park & Helgeson, 2006). There is still much to be understood in terms of the factors that may inhibit or enhance posttraumatic growth (Joseph & Linley, 2008b). Investigations including potential third variable interactions might be able to provide explanatory links between PTSD symptoms and posttraumatic growth.

Because posttraumatic growth is a relatively new area of study, there are a host of potential mediators or moderators that could be examined. However, the present study sought to identify potential third variables that could be introduced or altered in a therapeutic setting. How one thinks about a trauma and about PTSD symptoms is one such construct. The mutability of thoughts and the resultant improvements in symptom levels of trauma survivors has been well documented clinically (Ehlers, Clark, Hackmann, et. al., 2003; Foa & Rothbaum, 1998). Thus, the present study sought to

examine how type of thinking, or cognitive processing, may aid in the understanding of the relationship between PTSD symptoms and posttraumatic growth.

Cognitive Processing and Posttraumatic Growth

A common theme underlying the many theories of adjustment to trauma is that healthy adjustment is the result of repeated confrontations with the memories of the trauma and their subjective meanings (Horowitz, 1986; Janoff-Bulman, 1992). These theories suggest that the more an individual actively thinks about the circumstances, feelings, and implications of the trauma and tries to make sense of them, the more likely it is that posttraumatic growth will occur (Creamer, Burgess, & Patterson, 1992; Manne et al., 2004). Though it is likely that most trauma survivors experience some PTSD symptoms, survivors likely respond to those symptoms or think about those symptoms in very different ways. Accordingly, a moderating role of cognitive processing in the relationship between PTSD symptoms and posttraumatic growth seems plausible, in that the relationship between PTSD symptoms and posttraumatic growth may be significantly altered depending on the amount of cognitive processing an individual is engaging in.

Research has examined the relationship between cognitive processing and posttraumatic growth. The most often studied indicators of cognitive processing are intrusive thoughts (Greenberg, 1995; Horowitz, 1986) and searches for meaning or causes of the trauma (Taylor, 1983). Intrusions about the trauma have been found to relate positively to posttraumatic growth and well-being (McIntosh, Silver, & Wortman, 1993; Park & Fenster, 2004; Snape, 1997) and negatively to PTSD (Patterson, Carrigan, Robinson, & Questad, 1990; Shalev, 1992; Snape, 1997). Searches for causes and/or

meaning also relate positively to posttraumatic growth (Calhoun, Cann, & Tedeschi, 2000; Lepore, Ragan, & Jones, 2000; McIntosh et al., 1993).

However, research on the impact of cognitive processing on trauma recovery is far from consistent. Research on intrusions has also found that that they often lead to avoidance. Since intrusions and avoidance represent the core symptoms of PTSD, these symptoms often become significant enough to warrant a PTSD diagnosis (Baum, 1990; Joseph, Dalgleish, Thrasher, Yule, Williams, & Hodgkinson, 1996; McFarland, Buehler, von Ruti, Nguyen, & Alvaro, 2007). Decreases in intrusions also have been associated with better posttrauma adjustment (Lepore, et al., 2000). Survivors who report “reliving the trauma” (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992) as well as those searching for meaning or causes of trauma (Affleck & Tennen, 1996; Cordova et al., 2001) also have reported experiencing less posttraumatic growth and less adjustment.

Thus far, investigations of cognitive processing variables have failed to detect meaningful differences in the types of processing that lead to posttraumatic growth and those that do not. As a majority of these studies have focused on intrusions or searches for meaning, it is possible that the problem lies in the decision to examine these variables rather than other indicators of cognitive processing. The problems inherent in using these variables may be explained by several factors. First, intrusions are one of the main symptoms of PTSD; therefore, it is unlikely that intrusions would relate any more consistently to posttraumatic growth than the entire construct of PTSD. Second, inconclusive findings may result from a difficulty distinguishing between “adaptive” or

“maladaptive” searches for meaning and “healthy” or “unhealthy” levels of intrusions, as current measures are unable to differentiate these cognitive processes.

This last difficulty is demonstrated by the contradictory conclusions from a recent study by Manne et al., (2004). They reported that women who contemplated more the *potential reasons* why they might have developed breast cancer experienced more posttraumatic growth over time. Engaging in more attempts to *search for meaning in breast cancer* was also marginally associated with gains in posttraumatic growth. However, other very similar cognitive processes, including intrusions, and *searching for a cause* for developing breast cancer, were *not* associated with posttraumatic growth. These results highlight the significant inconsistencies in the literature, as the cognitive processes mentioned are all quite similar, yet differences exist in their relationship to posttraumatic growth.

These discrepancies highlight the need for a clearer definition of the substantive differences between adaptive and maladaptive or helpful and un-helpful ways of thinking about past traumas (Greenberg, 1995). In terms of posttraumatic growth, some of the research reviewed above points to a positive relationship between cognitive processing and posttraumatic growth. Additionally, the clinical success of cognitive therapy for trauma survivors suggests that alterations in thinking can impact adjustment after trauma (Ehlers, Clark, Hackmann, et. al., 2003; Foa & Rothbaum, 1998;). Thus, the role of cognitive processing in the development of posttraumatic growth appears worthy of examination. However, the current focus on intrusions and searches for meaning as forms of cognitive processing may be inadequate. Therefore, it may be important to

expand the discussion of cognitive processing to include other potential cognitive processing activities.

Rumination may be one way that survivors cognitively process a trauma, as rumination involves activation and contemplation of trauma-related material. Because rumination entails focusing on the self, mood, and/or current symptoms (Nolen-Hoeksema, 1991; Watkins, 2004), and because such self-exploration is thought to be central to the posttraumatic growth process (Tedeschi, 1999), rumination about a trauma may promote posttraumatic growth. Many trauma researchers believe that the more a person ruminates or actively thinks about what happened, the more he/she will experience posttraumatic growth (Bower, Kemeny, Taylor, & Fahey, 1998; Calhoun & Tedeschi, 1998; Linley & Joseph, 2004). Like the larger literature on post-trauma processing, however, there are some discrepancies in the research on rumination and adjustment after trauma.

Rumination, Posttraumatic Growth, and PTSD Symptoms

Rumination is most often defined as a mode of responding to distress that involves repetitively and passively focusing on symptoms of distress and on the possible causes and consequences of these symptoms (Nolen-Hoeksema, Wisco, Lyubomirsky, 2008). When defined in this way, research has shown that those who engage in rumination tend to report less well-being. For example, those who engage in more rumination about a trauma experience higher levels of PTSD symptoms following experimental and naturalistic traumas (Baum, Cohen, & Hall, 1993; Nolen-Hoeksema & Morrow, 1991; Sergestorm & Alden, 2000) and engaging in rumination has been shown

to contribute to maintenance of PTSD symptoms (Brewin & Holmes, 2003; Dunmore, Clark & Ehlers, 2001; Ehlers, Clark, Dunmore, Jaycox, Meadows & Foa, 1998).

Experimental studies have also shown that people encouraged to ruminate about a trauma experience more dysphoric mood and negative thinking and have trouble problem solving (Lyubomirsky, Tucker, Caldwell & Berg, 1999; Watkins & Baracaia, 2002).

Based on these connections between rumination and negative outcomes, some researchers suggest that rumination would likely have a negative impact on posttraumatic growth (Updegraff & Taylor, 2001). However, the perceived relationship between rumination and negative outcomes may be due to the now common restrictive use of the term rumination as exclusively *negative*, self-punitive thinking (e.g., Nolen-Hoeksema, 1991). In response to this potentially overly restrictive and inaccurate conceptualization of rumination, several researchers have suggested alternative definitions and theories of rumination. For example, Martin and Tesser (1996) define rumination as “several varieties of recurrent, event-related thinking, including making sense, problem solving, reminiscence, and anticipation.” Using this definition, researchers have found that those who ruminate actually experience more posttraumatic growth and are better adjusted after a trauma than those who report no rumination (Calhoun et al., 2000; Tedeschi, Calhoun, & Cooper, 2000).

Rumination Reconsidered: Brooding Versus Reflection

There are present in the literature two very different conceptualizations of rumination which each display two very different relationships to posttraumatic growth. Recently, researchers have begun to reconceptualize what has previously been called

“rumination” into two distinct forms of thinking: “reflection” and “brooding”. These two constructs, though frequently measured as the single construct “rumination” appear to be distinct (; Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Trapnell & Campbell, 1999; Treynor, Gonzalez & Nolen-Hoeksema, 2003; Watkins & Baracaia, 2002; Watkins, 2004). A recent study by Siegle et al. (2004) examined the convergence of more than 15 empirically validated measures of “rumination” as well as measures of “reflection” and “brooding” and found significant support for the two-factor model of rumination.

According to this two-factor model, brooding is defined as dwelling on negative states and/or moods, often in an evaluative manner. It involves a passive focus on the causes and consequences of negative feelings or situations. These problems and negative feelings are passively observed, rather than actively worked through. Feelings are interpreted as intrusive, unclear, and threatening and negative moods are seen as permanent and inescapable (e.g. “I spend a great deal of time thinking back over my embarrassing or disappointing moments” or “I wonder why I always react to things in the same manner” McFarland & Buhler, 1998; Trapnell & Campbell, 1999).

In contrast, the term reflection refers to thinking that is motivated by self-curiosity and a search for self-knowledge. The presence of reflection suggests an openness to self-examination as well as a comfort with even difficult emotions. It involves acknowledging moods and exploring the nature of feelings. Negative feelings are interpreted as clear and changeable, and as a sign for mood regulation or problem solving efforts (e.g. “I love to meditate on the nature and meaning of things” or “I find that I can

acknowledge any negativity I have;” McFarland & Buhler, 1998; Trapnell & Campbell, 1999).

Brooding and reflection may relate differently to posttrauma adjustment (Siegle, Moore, & Thase, 2004). They have been shown to relate differently to depression, with brooding (but not reflection) predicting depression over time (Treyner et al., 2003). Trapnell & Campbell (1999) found that those reporting high levels of brooding displayed more neurotic tendencies, whereas those engaging in more reflection displayed more openness to experiences. The present study hypothesized that brooding and reflection would relate differently to trauma recovery as well; specifically, that they would significantly alter the relationship between PTSD symptoms and posttraumatic growth.

In discussing the potential effects of brooding versus reflection on trauma recovery, Teasedale (1999) suggests that reflection represents a form of processing and therefore facilitates recovery from trauma, whereas brooding impedes recovery by impairing problem solving. Experimental studies have exposed participants to the same negative event (negative feedback on a task) and have found that those induced to reflect recovered more quickly than those induced to brood. Additionally, problem solving appeared to be disrupted for those induced to brood but not for those induced to reflect (Watkins, 2004).

These theories provided a basis for the current hypothesis that brooding and reflection would impact the relationship between PTSD symptoms and posttraumatic growth in very different ways. Because it may encourage problem solving and represent a kind of post-trauma processing, it is possible that reflection allows an individual to

acknowledge both the negative outcomes, such as PTSD symptoms, as well as the potential positive outcomes of a trauma. Thus, reflection may facilitate posttraumatic growth and strengthen the relationship between PTSD symptoms and posttraumatic growth. In contrast, brooding may not create such opportunities but may instead encourage a trauma survivor to remain passively focused on their PTSD symptoms, thereby making posttraumatic growth less likely and weakening the relationship between PTSD symptoms and posttraumatic growth.

In this way, it was thought that brooding and reflection could add to our understanding of the relationship between PTSD symptoms and posttraumatic growth, in that brooding and reflection may act as moderators in this relationship. Previous studies on posttraumatic growth and rumination have not distinguished between brooding and reflection and therefore do not allow for an evaluation of the impact of different types of ruminative thinking on posttraumatic growth. In this study, brooding and reflection were measured to assess how the individual was thinking about their trauma in that moment, as well as how they tend to think in general (i.e. at both a state and trait level).

The Current Investigation

Posttraumatic growth remains misunderstood, and current theories do not adequately explain conflicting empirical data (Zoellner & Maercker, 2006). Clarification of the precise meaning of constructs in the posttraumatic growth field—their constituents and natures, their limits, and their measurements—is sorely needed if posttraumatic growth is to be understood (Butler, 2007; Park & Hegelson, 2006). One important aspect of posttraumatic growth that is currently unclear is the relationship of PTSD symptoms to

posttraumatic growth. Thus far, despite repeated investigations, no firm conclusions can be drawn as to the nature of this relationship (Tedeschi & Calhoun, 2004). Evidence for both a positive and negative relationship between PTSD symptoms and posttraumatic growth suggests that this relationship may be moderated by a third variable.

The present study hypothesized that cognitive processing would moderate the relationship (specifically, strengthen the relationship) between PTSD symptoms and posttraumatic growth and offered reflection as a possible cognitive processing variable. In contrast, brooding was hypothesized as a moderator that would weaken the relationship between PTSD symptoms and posttraumatic growth. Previous studies have yet to examine whether the distinction between reflection and brooding may contribute to the understanding of *for whom* PTSD symptoms lead to posttraumatic growth.

This study examined the impact of both state and trait levels of reflection and brooding on the relationship between PTSD symptoms and posttraumatic growth and conducted each analysis using separate, hierarchical regressions. Analyses controlled for gender and time since trauma. The decision to control for gender was based on research suggesting that women may experience more intense suffering post-trauma, but also more posttraumatic growth (Breslau, Davis, Andreski, & Peterson, 1991; Buchi, Morgeli, & Schnyder, 2007; Tedeschi & Calhoun, 1996; Val & Linley, 2006). The decision to control for time since trauma was based on research that suggests that the amount of time since the trauma occurred can have an impact on reports of posttraumatic growth (Frazier & Kaler, 2006; Stanton et al., 2006; Weiss, 2002).

Because the current investigation utilized a conceptualization of posttraumatic growth as a stable outcome, this study was cross-sectional rather than prospective. This decision was based on studies which have shown that posttraumatic growth does not show significant changes over two ($r = .71$) and four ($r = .81$) month intervals (Snape, 1997; Tedeschi & Calhoun, 1996). As subjects participated in the study for single semester course credit, a prospective analysis of less than four months would be required to use this population, and the above data suggests that posttraumatic growth is stable rather than variable over such a time-period. Thus, the current study utilized cross-sectional rather than prospective data collection methods.

Understanding differences in how brooding and reflection relate to posttraumatic growth would contribute to our understanding of what types of cognitive processing are beneficial in the development of posttraumatic growth and which are not. This would be clinically valuable information, as it would provide empirical evidence that certain types of thinking post-trauma tend to co-occur with higher levels of posttraumatic growth. If posttraumatic growth is to be encouraged therapeutically, such information is essential (Park & Helgeson, 2006). Additionally, the present study hypothesized that differences in reflection and brooding may aid our understanding of how PTSD symptoms relate to posttraumatic growth. Previous studies have not investigated the potential role of reflection and brooding as moderators of this relationship. By examining these potential relationships, the present study hopes to contribute to the understanding of brooding and reflection themselves, as well as the relationship between PTSD symptoms and posttraumatic growth.

Hypotheses

The current study hypothesized that brooding and reflection would moderate the relationship between PTSD symptoms and posttraumatic growth. Specifically, it was hypothesized that accounting for levels of reflection would significantly strengthen the relationship between PTSD symptoms and posttraumatic growth, making it more positive, while accounting for levels of brooding would significantly weaken the relationship between PTSD symptoms and posttraumatic growth. This would suggest that it is the manner of thinking an individual engages in - their level of reflection or brooding - which determines the strength of the relationship between PTSD symptoms and posttraumatic growth. Thus, it was hypothesized that the relationship between PTSD symptoms and posttraumatic growth would change as a function of these moderator variables, reflection and brooding.

The hypothesized moderating effect of brooding on the relationship between PTSD symptoms and posttraumatic growth is depicted in Figures 1 and 2.

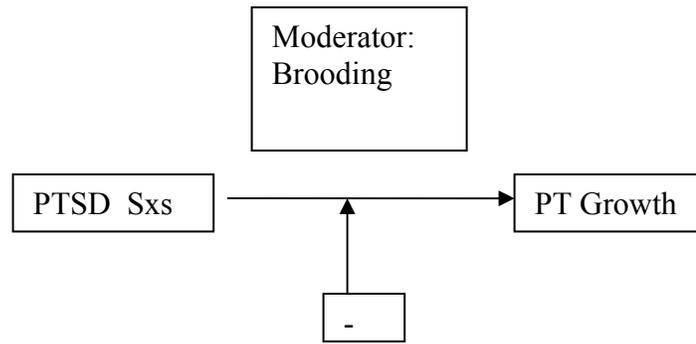


Figure 1. *Brooding as a Moderator*

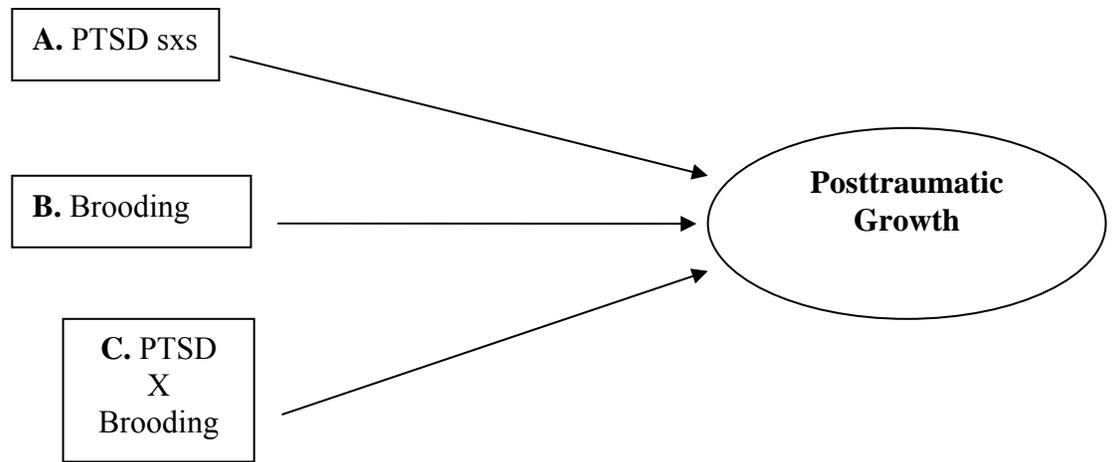


Figure 2. *Analyses, Brooding.*

Figure 2 details the hypotheses and analyses of the current study. The present study investigated the impact of PTSD symptoms as a predictor of posttraumatic growth (A). This study also investigated the moderating role of brooding (B). Finally, the main hypothesis of a significant interaction between PTSD symptoms and brooding was examined (C). It was hypothesized that when this interaction term is accounted for, the relationship between PTSD symptoms and posttraumatic growth would significantly weaken. A significant interaction term would indicate that it is the presence of brooding in response to PTSD symptoms that explains for whom the relationship between PTSD symptoms and posttraumatic growth is weak.

The hypothesized moderation of reflection on the relationship between PTSD symptoms and posttraumatic growth is depicted in figures 3 and 4 below.

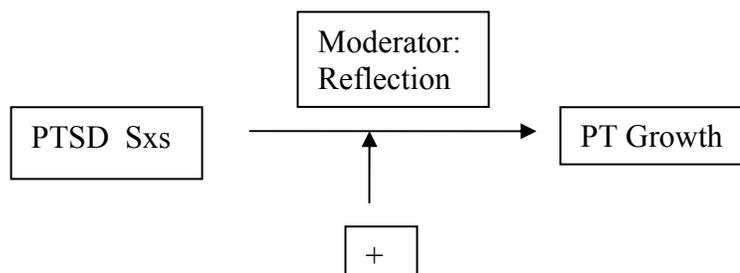


Figure 3. *Reflection as a Moderator.*

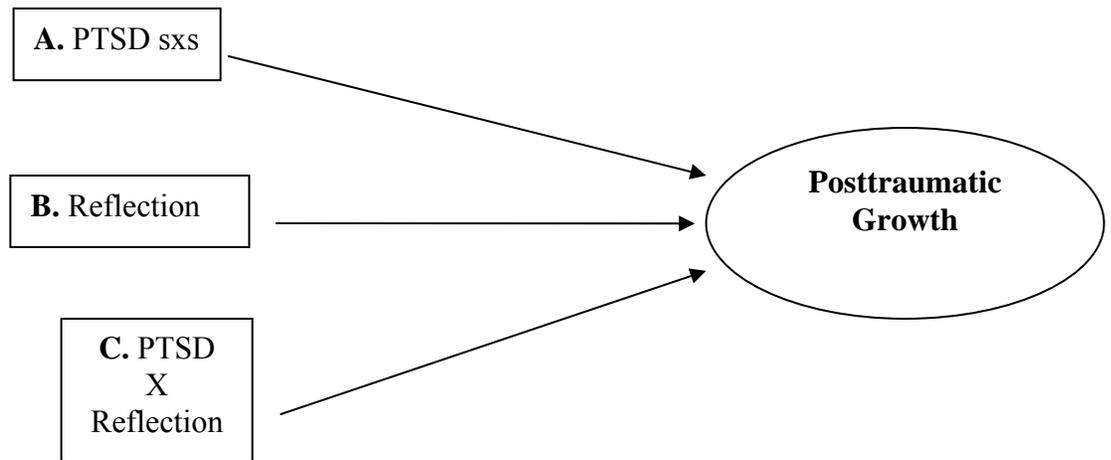


Figure 4. *Analyses, Reflection.*

Figure 4 details the hypotheses and method of analysis of the current study. The impact of PTSD symptoms on posttraumatic growth (A) was examined. A positive relationship between these two variables was hypothesized. The study also examined the impact of reflection as a moderator (B). Finally, the impact of the interaction between PTSD symptoms and reflection (C) was examined in order to test the hypothesis that the interaction of PTSD symptoms and reflection would significantly increase the strength of the relationship between PTSD symptoms and posttraumatic growth. A significant interaction term would support the hypothesis that it is the presence of reflection in response to PTSD symptoms that explains for whom the relationship between PTSD symptoms and posttraumatic growth is strongly positive.

METHOD

Participants

Most of the research on posttraumatic growth has studied growth in survivors of a single trauma such as rape or illness, with the majority of the literature focusing on growth after cancer (Ickovics et al., 2006). Although such specific investigations provide a focused, in depth look at one population, they do not permit simultaneous assessment of the diverse types of traumas experienced in the general population (Ickovics et al., 2006). The current investigation included survivors of any trauma, based on their positive response to a screening question which asked whether they have experienced a traumatic event. The screening question was derived from the DSM-IV Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 2000) and reads: “Sometimes things happen to people that are extremely upsetting – things like being in a life threatening situation like a major disaster, very serious accident or fire; being physically assaulted or raped; seeing another person killed or dead, or badly hurt, or hearing about something horrible that has happened to someone you are close to. At any time during your life, have any of these kinds of things happened to you?” Participants were asked to sign up for the study only if they answer yes to this question.

Additionally, the Traumatic Life Events Questionnaire (TLEQ; Kubaney et al., 2000) asked participants to choose the “most significant” trauma they have experienced and to rate the severity of that trauma from 1 (not at all distressing) to 10 (extremely distressing). Those who indicated that their trauma was “not at all distressing” (choosing a 1 out of 10) were removed from the analysis, because this indicated that although the person may have experienced a traumatic event, the event was not distressing to them. This resulted in the removal of just five participants from the analyses.

Participants consisted of 270 male and female undergraduates from George Mason University in Fairfax Virginia, a public four-year college. Students were recruited through the University’s psychological experiment list serve and their participation counted toward undergraduate course requirements. Cohen (1992) recommends a power of at least .80 for empirical psychological studies. Data analyses consisted of multiple regressions. Based on the limited research on PTSD symptoms, rumination, and posttraumatic growth (Calhoun et al., 2000; Snape, 1997), the effect sizes for the present study were expected to be medium. Thus, for a multiple regression with up to five independent variables (gender, time since trauma, PTSD symptoms, brooding or reflection, and the moderator term of PTSD x brooding or reflection) a sample size of 100 was believed to be sufficient to detect a medium effect size at an alpha level of .05. Post-hoc power analyses indicated that with the study’s sample size of 270 the power of the test of the moderation was .99, indicating sufficient power to detect the interaction.

Participants completed a confidential Internet-based survey and were not asked to provide information that could identify them (i.e., names, birthdates). The Internet

survey company (SurveyMonkey) used for data collection maintains the highest security standards, including encrypted data transfer, password- required access to data, and a secure survey environment (answers are written on a secure server with no traces on individual computers and individual IP addresses were not collected).

Measures

**Please see appendix for copies of all measures*

Trauma severity. The Traumatic Life Events Questionnaire (TLEQ; Kubany, et al., 2000) assessed for type of trauma experienced. The TLEQ is a 23-item self-report questionnaire that assesses exposure to a broad spectrum of traumatic events. It asks respondents to indicate which events they experienced. This scale has been shown to have good convergent validity in that it elicited similar response rates to semi-structured clinical interviews (Kubany et al., 2000). One week retest reliability scores were good ($r = .60$; Kubany et al., 2000).

PTSD symptoms. PTSD symptoms were measured using the PTSD Checklist-Civilian version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-C is a 17-item self-report inventory based on the DSM-IV criteria for PTSD including re-experiencing symptoms, avoidance-numbing, and hyper-arousal symptoms. The PCL-C was designed to assess responses to traumatic experiences encountered in the course of civilian life. Respondents rate the extent to which they have been bothered by symptoms over the past month on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). The PCL-C *total* score will be used in this study, with higher scores reflecting more severe PTSD symptoms. The PCL-C has shown good construct validity when compared

with other validated measures of PTSD symptoms such as the Clinician Administered Post-Traumatic Stress Disorder Scale (CAPS) and has also demonstrated good internal consistency, usually about .90 (Weathers et al., 1993). In a previous study at this University using the undergraduate population, internal reliability was also good ($\alpha = .92$; Kane, Kashdan, & Kecmanovic, 2009). In the current study the internal reliability was also good ($\alpha = .93$).

Posttraumatic Growth. Posttraumatic growth was measured using the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun 1996). In this study, participants were directed to keep their “most significant” trauma in mind when completing this questionnaire. The PTGI has 21 items and yields a total score as well as five separate continuous subscale scores: change in relationships with others; realization of new possibilities; increased personal strength; spiritual changes; and changes in appreciation of life. Participants rated items on a 6-point Likert scale, ranging from 0 “I did not experience this change as a result of my crisis” to 5 “I experienced this change to a very great degree as a result of my crisis”. Total scores can range from 0 to 126. In Tedeschi and Calhoun’s initial investigation (1996), the measure demonstrated good internal consistency ($\alpha = .90$) and test-retest reliability over a 2-month interval ($r = .71$). The PTGI has shown good convergent validity, correlating well with spouses’ reports of partner posttraumatic growth ($r = .51$; Weiss, 2002). In a previous study at the current University, internal reliability of the PTGI was good ($\alpha = .93$; Kane, Kashdan, & Kecmanovic, 2009). In the current study the internal reliability was also good ($\alpha = .95$).

Trait Level Brooding/Reflection. The Rumination Reflection Scale (RRQ; Trapnell & Campbell, 1999) is a 24-item questionnaire that separates the construct of rumination into two dimensions: brooding and reflection. The scale assesses these variables at a trait level, in that it asks about general tendencies and responses to moods. Respondents rated the degree to which they engage in the type of thinking or action on a Likert scale of 1-5 with 1 being disagree and 5 being strongly agree. The questionnaire contains a 12-item Brooding scale that includes items such as, “Often I’m playing back over in my mind how I acted in a past situation.” Internal consistency scores for the brooding scale are good ($\alpha = .88$). In the current study internal consistency for the brooding scale was also good ($\alpha = .90$). The 12-item Reflection scale includes items such as, “I love to meditate on the nature and meaning of things.” The 12-item Reflection scale also has good internal consistency ($\alpha = .94$). In the current study internal consistency for the brooding scale was adequate ($\alpha = .86$).

State level brooding and reflection. McFarland & Buhler’s (1998) *Reflective vs Ruminative Mood Orientation Scale* was used to assess reflection and brooding at the state level. Thus, participants in this study were asked to answer these questions regarding how they are thinking about their “most significant” trauma *at the present moment*. The measure contains a 12-item brooding scale as well as a 12 item reflection scale. The reflective items describe an ability to clearly label feelings, a willingness to attend openly to feelings, a general desire to distract from obsessive thoughts about causes and consequences of the trauma, and an ability to repair mood. Items include, “I feel like I want to do something to make myself feel better.” The rumination scale

describes thoughts indicating a sense of confusion about moods, an inclination to feel compelled to dwell passively on mood, an inclination to focus repetitively on causes or consequences of mood, and an inability to repair mood. It includes items such as, “I wonder why I always react to things in the same way.” Internal consistency for the reflection scale was adequate in the current study ($\alpha = .77$), for the brooding scale internal consistency was good ($\alpha = .89$).

Exploratory Measures

**The following measures were included in the packet of questionnaires and were explored in relation to the variables of interest but are not part of the current investigation*

The COPE Questionnaire (Carver, Scheier, & Weintraub, 1989) was used to assess the typical types of coping that participants report using in response to stressful events in general. The COPE is a 53-item self-report measure of the different ways people tend to respond to stress. Participants were asked to indicate the extent to which they engage in various behaviors (“I try to come up with a strategy about what to do; I pretend that it has not really happened”) when faced with problems. They did this on a 4-point scale that ranges from 1 (*Don't do this at all*) to 4 (*Do this a lot*). Five scales measure aspects of problem-focused coping (active coping, planning, suppression of competing activities, restraint coping, and seeking of instrumental social support); five scales measure emotion-focused coping (seeking of emotional social support, positive reinterpretation, acceptance, denial, turning to religion); and three scales measure coping responses that are considered avoidant (focus on and venting of emotions, behavioral

disengagement, mental disengagement). The scales show good internal consistency with alphas ranging from .65 - .85 in Carver et al.'s (1989) original study.

The *Beck Depression Inventory 2nd Edition* (BDI-II; Beck, Steer, & Brown, 1996) was used to measure symptoms of depression. The BDI-II is an update of the original BDI, which was altered to correspond to criteria from the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV; APA, 1994) for major depressive disorder and to improve the content validity of the instrument. The current version has 21 items, which measure the severity of depressive symptomatology. Each item of the BDI-II requires participants to endorse one of four options reflecting the severity of a given depressive symptom. Scores can range from 0-63, with higher scores indicating more severe symptoms. Internal consistency alphas ranged from .73 to .95, (.93 among college students) and test-retest reliability estimates are good, with a large variety of interval times (Beck et al., 1996).

Analyses

Hierarchical regressions were used to examine the potential moderating role of brooding and reflection in the relationship between PTSD symptoms and posttraumatic growth. Separate regressions investigated brooding and reflection at both state and trait levels. In step one of the regressions, the control variables gender and time since trauma were entered. In step two, the predictor variable PTSD symptoms were entered. In step three, the main effect of the proposed moderator (reflection or brooding) was entered. In step four the interaction term, meaning the standardized cross products of PTSD and either reflection or brooding, was entered. These predictor variables were centered and

significant interaction effects were explored with simple slope analyses (see Aiken & West, 1991).

In order to investigate the predictive value of the interaction term, changes in the r^2 statistic between step 3 (where the moderator term was entered) and step four (where the interaction term was entered), was examined. The r^2 statistic indicates the proportion of variance in the criterion (posttraumatic growth) which is explained by the combination of predictors. Thus, this statistic provided information about the degree to which differences among individuals, or variance in posttraumatic growth, was explained by this set of predictors for this sample, while controlling for the predictors entered in previous steps. Examining the change in r^2 after entering the interaction term provided a test of the main hypothesis that it is the *interaction* of PTSD symptoms and brooding/reflection which is key to understanding the relationship between PTSD symptoms and posttraumatic growth and that the addition of this interaction term explains a significant amount of the variance in posttraumatic growth. Additionally, these analyses allowed for an examination of the hypothesized changes in strength of the relationship between PTSD symptoms and posttraumatic growth.

Post-Hoc Analyses

In addition to the analyses described above one additional analysis was performed using the data provided by the present study.

Depression as an Outcome Variable. The relationship between PTSD symptoms and posttraumatic growth is not well understood, however, the relationship between PTSD symptoms and depression symptoms after trauma is equally unclear. Though

significant comorbidity exists between PTSD and depression, it is unclear what differences exist between those who exhibit both depression and PTSD and those that exhibit only PTSD symptoms. Thus, an investigation of the potential moderating role of brooding and reflection in the relationship between PTSD symptoms and depression symptoms could be rewarding. Though not the focus of the present study, this analysis was undertaken because of the potentially interesting differences between brooding and reflection as they relate to depression symptoms. Specifically, it was hypothesized that when levels of brooding were accounted for, the relationship between PTSD symptoms and depression symptoms will be more strongly positive. In contrast, it was hypothesized that when reflection levels were accounted for, PTSD symptoms and depression symptoms would relate less positively.

RESULTS

The sample

Participants were 270 University undergraduates. The mean age for the sample was 21.8 years of age with a standard deviation of 5.49 years. 86% of the sample was under the age of 25. A remaining 10% fell between the ages of 25-35, and the final 4% was above the age of 35. The sample was predominately female (82%). Participants consisted largely of students who self identified as Caucasian (52%) followed by Asian-American (25%), Hispanic (8%), African American (8%), Middle Eastern (3.5%), South Asian (1.25%); Indian (1.25%) and bi-racial (1%).

Participants were asked to indicate which of the traumas listed on the Traumatic Life Events Questionnaire (TLEQ; Kubaney et al., 2000) they had experienced. This data is summarized in Table 1. Percentages add up to more than 100% as participants reported all traumas they had experienced, which for most participants was more than one trauma. The most frequently reported trauma experienced was the sudden death of a loved one (70%), followed by a motor vehicle accident (54%), natural disaster (34%), childhood physical abuse (31%), stalking (30%) and physical assault (28%). These results are very similar to a larger study by Bernat et al. (1998) which found that around

35% of college students reported experiencing natural disasters, 31% serious accident, 22% witnessing serious injury or death, and 21% sexual assault.

Of these traumas, participants were asked to identify a “most significant” trauma. This data is also represented in Table 1. In this sample, the majority of respondents selected the sudden death of a loved one (30%), followed by a motor vehicle accident (15%), and childhood physical abuse (7%). Participants were also asked to indicate when this most significant trauma occurred. The mean amount of time since the trauma occurred was approximately 6 years. However, this mean was significantly impacted by several outliers. The median and modal values of time since trauma were 4 years and 1 year respectively. 16% of the sample reported that the trauma occurred in the current calendar year. In total, for 60% of the sample the trauma had occurred sometime in the past 5 years, and for the remaining 40% the trauma occurred 6 or more years ago. Participants were also asked how distressing this trauma was for them. The average distress level reported was 8.08 on a scale of 1-10 with a standard deviation of 1.93.

The sum of TLEQ responses provided an indication of the number of traumatic events participants reported experiencing in their lives thus far. In the current sample, the mean number of traumas experienced was 4. This data is consistent with a larger study by Vrana and Lauterback (1994) who found that over one third of their college sample reported experiencing four or more traumas.

Pearson Correlations

Means, standard deviations, and Pearson correlation coefficients for all scales are reported in Table 2. All scales displayed good internal consistency. Results of simple

correlations indicate a positive correlation between PTSD symptoms and posttraumatic growth ($r = .38$; $p < .01$). Trait brooding and trait reflection displayed different correlations to PTSD symptoms, growth, and other validated indicators of coping (see Table 2). Trait brooding had a positive correlation with PTSD symptoms ($r = .38$; $p < .01$). Trait reflection, in contrast, had no correlation with PTSD symptoms. Both trait brooding and trait reflection displayed positive correlations with growth, but reflection had a stronger positive correlation than brooding ($r = .21$; $p < .01$ and $r = .12$ $p = .05$ respectively).

Though not part of the original hypotheses, differences between how trait brooding and trait reflection correlated with certain well-validated measures of coping behavior (COPE scale; Carver et al., 1989) as well as depression (BDI-II; Beck et al., 1996) were examined and are reported in Tables 2 and 3. Trait brooding correlated positively with depression ($r = .48$) while trait reflection showed a much weaker positive correlation with depression ($r = .15$). In terms of types of coping, trait brooding did not correlate with positive reinterpretation, seeking social support, active coping, seeking emotional social support, supportive action, or planning. Trait brooding was positively correlated with mental distress ($r = .25$, $p < .01$) and substance abuse ($r = .13$, $p < .05$). In contrast, trait reflection displayed a strong positive correlation with planning ($r = .27$, $p < .01$), positive reinterpretation coping ($r = .25$, $p < .01$), active coping ($r = .22$, $p < .01$), supportive action coping ($r = .15$, $p < .05$), use of instrumental social support ($r = .14$, $p < .05$), and use of emotional social support ($r = .14$, $p < .05$), (but no correlation with substance abuse).

The correlations for state brooding and state reflection are reported in Table 4. Both state brooding and state reflection correlated positively with PTSD symptoms and posttraumatic growth, but state brooding correlated more strongly than state reflection with PTSD symptoms ($r = .54$ and $.24$ respectively, p 's $< .01$), and state reflection correlated more strongly than state brooding with posttraumatic growth ($r = .43$ and $.31$ respectively $p < .01$).

Again, differences between the correlation of state brooding and state reflection with coping and depression were found (COPE scale; Carver et al., 1989; Beck et al., 1996). State brooding correlated strongly with depression ($r = .61$) whereas state reflection had no relationship with depression ($r = .05$). State brooding did not correlate with positive reinterpretation, seeking social support, active coping, and seeking emotional social support, or planning. Trait brooding was positively correlated with denial ($r = .32$, $p < .01$), and substance abuse ($r = .29$, $p < .01$). In contrast, state reflection was positively correlated with positive reinterpretation coping ($r = .43$, $p < .01$), active coping ($r = .37$, $p < .01$), planning ($r = .33$, $p < .01$), acceptance ($r = .30$, $p < .01$) use of instrumental social support ($r = .23$, $p < .01$), and use of emotional social support ($r = .21$, $p < .01$), (but no correlation with substance abuse).

Tests of Moderation Models:

For each of the following analyses predictor variables were centered and statistically significant interaction effects were explored with simple slope analyses (see Aiken & West, 1991). Initially, all analyses were run controlling for both gender and

time since trauma. However, because time since trauma proved to have no significant impact on any proposed moderation, time since trauma was removed from the analyses.

Test of Moderation Model 1: Trait Brooding

After controlling for the model covariate gender, the interaction term of trait brooding x PTSD accounted for a statistically significant amount of the variance in posttraumatic growth, $t(266) = -2.71$, $R^2\Delta = .02$, $\Delta F = 7.32$, $p < .01$. The R value ($r = .42$) for this model meets the criteria for a medium effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .18$) indicates that 18% of the variance observed in posttraumatic growth was explained by this model. Examination of the t-tests on each beta weight shows that the moderator term of trait brooding x PTSD made a statistically significant unique contribution to the variance in posttraumatic growth. Specifically, the addition of the moderator term changed the direction of the relationship between PTSD symptoms and posttraumatic growth from positive to negative $b = -.14$, $t(266) = -2.71$ $p < .01$. This suggests that lower levels of PTSD symptoms in combination with trait brooding are associated with higher levels of posttraumatic growth (results reported in Table 5).

An examination of the individual contribution of trait brooding to the variance in posttraumatic growth reveals that it actually weakened the relationship between PTSD symptoms and posttraumatic growth, as hypothesized (part correlation for brooding = -.06). When the part correlation of the interaction term brooding x PTSD was examined the relationship was again negative (part correlation for interaction term = -.15).

Test of Moderation Model 2: Trait Reflection

After controlling for model covariate gender, the interaction term of trait reflection x PTSD accounted for a statistically significant amount of the variance in posttraumatic growth, $t(266) = -2.14$, $R^2\Delta = .01$, $\Delta F = 4.59$, $p < .05$. The R value ($r = .43$) for this model meets the criteria for a medium effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .19$) indicates that 19% of the variance observed in posttraumatic growth was explained by this model. Examination of the t-tests on each beta weight showed that the moderator term of trait reflection x PTSD symptoms made a statistically significant unique contribution to the variance in posttraumatic growth. Specifically, the addition of the moderator terms changed the direction of the relationship between PTSD symptoms to posttraumatic growth from positive to negative, $b = -.10$, $t(266) = -2.14$ $p < .05$. This suggests that lower levels of PTSD symptoms in combination with reflection are associated with higher levels of posttraumatic growth (results reported in table 5).

Additionally, an examination of the individual contribution of the variable trait reflection to the variance in posttraumatic growth revealed that it strengthened the relationship between PTSD symptoms and posttraumatic growth as hypothesized (part correlation for trait reflection = .14). When the part correlation of the interaction term trait reflection x PTSD was examined, the relationship was again negative (part correlation for interaction term = -.12).

Test of Moderation Model 3: State Brooding

After controlling for model covariate gender, the interaction term of state brooding x PTSD accounted for a statistically significant amount of the variance in posttraumatic growth, $t(261) = -3.02$, $R^2\Delta = .03$, $\Delta F = 9.12$, $p < .01$. The R value ($r = .44$) for this model meets the criteria for a medium effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .19$) indicates that 19% of the variance observed in posttraumatic growth was explained by this model. Examination of the t-tests on each beta weight shows that the moderator term of state brooding x PTSD made a statistically significant unique contribution to the variance in posttraumatic growth. Specifically, the addition of the moderator term changed the direction of the relationship between PTSD symptoms and posttraumatic growth from positive to negative, $b = -.16$, $t(261) = -3.02$, $p < .01$. This suggests that lower levels of PTSD symptoms in combination with state brooding are associated with higher levels of posttraumatic growth. Results are reported in Table 6.

Test of Moderation Model 4: Reflection, State-Level Measure

After controlling for model covariate gender, the interaction term of state reflection x PTSD accounted for a statistically significant amount of the variance in posttraumatic growth, $t(273) = -2.29$, $R^2\Delta = .01$, $\Delta F = 5.23$, $p < .05$ (see Table 6). The R value ($r = .54$) for this model meets the criteria for a large effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .29$) indicates that 29% of the variance observed in posttraumatic growth was explained by this model. Examination of the t-tests on each beta weight shows that the moderator term of state reflection x PTSD made a statistically

significant unique contribution to the variance in posttraumatic growth. Specifically, addition of the moderator term changed the direction of the relationship between PTSD symptoms and posttraumatic growth from positive to negative, $b = -.11$, $t(272) = -2.29$ $p < .05$. This suggests that lower levels of PTSD symptoms in combination with state reflection are associated with higher levels of posttraumatic growth. Results are reported in Table 6.

Post-Hoc Moderation Model: Trait Brooding and Depression

After controlling for the model covariate gender, the interaction term of trait brooding x PTSD accounted for a statistically significant amount of the variance in depression, $t(266) = 4.26$, $R^2\Delta = .04$, $\Delta F = 18.12$, $p < .01$. The R value ($r = .68$) for this model meets the criteria for a large effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .47$) indicates that 47% of the variance observed in depression was explained by this model. Examination of the t-tests on each beta weight shows that the moderator term of trait brooding x PTSD made a statistically significant unique to the variance in depression. Specifically, addition of the moderator term increased the strength of the relationship between PTSD symptoms and depression, making it more positive $b = .18$, $t(266) = 4.26$ $p < .01$. This suggests that higher levels of PTSD symptoms in combination with trait brooding are associated with higher levels of depression. Results are reported in Table 7.

Post-Hoc Moderation Model: Trait Reflection and Depression

After controlling for model covariate gender, the interaction term of trait reflection x PTSD accounted for a statistically significant amount of the variance in

depression, $t(264) = -2.4$, $R^2\Delta = .01$, $\Delta F = 5.78$, $p < .05$. The R value ($r = .62$) for this model meets the criteria for a large effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .39$) indicates that 39% of the variance observed in depression was explained by this model. Examination of the t-tests on each beta weight showed that the moderator term of trait reflection x PTSD made a statistically significant unique contribution to the variance in depression. Specifically, addition of the moderator term changed the direction of the relationship between PTSD symptoms and depression from positive to negative, $b = -.10$, $t(264) = -2.4$, $p < .05$. This suggests that higher levels of PTSD symptoms in combination with reflection are associated with lower levels of depression. Results are reported in Table 7.

Test of Post-Hoc Moderation Model: State Brooding and Depression

After controlling for model covariate gender, the interaction term of state brooding x PTSD accounted for a statistically significant amount of the variance in depression, $t(260) = 3.25$, $R^2\Delta = .02$, $\Delta F = 10.57$, $p < .01$. The R value ($r = .71$) for this model meets the criteria for a large effect size, as defined by Cohen (1992). The R^2 value ($R^2 = .50$) indicates that 50% of the variance observed in depression was explained by this model. Examination of the t-tests on each beta weight shows that the moderator term of state brooding x PTSD made a statistically significant unique contribution above and beyond the control variables and strengthened the relationship between PTSD symptoms and depression, $b = .14$, $t(260) = 3.25$, $p < .01$, suggesting that higher levels of PTSD symptoms in combination with state brooding are associated with higher levels of depression. Results are reported in Table 7.

Test of Post-Hoc Moderation Model: State Reflection and Depression

After controlling for model covariate gender, the interaction term of state reflection x PTSD did not account for a statistically significant amount of the variance in depression, $t(271) = -.91$, $R^2\Delta = .00$, $\Delta F = .83$, $p = .36$.

DISCUSSION

The goal of this study was to better understand the relationship between PTSD symptoms and posttraumatic growth, and to investigate the role of brooding and reflection in that relationship. It was hypothesized that there would be meaningful differences between the proposed two factors of rumination, brooding and reflection, and that both brooding and reflection would significantly moderate the relationship between PTSD symptoms and posttraumatic growth. These hypotheses were supported. Because results of state and trait levels of brooding and reflection were essentially the same, they will be referred to together as “brooding” and “reflection” except when distinctions are necessary.

Differences between Brooding and Reflection

The current study found meaningful differences in the way brooding and reflection correlated with PTSD symptoms, posttraumatic growth, depression, and measures of coping. It was believed that brooding and reflection would display different relationships with posttraumatic growth because they represent different forms of cognitive processing. Reflection was thought to represent a deeper form of cognitive processing that would involve a willingness to explore even the most negative aspects of a trauma, while brooding would represent a more superficial form of repetitive thought

and would actually be more of an avoidant form of coping. It was hypothesized that the more an individual actively thinks about the circumstances, feelings, and implications of the trauma and tries to make sense of them (the more they reflect rather than brood), the more likely it is that posttraumatic growth will occur.

The present study found support for this hypothesis in that reflection correlated more strongly with posttraumatic growth than did brooding, whereas brooding correlated more positively with PTSD symptoms than did reflection. Although not part of the initial hypotheses, correlations between brooding and reflection and another well-validated indicator of coping styles, the COPE questionnaire (Carver et al., 1989) also were examined to see if they would provide additional support for the hypothesized differences between brooding and reflection. Results indicated that brooding was positively related to forms of avoidant coping (i.e. substance use, denial), whereas reflection was positively related to approach-oriented coping (i.e. problem solving, seeking social support). Similarly, correlations between brooding and reflection and depression were examined, and results indicated that brooding was more strongly positively correlated with depression than reflection. These findings provide support for the hypothesis that reflection is a helpful form of processing, similar to problem-solving and is related to positive outcomes such as posttraumatic growth, whereas brooding is a type of avoidant coping that is related to negative outcomes such as PTSD symptoms and depression. Previous research has found similar distinctions between brooding and reflection (Teasdale, 1999).

More broadly, differences in how brooding and reflection correlated with other variables supports the suggestion that rumination should not be viewed and studied as a unitary construct, but rather as consisting of two components – brooding and reflection. This is consistent with previous research (Fresco et al., 2002; Siegle, 2004; Trapnell & Campbell, 1999; Treynor et al., 2003; Watkins & Baracaia, 2002; Watkins, 2004)

The Proposed Moderation

The main hypothesis of the current investigation was that brooding and reflection would both act as moderators in the relationship between PTSD symptoms and posttraumatic growth and would provide important information about this relationship. This hypothesis was supported.

Research has found both positive correlations (McMillin et al., 1997; Park et al., 2008; 1996; Schorr & Roemer, 2002; Shiri et al., 2008; Snape, 1997), and negative correlations (Aldwin et al., 1994; Frazier et al., 2001; Ickovics et al., 2006) between PTSD symptoms and posttraumatic growth. These inconclusive findings have led several researchers to suggest that the relationship between PTSD symptoms and posttraumatic growth may be more complex than previously believed, and may be explained by an interaction with a third variable (Butler, 2007; Linley & Joseph, 2008b; Park & Helgeson, 2006; Zoellner & Maercker, 2006). The current results support the suggestion that third variables should be explored in this research. The most striking support for this suggestion comes from the finding that PTSD symptoms and posttraumatic growth were positively correlated, but when the interaction term of brooding or reflection was included, the relationship changed from positive to negative. Had the current study not

moved beyond correlations, the relationship would have appeared to be positive rather than negative. Thus, it is essential to continue to examine the impact of third variables on this relationship.

Brooding and reflection were selected as potential moderators because they were believed to represent two forms of cognitive processing of a trauma. Cognitive processing is defined here as repeated confrontations with trauma memories and their subjective meanings. This fits closely with both brooding and reflection, which were considered here as different forms of repetitive thinking about the trauma. It was believed that by accounting for levels of cognitive processing, the relationship between PTSD symptoms and posttraumatic growth would become clearer, in that repetitive thinking about a trauma may be an important factor in the relationship between PTSD symptoms and posttraumatic growth. This suggestion was based on research which has shown that cognitive processing is essential to both improved functioning after trauma (less PTSD symptoms) as well as posttraumatic growth (Calhoun et al., 2000; Calhoun & Tedeschi, 1998; Greenberg, 1995; O'Leary, Alday, & Ickovics, 1998; Park & Fenster, 2004; Tedeschi & Calhoun, 1996). It was hypothesized that if cognitive processing were important to this process, then brooding and reflection would make a significant impact on the relationship between PTSD symptoms and posttraumatic growth. This hypothesis was supported. When levels of either brooding or reflection were accounted for, the relationship between PTSD symptoms and posttraumatic growth changed from positive to negative, with lower PTSD symptoms leading to higher reports of posttraumatic growth.

An additional reason for choosing to examine brooding and reflection as indicators of cognitive processing was based on the theory that they may represent one way to differentiate between “helpful” and “unhelpful” forms of processing, something that is currently lacking in the cognitive processing literature (Greenberg, 1995). It was hypothesized that there would be important differences in how brooding and reflection would perform as moderators; that brooding would weaken the relationship between PTSD symptoms and posttraumatic growth, and reflection would strengthen the relationship. This hypothesis was not supported. Both brooding and reflection not only weakened the relationship between PTSD symptoms and posttraumatic growth, they reversed it from positive to negative.

It was also hypothesized that brooding and reflection would be largely responsible for the change in the relationship between PTSD symptoms and posttraumatic growth. However, an examination of the simple slope graph of each moderation revealed that the impact of lower PTSD symptoms was largely responsible for the change in the relationship between PTSD symptoms and posttraumatic growth. These findings indicate that lower PTSD symptoms, combined with either brooding or reflection, were associated with higher reports of posttraumatic growth. However, brooding and reflection clearly are essential to our understanding of this relationship, as the interaction term was significant and changed the relationship between PTSD symptoms and posttraumatic growth from positive to negative.

The failure to find hypothesized differences in the action of brooding and reflection as moderators might be explained by measurement problems in the current

study. The practice of examining brooding versus reflection rather than the unitary construct rumination is relatively new, and measures of these constructs are still in their infancy. The measures used to detect brooding and reflection may not have adequately distinguished between the two constructs. In this study, as in others (Teasedale & Green, 2004), brooding and reflection were significantly correlated ($r = .13$ for trait-level brooding and reflection and $.26$ for state-level). Although the correlation between brooding and reflection is small enough to consider them essentially independent, smaller correlations would have been more desirable. Because the constructs were more highly correlated than hypothesized, it may have been more difficult to detect differences in how they performed as moderators. Additionally, the measures of brooding and reflection used had acceptable, but not ideal scores on internal consistency (State Reflection, $\alpha = .77$; State Brooding, $\alpha = .89$; Trait Reflection $\alpha = .94$; Trait Brooding $\alpha = .86$). Measures with higher reliability that could better discriminate between brooding and reflection might allow future researchers to detect meaningful differences in how brooding and reflection impact the relationship between PTSD symptoms and posttraumatic growth. The finding that the part correlations for trait reflection and brooding were in the hypothesized directions (with brooding weakening the relationship and reflection strengthening the relationship) adds additional support to this assertion.

Examination of Depression as an Outcome

Additional evidence that brooding and reflection can perform differently as moderators was provided by one of the post-hoc analyses. It was hypothesized that brooding and reflection would both significantly moderate the relationship between

PTSD symptoms and depression, with brooding strengthening the positive relationship between PTSD symptoms and depression and reflection weakening the relationship. This hypothesis was supported. Higher PTSD symptoms, in combination with trait brooding, were associated with higher reports of depression. In contrast, entering trait reflection as an interaction term caused the relationship not only to weaken but to reverse from positive to negative. This means that higher PTSD symptoms, in combination with reflection, were associated with lower reports of depression. Thus, trait brooding and trait reflection affected the relationship between PTSD symptoms and depression in the exact way it was hypothesized they would affect the relationship between PTSD symptoms and posttraumatic growth. Specifically, trait reflection and brooding moderated the relationship in opposite directions, with trait brooding contributing to a more negative outcome and trait reflection contributing to a more positive outcome (in this case, less depression).

This finding provides support for several aspects of the current investigation. First, it demonstrates that brooding and reflection can perform differently as moderators and therefore may eventually be found to influence the relationship between PTSD symptoms and posttraumatic growth in the manner hypothesized. Second, these results support the hypothesis that brooding is an un-helpful form of repetitive thought that is likely to lead to negative outcomes and that reflection is a helpful form of repetitive thought that is more likely to lead to positive outcomes.

A great deal of research has been conducted on the relationship between PTSD and depression in an effort to understand how these disorders impact each other. Studies

using both clinical and community samples have shown that between 30-50% of those diagnosed with PTSD will eventually be diagnosed with major depressive disorder (Bourdreaux, Kilpatrick, Resnick, Best, & Saunders, 1998; Erickson, Wolfe, King, King, & Sharkansky, 2001; Kessler et al., 1995; Nixon, Resick, & Nishith, 2004). Although research has shown that a comorbid diagnosis increases risk factors for outcomes such as suicidality and functional impairment, the exact nature of the relationship between PTSD symptoms and depression remains unclear (Holtzheimer, Russo, Zatzick, Bundy, & Roy-Byrne, 2005; Momartin, Silove, Manicavasgar, & Steel, 2004; Nixon et al., 2004; Oquendo, Brent, & Birmaher, 2005). The present results suggest that distinguishing between brooding and reflection might aid in our understanding of the relationship between PTSD symptoms and depression. Specifically, brooding and reflection may provide information about for whom PTSD symptoms are likely to lead to depression. The results of the present investigation suggest that people who engage in brooding after a trauma are more likely to experience depression than people who engage in reflection.

Implications for Treatment

The present results have potentially important implications for clinical work with trauma survivors. Specifically, the current study contributes to our understanding of the differences between brooding and reflection, as well as the concept of growth in general and what types of thinking may or may not lead to perceptions of growth in trauma survivors.

The current results support the conceptualization of rumination as consisting of an un-helpful form of repetitive thought (brooding) and a helpful form of repetitive thought

(reflection). In treatment, however, all repetitive thought usually is viewed by the clinician as negative, and as something that must be eliminated. By focusing only on the negative aspects of repetitive thought and on reducing that “symptom”, clinicians may prevent clients from using repetitive thought to reflect on their beliefs and attempt to find growth in their experience (Zoellner & Maercker, 2006). Understanding how repetitive thought can facilitate recovery from a trauma could help clinicians view a client’s repetitive thoughts about the trauma as not simply a symptom of PTSD, but as a potential precursor to growth.

Watkins (2004) has discussed at length the distinction between helpful and un-helpful repetitive thought. He suggests that when clients are dwelling on a negative event, they can shift from repetitive thoughts that exacerbate difficulties to repetitive thoughts that aid recovery. The implication for therapy, therefore, is that if helpful versus un-helpful repetitive thought could be distinguished, then therapists could encourage clients to shift from a negative form of repetitive thought to a more positive form of repetitive thought. These suggestions are consistent with current evidence based treatments for PTSD, such as cognitive behavioral therapy, that aim to shift clients’ thoughts toward productive, trauma-focused processing (Watkins, 2004). By adding to our understanding of different forms of repetitive thought, research such as the current investigation might help to improve treatments for trauma survivors.

Research on the correlates and predictors of posttraumatic growth may also increase clinicians’ understanding and awareness of benefit finding after trauma. If clinicians are aware of the behaviors and cognitions that may precede or co-occur with

growth, they may be able to help clients identify posttraumatic growth as it emerges during treatment (Calhoun & Tedeschi, 2008; Zoellner & Maercker, 2006). Accordingly, several posttraumatic growth researchers have written extensively on how clinicians can identify and facilitate posttraumatic growth in treatment (Calhoun & Tedeschi, 2000;2008; Cordova, 2008; Joseph & Linley, 2008b; Sheika & Marotta, 2008; Tedeschi & Calhoun, 2009).

These approaches suggest that growth may be facilitated by helping survivors confront rather than avoid thoughts and emotions related their trauma, express and process their reactions, and develop a coherent story about their trauma (Cordova, 2008). The current study's focus on cognitive processing as a key to growth is in line with this suggested focus. The few studies that have investigated clinical interventions incorporating growth have found that those interventions resulted in increased benefit-finding and decreased depression (Antoni, Lehman, Klibourn, Boyers, Culver, Alferi, et. al., 2001; Ullrich & Lutgendorf, 2002; Wagner, Knaevelsrud, & Maercker, 2007; Weinrib, Rothrock, Johnsen, & Lutgendorf, 2006). Thus, how posttraumatic growth can be integrated into treatment for trauma represents an important new area of clinical research. By investigating potential precursors to growth, the present study hopes to have contributed to this emerging area of research.

Toward an Integrative Understanding of Post-trauma Reactions

By encouraging an understanding of the potential *positive* outcomes of traumatic experiences and how they are related to negative outcomes, research on posttraumatic growth such as the present study may represent an important paradigm shift in trauma

research and clinical work (Joseph & Linley, 2008b). The current study supports the suggestion that both positive and negative psychological phenomena should be examined not as separate lines of research, but together as part of an effort to develop an integrated understanding of trauma recovery.

Perhaps as a result of the implicit categorization of “normal” versus “abnormal” behavior in clinical psychology (Maddux, Snyder, & Lopez, 2004), the study of posttraumatic reactions has been unnecessarily divided into investigations of posttraumatic stress versus posttraumatic growth, as if these two outcomes were two separate ends of a continuum instead of different outcomes that very often interact and coexist (Joseph & Linley, 2008a).

In contrast, multidimensional models of emotional well-being suggest that positive and negative adjustment may be independent of one another, such that distress and growth would not be mutually exclusive and instead could exist together, as research shows they do (Cacioppo & Berntson, 1994; Calhoun & Tedeschi, 2006; Joseph & Linley, 2008a). Brain imaging studies, as well as research on emotionally-charged events such as graduating or moving suggests that people can experience both positive and negative states such as distress and well-being simultaneously (Hoebel, Rada, Mark & Pothos, 1999; Irwin, Davidson, Lowe, Mock, Sorenson, & Turski, 1996; LeDoux, 1995; Larsen, McGraw, Mellers, & Cacioppo, 2004; Priester & Petty, 1996; Zautra, Potter, & Reich, 1997). Because trauma is an emotionally-charged event, it is particularly important to examine the potential for experiencing both positive outcomes and negative symptoms simultaneously.

Understanding the relationship between PTSD symptoms and posttraumatic growth is essential to trauma recovery research. It is impossible to understand posttraumatic growth completely without taking into account the distress that precedes it, and we cannot fully understand recovery from posttraumatic stress without taking into account the possibility of growth (Joseph & Linley, 2008a). Thus, these two areas of research are intertwined and should be examined together, as in the current study. It is hoped that these results contribute to the goal of eventually developing an integrated understanding of post-trauma reactions that includes both positive and negative outcomes.

Limitations and Directions for Future Research

The cross-sectional nature of the current investigation makes it impossible to determine causal relationships between the variables studied. Future studies would benefit from examining such relationships longitudinally, as this would permit an exploration of the hypothesis that PTSD symptoms may lead to different types of thinking about a trauma (such as reflection or brooding), which may then lead to different outcomes such as depression or posttraumatic growth. This type of investigation was not possible using the methods of the current investigation.

This study also relied on retrospective self-report data, which may be inaccurate and subject to cognitive biases, particularly when such reports refer to past personal attributes or behaviors (Neisser, 1994; Ransom, Sheldon, & Jacobson 2008). In particular, validation of peoples' reports of posttraumatic growth is impossible when pre-trauma data on domains of posttraumatic growth (i.e. quality of relationships or

perceptions of purpose in life) are not obtained. Thus, we cannot be sure if participants' reports of posttraumatic growth are indicative of actual changes from their pre-trauma state, or simply the result of response bias or even a coping strategy. For example, respondents may report growth so that they can feel better about their trauma and believe that they have gained something from it, even if they actually have not.

Longitudinal studies with time series assessments beginning with pre-trauma baseline (or even a series of assessments to establish pre-trauma trajectory) are needed in order to demonstrate that "change" or "growth" have occurred (Ford, Tennen, & Albert, 2008). College students would be an excellent population for such research. Assuming that many college students will experience a trauma during an academic year (as they reported in the current study), students could be asked at the beginning of the year to rate themselves on certain components of posttraumatic growth such as their current level of relationship satisfaction or feelings of purpose in life. At the end of the year, when many students would likely have experienced a trauma, these domains of posttraumatic growth could be measured again, as well as students' self-reports of posttraumatic growth. Then, the actual changes in posttraumatic growth domains versus their reports of posttraumatic growth could be compared. This type of prospective study would provide additional evidence of the validity of posttraumatic growth reporting.

The current study utilized a non-clinical sample of university students, most of whom were female and under 25 years of age. The restricted nature of this sample may limit the generalizability of the current data. However, in terms of traumatization this sample appears to be an excellent representation of college students, and has experienced

slightly more traumas than the average adult (Bernat et al., 1998; Kessler et al., 1995), which reduces some of the concerns regarding generalizability of the data.

Also, the “most significant” trauma cited most frequently by participants in the current study was the sudden loss of a loved one, which was selected by 30% of the sample. While the sudden death of a loved one does meet the event requirements for a PTSD diagnosis as defined by the DSM IV-TR (American Psychiatric Association, 2001), it is important to note that it is possible the current finding may apply more strictly to bereavement rather than to all traumatic experiences. However, when analyses were re-run with those indicating bereavement as their trauma removed, results did not change.

Frazier, Tix, and Barron (2004) have recommended a number of prerequisites for examination of moderations. Although many of their recommendations were met by the current study, some were not. Those areas where their recommendations were not met should be rectified in future studies if possible. Specifically, they recommend that an outcome variable in a test of moderation have a number of response options equal to the number of predictor response options times the number of moderator term response options. For the current study, that would have required our posttraumatic growth measure to have a Likert scale of 16 possible choices. Ours had only 6. This limitation likely reduced the power of the test of the moderation hypotheses.

Additionally, the reliability of the measure used for the moderator term is extremely important. A difference in $\alpha = .8$ and $.9$ can mean as much as a 50% reduction in power (Frazier et al., 2002). Though reliability for trait brooding and reflection scales was good ($\alpha = .86$ and $.94$ respectively), reliability for state brooding and reflection,

particularly state reflection, was not as good ($\alpha = .89$ and $.77$ respectively). Again, this may have reduced our power to detect the hypothesized moderations.

Conclusions

The results of the current investigation provide encouraging results for future studies of posttraumatic growth. First, future studies should investigate the role of third variables in the relationship between PTSD symptoms and posttraumatic growth. Second, cognitive processing variables appear to represent excellent sources of information as third variables in this relationship. Third, brooding and reflection represent one potential manner in which to investigate distinctions between helpful and un-helpful forms of post-trauma processing, particularly if current measures are improved.

The current results also speak to the importance of examining both positive and negative outcomes of traumatic experience, and ideally working toward understanding how these outcomes interact and coexist. Examining positive outcomes of trauma such as posttraumatic growth in addition to negative outcomes such as PTSD provides a more balanced understanding of post-trauma reactions (Manne et al., 2004; Park, 2004). This change has been described as a paradigm shift from a deficit-oriented approach to a focus on nurturing strengths (Ford, Tennen, & Albert, 2008; Richardson, 2002; Zoellner & Maercker, 2006). A shift toward an examination of strengths rather than disorders, such as from a focus on posttraumatic stress disorder to posttraumatic growth, may greatly improve the field of clinical psychology research, particularly as evidence suggest that most people are resilient and many report positive changes after trauma (Linley &

Joseph, 2008a). An emphasis on posttraumatic growth is particularly important if the goal of clinical work is not just symptom removal but growth and development.

Investigations of such positive psychological outcomes as posttraumatic growth may help to continue the progression of the field from a focus on deficits to the inclusion of positive outcomes such as growth.

APPENDIX

Table 1. Percentage of participants endorsing life traumas on the Traumatic Life Events Questionnaire (Kubaney et al., 2000)

<i>Type of Trauma</i>	<i>% experienced</i>	<i>% “most significant”</i>
Natural disaster	34%	6%
Motor vehicle accident	54%	12%
Other accident	27%	2%
Lived/worked in war zone	14%	1%
Death of loved one	70%	30%
Life threatening illness	10%	2%
Robbed/present for robbery	15%	2%
Physical assault	11%	2%
Witness assault	28%	5%
Life threatened by other	18%	2%
Stalked	30%	2%
Domestic violence	20%	5%
Sexual assault (as adult)	15%	4%
Physical abuse as child	31%	7%
Heard family violence	14%	6%
Childhood sexual assault	9%	6%
Other trauma not listed	14%	2%

Notes: N = 270.

Table 2. Zero-order relations between all variables

Variable	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. PTSD Sxs	41.69	14.83	—							
2. PT Growth	70.51	25.60	.38**	—						
3. Trait Brooding	41.47	9.62	.38**	.12*	—					
4. Trait Reflection	39.27	8.81	.10	.21**	.13*	—				
5. State Brooding	21.13	7.65	.54**	.31**	.53**	.26**	—			
6. State Reflection	31.41	5.82	.24**	.43**	-.01	.22**	.26**	—		
7. Gender	1.82	.39	-.08	-.06	.06	-.04	-.01	.10	—	
8. Depression	35.37	12.06	.60**	.15*	.48**	.11	.61**	.05	.06	—

Notes: N = 270. A double asterisk indicates correlation is significant at .01 alpha level; a single asterisk indicates correlation is significant at .05 level. All p-values were two tailed. PTSD Symptoms: PTSD Checklist-Civilian Version (Weathers et al., 1993); Posttraumatic Growth: Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996); Trait Brooding and Trait Reflection: Rumination and Reflection Questionnaire (Trapnell & Campbell, 1999); State Brooding and State Reflection: Reflection vs Ruminative Mood Orientation Scale (McFarland & Buhler, 1998).

Table 3. Zero order correlations between coping strategies and trait brooding/reflection

<i>Variable</i>	<i>Trait Brooding</i>	<i>Trait Reflection</i>
Positive Reinterpretation	-.01	.25**
Mental Distress	.25**	.11
Instrumental Social Support	-.06	.14*
Active Coping	-.04	.22**
Emotional Social Support	-.08	.14*
Substance use	.13*	-.01
Supportive Action	.01	.15*
Planning	-.05	.27**

Notes: N = 270. A double asterisk indicates correlation is significant at .01 alpha level; a single asterisk indicates correlation is significant at .05 level. All p-values were two tailed. Trait Brooding and Trait Reflection: Rumination and Reflection Questionnaire (Trapnell & Campbell, 1999); All coping variables: The COPE Questionnaire (Carver, Scheier, & Weintraub, 1989).

Table 4. Zero order correlations between coping variables and state brooding/reflection

<i>Variable</i>	<i>State Brooding</i>	<i>State Reflection</i>
Positive Reinterpretation	.04	.43**
Instrumental Social Support	.09	.23**
Active Coping	.11	.37**
Emotional Social Support	.05	.21**
Substance use	.29**	-.01
Planning	.07	.33**
Denial	.32**	.05
Acceptance	.03	.30**

Notes: N = 270. A double asterisk indicates correlation is significant at .01 alpha level; a single asterisk indicates correlation is significant at .05 level. All p-values were two tailed. State Brooding and State Reflection: Reflection vs Ruminative Mood Orientation Scale (McFarland & Buhler, 1998); All coping variables: The COPE Questionnaire (Carver, Scheier, & Weintraub, 1989).

Table 5. Hierarchical regression models of PTSD symptoms and trait-level measure of brooding and reflection on posttraumatic growth

Step		<i>b</i>	S.E. _{<i>b</i>}	β	<i>t</i>	ΔR^2	ΔF	<i>p</i>
Moderator variable:								
Brooding								
1	Gender	.14	.06	.14	2.43	.04	9.61	<.01
3	PTSD sxS	.39	.06	.40	6.35	.12	37.32	<.01
4	Brooding	-.07	.06	-.07	-1.09			.5
5	PTSD*Brood	-.14	.05	-.16	-2.71	.02	7.32	.01
Moderator variable:								
Reflection								
1	Gender	.11	.06	.11	1.92	.03	7.74	.01
3	PTSD sxS	.35	.06	.35	6.19	.12	38.69	<.01
4	Reflection	.14	.06	.14	2.52			.01
5	PTSD*Reflect	-.10	.05	-.12	-2.14	.01	4.59	.03

Notes: N = 265; PTSD Symptoms: PTSD Checklist-Civilian Version (Weathers et al., 1993); Brooding and Reflection: Rumination and Reflection Questionnaire (Trapnell & Campbell, 1999); Posttraumatic Growth: Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996).

Table 6. Hierarchical regression models of PTSD symptoms and state-level measure of brooding and reflection on posttraumatic growth

Step		<i>b</i>	S.E. _{<i>b</i>}	β	<i>t</i>	ΔR^2	ΔF	<i>p</i>
Moderator variable:								
Brooding								
1	Gender	.14	.06	.14	2.40	.03	7.70	.01
3	PTSD sxs	.28	.07	.29	4.10	.12	34.96	<.01
4	Brooding	.16	.07	.16	2.38			.02
5	PTSD*Brood	-.16	.05	-.17	-3.02	.03	9.12	<.01

Moderator variable:

Reflection

1	Gender	.09	.05	.09	1.70	.03	8.26	<.01
2	PTSD sxs	.28	.05	.28	5.30	.12	39.45	<.01
3	Reflection	.35	.05	.35	6.47			<.01
4	PTSD*Reflect	-.11	.05	-.12	-2.29	.01	5.23	.02

Notes: N = 261; PTSD Symptoms: PTSD Checklist-Civilian Version (Weathers et al., 1993); Posttraumatic Growth: Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996); State Brooding and State Reflection: Reflection vs Ruminative Mood Orientation Scale (McFarland & Buhler, 1998).

Table 7. Hierarchical regression models of PTSD symptoms and trait and state-level measure of brooding and reflection on depression

Step		<i>b</i>	S.E. _{<i>b</i>}	β	<i>t</i>	ΔR^2	ΔF	P
Moderator variable:								
Trait Brooding								
1	Gender	-.06	.05	-.05	-1.16	.00	.79	.38
2	PTSD sxS	.44	.05	.43	8.54	.35	142.65	<.01
3	Brooding	.34	.05	.34	6.80		35.95	<.01
4	PTSD*Brood	.18	.04	.20	4.26	.04	18.12	<.01
Moderator variable:								
Trait Reflection								
1	Gender	-.06	.05	-.06	-1.30	.00	.30	.58
3	PTSD sxS	.60	.05	.61	12.37	.37	152.93	<.01
4	Reflection	.06	.05	.06	1.18			.23
5	PTSD*Reflect	-.10	.04	-.12	-2.40	.01	5.78	.02
Moderator variable:								
State Brooding								
1	Gender	.00	.04	.00	.07	.01	1.18	.28
3	PTSD sxS	.33	.05	.33	6.13	.35	137.97	<.01
4	Brooding	.42	.05	.43	8.03		62.84	<.01
5	PTSD*Brood	.14	.04	.15	3.25	.02	10.57	<.01

Notes: *N* = 265; PTSD Symptoms: PTSD Checklist-Civilian Version (Weathers et al., 1993); Brooding and Reflection: Rumination and Reflection Questionnaire (Trapnell & Campbell, 1999); Posttraumatic Growth: Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996).

Measures

TLEQ – used to measure experience of trauma

Please read each question carefully and check all the events which describe your experience.

- _____ 1. Have you ever experienced a natural disaster (flood, hurricane, earthquake, etc.)?
- _____ 2. Were you involved in a motor accident ?
- _____ 3. Have you been involved in any other kind of accident?
- _____ 4. Have you lived, worked, or had military service in a war zone?
- _____ 5. Have you experienced the sudden and unexpected death of a close friend or a loved one?
- _____ 6. Have you ever had a life-threatening illness?
- _____ 7. Have you been robbed or been present during a robbery?
- _____ 8. Have you ever been hit or beaten up by a stranger or someone you did not know very well?
- _____ 9. Have you seen a stranger (or someone you did not know very well) attack or beat up someone?
- _____ 10. Has anyone threatened to kill you or cause you serious harm?
- _____ 11. Has anyone followed you or stalked you, causing you to feel concerned for your safety?
- _____ 12. Have you ever been slapped, punched, kicked, beaten up, or otherwise physically hurt by your significant other (boyfriend, girlfriend, spouse, etc.)?
- _____ 13. *After your 18th birthday*: Did anyone touch sexual parts of your body or make you touch sexual parts of his/her body against you will or without your consent?
- _____ 14. *If you answered “yes” to #13*: Was there oral, anal, or vaginal penetration? _____
- _____ 15. *While growing up*: Were you physically punished in way that resulted in bruises, burns, or other injuries?

_____ 16. *While growing up*: Did you see or hear family violence?

_____ 17. *Before your 13th birthday*: Did anyone who was at least 5 years older than you touch or fondle your body in a sexual way or make you touch his/her body in a sexual way?

_____ 18. Have you experienced (or seen) any other events that were life threatening, caused serious injury, or were highly disturbing or distressing?

Please describe _____

Many of the remaining questionnaires will ask you to answer questions based on your “most significant” stressful experience. Please take a moment now to consider what stressful experience of yours you would consider the most significant. Please circle that experience in the above list and keep it in mind when you complete the remaining questionnaires.

Please identify approximately when this particular stressful experience occurred:

Month _____ Year: _____

Additionally, please circle how severe your reaction to this stressful experience was, meaning how distressing this experience was to you, using the following scale:

Not at all Distressing _____ Somewhat Distressing _____ Very Distressing _____ Extremely Distressing _____
0 1 2 3 4 5 6 7 8 9 10

PCL-C – Measure of PTSD Symptoms

INSTRUCTIONS: Below is a list of problems and complaints that people sometimes have in response to stressful experiences. Please read each one carefully, put an X in the box to indicate how much you have been bothered by that problem in the past month.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
1.	Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience?	1	2	3	4	5
2.	Repeated, disturbing <i>dreams</i> of a stressful experience?	1	2	3	4	5
3.	Suddenly <i>acting or feeling</i> as if a stressful experience <i>were happening again</i> (as if you were reliving it)?	1	2	3	4	5
4.	Feeling <i>very upset</i> when <i>something reminded you</i> of a stressful experience?	1	2	3	4	5
5.	Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when <i>something reminded you</i> of a stressful experience?	1	2	3	4	5
6.	Avoiding <i>thinking about</i> or <i>talking about</i> a stressful experience or avoiding <i>having feelings</i> related to it?	1	2	3	4	5

7.	Avoiding <i>activities</i> or <i>situations</i> because <i>they reminded you</i> of a stressful experience?	1	2	3	4	5
8.	Trouble <i>remembering important parts</i> of a stressful experience?	1	2	3	4	5
9.	Loss of interest in activities that you used to enjoy?	1	2	3	4	5
10.	Feeling distant or cut off from other people?	1	2	3	4	5
11.	Feeling emotionally numb or being unable to have loving feelings for those close to you?	1	2	3	4	5
12.	Feeling as if your future will somehow be cut short?	1	2	3	4	5
13.	Trouble falling or staying asleep?	1	2	3	4	5
14.	Feeling irritable or having angry outbursts?	1	2	3	4	5
15.	Having difficulty concentrating?	1	2	3	4	5

16.	Being "super-alert" or watchful or on guard?	1	2	3	4	5
17.	Feeling "jumpy" or easily startled?	1	2	3	4	5

Posttraumatic Growth Inventory

Indicate for each of the statements below the degree to which this change occurred in your life as a result of your stressful experience, using the following scale.

- 0= I did not experience this change as a result of my stressful experience.
- 1= I experienced this change to a very small degree as a result of my stressful experience.
- 2= I experienced this change to a small degree as a result of my stressful experience.
- 3= I experienced this change to a moderate degree as a result of my stressful experience.
- 4= I experienced this change to a great degree as a result of my stressful experience.
- 5= I experienced this change to a very great degree as a result of my stressful experience.

- _____ 1. I changed my priorities about what is important in life. (V)
- _____ 2. I have a greater appreciation for the value of my own life. (V)
- _____ 3. I developed new interests. (II)
- _____ 4. I have a greater feeling of self-reliance. (III)
- _____ 5. I have a better understanding of spiritual matters. (IV)
- _____ 6. I more clearly see that I can count on people in times of trouble. (I)
- _____ 7. I established a new path for my life. (II)
- _____ 8. I have a greater sense of closeness with others. (I)
- _____ 9. I am more willing to express my emotions. (I)
- _____ 10. I know better that I can handle difficulties. (III)
- _____ 11. I am able to do better things with my life. (II)
- _____ 12. I am better able to accept the way things work out. (III)
- _____ 13. I can better appreciate each day. (V)
- _____ 14. New opportunities are available which wouldn't have been otherwise. (II)

- _____ 15. I have more compassion for others. (I)
- _____ 16. I put more effort into my relationships. (I)
- _____ 17. I am more likely to try to change things which need changing. (II)
- _____ 18. I have a stronger religious faith. (IV)
- _____ 19. I discovered that I'm stronger than I thought I was. (III)
- _____ 20. I learned a great deal about how wonderful people are. (I)
- _____ 21. I better accept needing others. (I)

Note: Scale is scored by adding all responses. Factors are scored by adding responses to items on each factor. Items to which factors belong are not listed on form administered to participants.

PTGI Factors

- Factor I: Relating to Others
 Factor II: New Possibilities
 Factor III: Personal Strength
 Factor IV: Spiritual Change
 Factor V: Appreciation of Life

RRQ –trait level measure of brooding versus reflection

For each of the statements located on the next two pages, please indicate your level of agreement or disagreement by writing your response to the right of each statement. Use the scale as shown below.

- 1 = Strongly Disagree**
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

Brooding

- _____ 1. My attention is often focused on aspects of myself I wish I'd stop thinking about.
- _____ 2. I always seem to be rehashing in my mind recent things I've said or done.
- _____ 3. Sometimes it is hard for me to shut off thoughts about myself.
- _____ 4. Long after an argument or disagreement is over with, my thoughts keep going

back to what happened.

- _____ 5. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward.
- _____ 6. I don't waste time rethinking things that are over and done with. (—)
- _____ 7. Often I'm playing back over in my mind how I acted in a past situation.
- _____ 8. I often find myself reevaluating something I've done.
- _____ 9. I never ruminate or dwell on myself for very long. (-)
- _____ 10. It is easy for me to put unwanted thoughts out of my mind. (—)
- _____ 11. I often reflect on episodes in my life that I should no longer concern myself with.
- _____ 12. I spend a great deal of time thinking back over my embarrassing or disappointing moments.

Reflection

- _____ 13. Philosophical or abstract thinking doesn't appeal to me that much. (—)
- _____ 14. I'm not really a meditative type of person. (—)
- _____ 15. I love exploring my "inner" self.
- _____ 16. My attitudes and feelings about things fascinate me.
- _____ 17. I don't really care for introspective or self-reflective thinking. (—)
- _____ 18. I love analyzing why I do things.
- _____ 19. People often say I'm a "deep," introspective type of person.
- _____ 20. I don't care much for self-analysis. (—)
- _____ 21. I'm very self-inquisitive by nature.
- _____ 22. I love to meditate on the nature and meaning of things.
- _____ 23. I often love to look at my life in philosophical ways.
- _____ 24. Contemplating myself isn't my idea of fun. (—)

McFarland et al – State level measure of Reflection and Brooding

Once again thinking about the stressful experience that you described as most significant, please rate the degree to which you have thought about your experience in the following ways. Please use this scale:

- 0 – Almost never**
- 1 – Sometimes**
- 2 – Often**
- 3 – Almost always**

Reflection list

- _____ 1. I don't want to dwell on my feelings.
- _____ 2. I feel like I want to do something to make myself feel better.
- _____ 3. I feel like distracting myself from these feelings.
- _____ 4. I feel like doing something that I have enjoyed in the past.
- _____ 5. I find my feelings clear and easy to label.
- _____ 6. I can't deny I'm feeling something.
- _____ 7. I find I can acknowledge any negativity I have.
- _____ 8. I am willing to attend to my feelings.
- _____ 9. My feelings can be controlled.
- _____ 10. I believe I can change and improve my feelings.
- _____ 11. If I know what I feel I can alter my moods.
- _____ 12. I can think positively to eliminate any negativity I feel.

Brooding list

- _____ 1. I find myself focused on my feelings.
- _____ 2. I feel passive and fatigued.
- _____ 3. I find myself wondering why I feel the way I do about myself.
- _____ 4. I tend to dwell on my feelings after imagining experiences such as this.
- _____ 5. I wonder why I always react to things in the same way.
- _____ 6. I find myself ruminating somewhat about my mood.
- _____ 7. I want to be by myself and analyze my reactions more.
- _____ 8. I feel focused on myself, like I'm observing myself.
- _____ 9. I find myself thinking about what my reactions imply about the kind of person I am.

- _____ 10. My feelings are mixed and not easy to label.
- _____ 11. It isn't easy to change or improve my mood.
- _____ 12. I am aware of my feelings, but I'm not sure what to do about them.

COPE

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress. Please use the following scale when responding to these items. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU--not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

- 1 = I usually don't do this at all**
- 2 = I usually do this a little bit**
- 3 = I usually do this a medium amount**
- 4 = I usually do this a lot**

- _____ 1. I try to grow as a person as a result of the experience.
- _____ 2. I turn to work or other substitute activities to take my mind off things.
- _____ 3. I get upset and let my emotions out.
- _____ 4. I try to get advice from someone about what to do.
- _____ 5. I concentrate my efforts on doing something about it.
- _____ 6. I say to myself "this isn't real."
- _____ 7. I put my trust in God.
- _____ 8. I laugh about the situation.
- _____ 9. I admit to myself that I can't deal with it, and quit trying.
- _____ 10. I restrain myself from doing anything too quickly.
- _____ 11. I discuss my feelings with someone.
- _____ 12. I use alcohol or drugs to make myself feel better.

- ___ 13. I get used to the idea that it happened.
- ___ 14. I talk to someone to find out more about the situation.
- ___ 15. I keep myself from getting distracted by other thoughts or activities.
- ___ 16. I daydream about things other than this.
- ___ 17. I get upset, and am really aware of it.
- ___ 18. I seek God's help.
- ___ 19. I make a plan of action.
- ___ 20. I make jokes about it.
- ___ 21. I accept that this has happened and that it can't be changed.
- ___ 22. I hold off doing anything about it until the situation permits.
- ___ 23. I try to get emotional support from friends or relatives.
- ___ 24. I just give up trying to reach my goal.
- ___ 25. I take additional action to try to get rid of the problem.
- ___ 26. I try to lose myself for a while by drinking alcohol or taking drugs.
- ___ 27. I refuse to believe that it has happened.
- ___ 28. I let my feelings out.
- ___ 29. I try to see it in a different light, to make it seem more positive.
- ___ 30. I talk to someone who could do something concrete about the problem.
- ___ 31. I sleep more than usual.
- ___ 32. I try to come up with a strategy about what to do.
- ___ 33. I focus on dealing with this problem, and if necessary let other things slide a little.
- ___ 34. I get sympathy and understanding from someone.
- ___ 35. I drink alcohol or take drugs, in order to think about it less.
- ___ 36. I kid around about it.
- ___ 37. I give up the attempt to get what I want.
- ___ 38. I look for something good in what is happening.
- ___ 39. I think about how I might best handle the problem.
- ___ 40. I pretend that it hasn't really happened.

- _____ 41. I make sure not to make matters worse by acting too soon.
- _____ 42. I try hard to prevent other things from interfering with my efforts at dealing with this.
- _____ 43. I go to movies or watch TV, to think about it less.
- _____ 44. I accept the reality of the fact that it happened.
- _____ 45. I ask people who have had similar experiences what they did.
- _____ 46. I feel a lot of emotional distress and I find myself expressing those feelings a lot.
- _____ 47. I take direct action to get around the problem.
- _____ 48. I try to find comfort in my religion.
- _____ 49. I force myself to wait for the right time to do something.
- _____ 50. I make fun of the situation.
- _____ 51. I reduce the amount of effort I'm putting into solving the problem.
- _____ 52. I talk to someone about how I feel.
- _____ 53. I use alcohol or drugs to help me get through it.
- _____ 54. I learn to live with it.
- _____ 55. I put aside other activities in order to concentrate on this.
- _____ 56. I think hard about what steps to take.
- _____ 57. I act as though it hasn't even happened.
- _____ 58. I do what has to be done, one step at a time.
- _____ 59. I learn something from the experience.
- _____ 60. I pray more than usual.

Scales (sum items listed, with no reversals of coding):

Positive reinterpretation and growth: 1, 29, 38, 59

Mental disengagement: 2, 16, 31, 43

Focus on and venting of emotions: 3, 17, 28, 46

Use of instrumental social support: 4, 14, 30, 45

Active coping: 5, 25, 47, 58

Denial: 6, 27, 40, 57

Religious coping: 7, 18, 48, 60
Humor: 8, 20, 36, 50
Behavioral disengagement: 9, 24, 37, 51
Restraint: 10, 22, 41, 49
Use of emotional social support: 11, 23, 34, 52
Substance use: 12, 26, 35, 53
Acceptance: 13, 21, 44, 54
Suppression of competing activities: 15, 33, 42, 55
Planning: 19, 32, 39, 56

Beck Depression Inventory – II

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure

- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure

- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings

- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike

- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed with myself.
- 3 I dislike myself.

8. Self-Criticalness

- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying

- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

11. Agitation

- 0 I am no more restless or wound up than usual.
- 1 I feel more restless or wound up than usual.

- 2 I am so restless or agitated that it's hard to stay still.
- 3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or things than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.

13. Indecisiveness

- 0 I make decisions about as well as ever.
- 1 I find it more difficult to make decisions than usual.
- 2 I have much greater difficulty in making decisions than I used to.
- 3 I have trouble making any decisions.

14. Worthlessness

- 0 I do not feel I am worthless.
- 1 I don't consider myself as worthwhile and useful as I used to.
- 2 I feel more worthless as compared to other people.
- 3 I feel utterly worthless.

15. Loss of Energy

- 0 I have as much energy as ever.
- 1 I have less energy than I used to have.
- 2 I don't have enough energy to do very much.
- 3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

- 0 I have not experienced any change in my sleeping pattern.
- 1a I sleep somewhat more than usual.
- 1b I sleep somewhat less than usual.
- 2a I sleep a lot more than usual.
- 2b I sleep a lot less than usual.
- 3a I sleep most of the day
- 3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

- 0 I am no more irritable than usual.
- 1 I am more irritable than usual.
- 2 I am much more irritable than usual.
- 3 I am irritable all the time.

18. Changes in Appetite

- 0 I have not experienced any change in my appetite.
- 1a My appetite is somewhat less than usual.
- 1b My appetite is somewhat greater than usual.
- 2a My appetite is much less than before.
- 2b My appetite is much greater than usual.
- 3a I have no appetite at all.
- 3b I crave food all the time.

19. Concentration Difficulty

- 0 I can concentrate as well as ever.
- 1 I can't concentrate as well as usual.
- 2 It's hard to keep my mind on anything for very long.
- 3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

- 0 I am no more tired or fatigued than usual.
- 1 I get tired or fatigued more easily than usual.
- 2 I am too tired or fatigued to do a lot of the things I used to do.
- 3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

- 0 I have not noticed any recent change in my interest in sex.
- 1 I am less interested in sex than I used to be.
- 2 I am much less interested in sex now.
- 3 I have lost interest in sex completely.

REFERENCES

- Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality, 64*, 899-922.
- Aiken, L.S., & West, S.G. (1991). *Multiple regression: testing and interpreting interactions*. London: Sage.
- Aldwin, C., Levenson, M., & Spiro, A. (1994). Vulnerability and resilience to combat exposure: Can stress have lifelong effects? *Psychology and Aging, 9*, 34-44.
- American Psychiatric Association (2001). *Diagnostic and statistical manual of mental disorders* (4th Edition, Revised). Washington, DC: Author.
- Antoni, M. H., Lehman, J. M., Klibourn, K. M., Boyers, A. E., Culver, J. L., Alferi, S. M., Yount, S. E., McGregor, B. A., Arena, P. L., Harris, S. D., Price, A. A., & Carver, C. S. (2001). Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychology, 20*, 20-32.
- Baum, A. (1990). Stress, intrusive imagery and chronic distress. *Health Psychology, 9*, 653-675.
- Baum, A., Cohen, L., & Hall, M. (1993). Control and intrusive memories as possible determinants of chronic stress. *Psychosomatic Medicine, 55*, 274-286.
- Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.

- Bernat, J.A., Ronfeldt, H.M., Calhoun, K.S. (1998). Prevalence of traumatic events and peritraumatic predictors of posttraumatic stress symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress, 11*, 645-664.
- Boudreaux, E., Kilpatrick, D., Resnick, H., Best, C., and Saunders, B. (1998). Criminal victimization, posttraumatic stress disorder and comorbid psychopathology among a community sample of women, *Journal of Traumatic Stress 11*, 665–678.
- Bower, J.E., Kemeny, M.E., Taylor, S.E., & Fahey, J.L. (2003). Finding positive meaning and its association with natural killer cell cytotoxicity among participants in a bereavement-related disclosure intervention. *Annals of Behavioral Medicine, 25*, 146-155.
- Breslau, N., & Davis, G. C. (1987). Posttraumatic stress disorder: The stressor criterion. *The Journal of Nervous and Mental Disease, 175*, 255–264.
- Breslau, N., Davis, G., Andreski, P., & Peterson, E. (1991). Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry, 48*, 216–222.
- Brewin, C., & Holmes, E. (2003). Psychological theories of posttraumatic stress disorder. *Clinical Psychology Review, 23*, 339-376.
- Brown, T.A., Di Nardo, P.A., Lehman, C.L., & Campbell, L.A. (2001). Reliability of DSM-IV anxiety and mood disorders: implications for the classification of emotional disorders, *Journal of Abnormal Psychology, 110*, 49–58.
- Buchi, S., Morgeli, H., & Schnyder, U. (2007). Grief and post-traumatic growth in parents 2-6 years after the death of their extremely premature baby. *Psychotherapy and Psychosomatics, 76*, 106-114.
- Butler, L.D. (2007). Growing pains: Commentary on the field of posttraumatic growth and Hobfoll and colleagues' recent contributions to it. *Applied Psychology: An International Review, 56*, 367-378.

- Cacioppo, J. T., & Berntson, G. G. (1994). Relationship between attitudes and evaluative space: A critical review, with emphasis on the separability of positive and negative substrates. *Psychological Bulletin*, *115*, 401–423.
- Calhoun, L.G., & Tedeschi, R.G. (2008). The paradox of struggling with Trauma: Guidelines for practice and directions for research. In: *Trauma, Recovery, and Growth*. Joseph, S., & Linley, P.A. (Eds.), New Jersey, Wiley.
- Calhoun, L. G., Cann, A. & Tedeschi, R. G. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *Journal of Traumatic Stress*, *13*, 521-527.
- Calhoun, L., & Tedeschi, R. (1998). Beyond recovery from trauma: Implications for clinical practice and research. *Journal of Social Issues*, *54*, 357-371.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, *56*, 267–283.
- Cella, D.F., & Tross, S. (1986). Psychological adjustment to survival from Hodgkin's disease. *Journal of Consulting and Clinical Psychology*, *54*, 616–622.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155-159.
- Collins, R. L., Taylor, S. E., & Skokan, L. A. (1990). A better world or a shattered vision? Changes in life perspectives following victimization. *Social Cognition*, *8*, 263–285.
- Cordova, M.J. (2008). Facilitating posttraumatic growth following cancer. In: *Trauma, Recovery, and Growth*. Stephen Joseph & P. Alex Linley (Eds.) New Jersey: Wiley & Sons.
- Cordova, M. J., Cunningham, L. L., & Carlson, C. R. (2001). Posttraumatic growth following breast cancer. *Health Psychology*, *20*, 176-185.

- Creamer, M., Burgess, P., & Patterson, P. (1992). Reaction to trauma: A cognitive processing model. *Journal of Abnormal Psychology, 101*, 452-459.
- Davis, C. G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology, 75*, 561-574.
- Dunmore, E., Clark, D., Ehlers, A. (2001). A prospective investigation of the role of cognitive factors in persistent Posttraumatic Stress Disorder (PTSD) After Physical or Sexual Assault. *Behaviour Research and Therapy, 39*, 1063-1084.
- Ehlers, A., Clark, D., Dunmore, E., Jaycox, L., Meadows, E., & Foa, E. (1998). Predicting response to exposure treatment in PTSD: The role of mental defeat and Alienation. *Journal of Traumatic Stress, 11*, 457-473.
- Ehlers, A., Clark, D.M., Hackmann, A., McManus, F., Fennell, M.J.V., Herbert, C., et al. (2003). A randomized controlled trial of cognitive therapy, a self-help booklet, and repeated assessment as early interventions for PTSD. *Archives of General Psychiatry, 60*, 1024-1032.
- Erickson D., Wolfe J., King D., King L., Sharkansky E. (2001). Posttraumatic stress disorder and depression symptomatology in a sample of Gulf War veterans: a prospective analysis. *Journal of Consulting and Clinical Psychology, 69* 41-49.
- Foa, E. B., & Rothbaum, B. O. (1998). *Treating the trauma of rape*. New York: Guilford Press.
- Ford, J.D., Tennen, H., & Albert, D. (2008). A contrarian view of growth following adversity. In: *Trauma, Recovery, and Growth*. S. Joseph and P.A. Linley (Eds.). New Jersey: Wiley & Sons.
- Frazier, P. A., Conlon, A., & Glaser, T. (2001). Positive and negative life changes following sexual assault, *Journal of Consulting and Clinical Psychology, 69*, 1048-1055.

- Frazier, P.A. & Kaler, M.E. (2006). Assessing the validity of self-reported stress-related growth. *Journal of Consulting and Clinical Psychology, 74*, 859-869.
- Frazier, P.A., Tix, A.P., & Barron, K.E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology 51*, 115-134.
- Fresco, D.M., Frankel, A.N., Mennin, D. S., Turk, C. L., & Heimberg, R.G. (2002). Distinct and overlapping features of rumination and worry: The relationship of cognitive production to negative affective states. *Cognitive Therapy and Research, 26*, 179–188.
- Fromm, K., Andrykowski, M. A., & Hunt, J. (1996). Positive and negative psychological sequelae of bone marrow transplantation: Implications for quality of life assessment. *Journal of Behavioral Medicine, 19*, 221–240.
- Greenberg, M.A. (1995). Cognitive processing of traumas: The role of intrusive thoughts and reappraisals. *Journal of Applied Social Psychology, 25*, 1262-1296.
- Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology, 74*, 797-816.
- Hoebel, B. G., Rada, P. V., Mark, G. P., & Pothos, E. N. (1999). Neural systems for reinforcement and inhibition of eating: Relevance to eating, addiction, and depression. In D.Kahneman, E.Diener, & N.Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 558–572). New York: Cambridge University Press.
- Holtzheimer, P., Russo, J., Zatzick, D., Bundy, C., Roy-Byrne, P. (2005). The impact of comorbid posttraumatic stress disorder on short-term clinical outcome in hospitalized patients with depression. *The American Journal of Psychiatry, 162*, 970-977.
- Horowitz, M.J. (1986). *Stress response syndromes*. Northville, NJ: Jason Aronson.

- Ickovics, J. R., Meade, C. S., Kershaw, T. S., Milam, S., Lewis, J. B., & Ethier, K. A. (2006). Urban teens: Trauma, posttraumatic growth, and emotional distress among female adolescents. *Journal of Consulting and Clinical Psychology, 74*, 841-850.
- Irwin, W., Davidson, R. J., Lowe, M. J., Mock, B. J., Sorenson, J. A., & Turski, P. A. (1996). Human amygdala activation detected with echo-planar functional magnetic resonance imaging. *Neuroreport, 7*, 1765–1769.
- Janoff-Bulman, R. (1992). *Shattered assumptions: Toward a new psychology of trauma*. New York: Free Press.
- Joseph, S., & Linley, P.A. (2008a). Reflections on Theory and Practice in Trauma, Recovery, and Growth. In: *Trauma, Recovery, and Growth*. Joseph, S., & Linley, P.A. (Eds.), New Jersey, Wiley.
- Joseph, S., & Linley, P.A. (2008b). Positive psychological perspectives on posttraumatic stress: An integrative psychosocial framework. In: *Trauma, Recovery, and Growth*. Joseph, S., & Linley, P.A. (Eds.), New Jersey, Wiley.
- Kane, J.Q., Kashdan, T.B., & Kecmanovic, J. (2009, under review). PTSD symptoms, meaning in life, and post-trauma growth: Experiential avoidance offers insight into when problems are most pronounced.
- Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., Walters, E.E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*, 593-602.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52*, 1048–1060.

- Kubany, E., Hanes, S., Leisen, M., Owens, J., Kaplan, S., & Watson, S. (2000). Development and preliminary validation of a brief broad-spectrum measure of trauma exposure: The Traumatic Life Events Questionnaire. *Psychological Assessment, 12*, 210-224.
- Larsen, J.T., McGraw, A. P., Mellers, B.A., & Cacioppo, J.T. (2004). The agony of victory and thrill of defeat: mixed emotional reactions to disappointing wins and relieving losses. *Psychological Science, 15*, 325-330.
- Lechner, S.C., Carver, C.S., Antoni, M.H., Weaver, K.E., & Phillips, K.M. (2006). Curvilinear associations between benefit finding and psychosocial adjustment to breast cancer. *Journal of Consulting and Clinical Psychology, 74*, 828–840.
- LeDoux, J. E. (1995). Emotions: Clues from the brain. *Annual Review of Psychology, 46*, 209–235.
- Lepore, S. J., Ragan, J. D., & Jones, S. (2000). Talking facilitates cognitive-emotional processes of adaptation to an acute stressor. *Journal of Personality and Social Psychology, 78*, 499-508.
- Linley, A.P., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*, 11-21.
- Lyubomirsky, S., Tucker, K.L., Caldwell, N.D. and Berg, K. (1999). Why ruminators are poor problem solvers: Clues from the phenomenology of dysphoric rumination. *Journal of Personality and Social Psychology 77*, 1041–1060.
- Maddux, J.E., Snyder, C.R., & Lopez, S.J. (2004). Toward a positive clinical psychology: Deconstructing the illness ideology and constructing an ideology of human strengths and potential. In P.A. Linley & S. Joseph (Eds.), *Positive psychology in practice*. Hoboken, NJ: Wiley.
- Manne, S., Ostroff, J., & Winkel, G. (2004). Posttraumatic growth after breast cancer: patient, partner, and couple perspectives. *Psychosomatic Medicine, 66*, 442-454.

- Martin, L.L., & Tesser, A. (1996). Some Ruminative Thoughts. In Wyer, R.S. (Eds.). *Ruminative Thoughts, Advances in Social Cognition*, Volume IX, (pp. 1-47). Lawrence Erlbaum Associates: New Jersey.
- McIntosh, D.N., Silver, R.C. & Wortman, C. (1993). Religion's role in adjustment to a negative life event: Coping with the loss of a child. *Journal of Personality and Social Psychology*, *65*, 812-821.
- McFarland, C., & Alvaro, C. (2000). The impact of motivation on temporal comparisons: Coping with traumatic events by perceiving personal growth. *Journal of Personality and Social Psychology*, *79*, 327-343.
- McFarland, C., & Buehler, R. (1998). The impact of negative affect on autobiographical memory: The role of self-focused attention to moods. *Journal of Personality and Social Psychology*, *75*, 1424-1440.
- McFarland, C., Buehler, R., von Ruti, R., Nguyen, L., & Alvaro, C. (2007). The impact of negative moods on self-enhancing cognitions: The role of reflective versus ruminative mood orientations. *Journal of Personality and Social Psychology*, *93*, 728-750.
- McMillen, J.C., Smith, E.M., & Fisher, R.H. (1997). Perceived benefit and mental health after three types of disaster. *Journal of Consulting and Clinical Psychology*, *65*, 733-739.
- Milam, J. E. (2004). Posttraumatic growth among HIV/AIDS patients. *Journal of Applied Social Psychology*, *34*, 2353-2376.
- Monmartin, S., Silove, D., Manicavasagar, V., Steel, Z. (2004). Comorbidity of PTSD and depression: associations with trauma exposure, symptom severity and functional impairment in Bosnian refugees in Australia. *Journal of Affective Disorders*, *80*, 231-238.

- Neisser, U. (1994). Self-narratives: True and false. In U. Neisser & R. Fivush (Eds.), *The remembering self: Construction and accuracy in the self-narrative* (pp. 1–18). New York: Cambridge University Press.
- Nice, D.S., Garland, C.F., Hilton, S.M., Baggett, J.C., & Mitchell, R.E. (1996). Long-term health outcomes and medical effects of torture among U.S. Navy prisoners of war in Vietnam. *Journal of the American Medical Association*, *276*, 375-381.
- Nixon, R., Resick, P., Nishith, P. (2004). An exploration of comorbid depression among female victims of intimate partner violence with posttraumatic stress disorder. *Journal of Affective Disorders*, *82*, 315-320.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology* *100*, 569–582.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and distress following a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology*, *61*, 115-121.
- Nolen-Hoeksema, S., Wisco, B.E., & Lyubomirsky, S. (2008). Rethinking Rumination. *Perspectives on Psychological Science*, *3*, 400-424
- O’Leary, V. E., Alday, C. S., & Ickovics, J. R. (1998). Models of life change and posttraumatic growth. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 127-151). Mahwah, NJ Lawrence Erlbaum Associates, Publishers.
- Oquendo, M., Brent, D., Birmaher, B. (2005). Posttraumatic Stress Disorder Comorbid With Major Depression: Factors Mediating the Association With Suicidal Behavior. *American Journal of Psychiatry*, *162*, 560-566.
- Park, C.L., Aldwin, C.M., Fenster, J.R., & Snyder, L.B. (2008). Pathways to posttraumatic growth versus posttraumatic stress: Coping and emotional reactions following the September 11, 2001, terrorist attacks. *Journal of Orthopsychiatry*, *78*, 300-312.

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, *64*, 71-105.

Park, C. L., & Fenster, J. (2004). Stress-related growth: Predictors of occurrence and correlates with psychological adjustment. *Journal of Social and Clinical Psychology*, *23*, 195-215.

Park, C. L., & Hegelson, V. (2006). Growth following highly stressful life events—current status and future directions. *Journal of Consulting and Clinical Psychology*, *74*, 791-796.

Patterson, D. R., Carrigan, L., Robinson, R., & Questad, K. A. (1990). Posttraumatic stress disorder in hospitalized patients with burn injuries. *Journal of Burn Care and Rehabilitation*, *11*, 181-184.

Powell, S., Rosner, R., Butollo, W., Tedeschi, R., & Calhoun, L.G. (2003). Posttraumatic growth after war: A study with former refugees and displaced people in Sarajevo. *Journal of Clinical Psychology*, *59*, 71-83.

Priester, J. R., & Petty, R. E. (1996). The gradual threshold model of ambivalence: Relating the positive and negative bases of attitudes to subjective ambivalence. *Journal of Personality and Social Psychology*, *71*, 431-449.

Rabe, S., Zoellner, T., Maercker, A. & Karl, A. (2006) Neural correlates of posttraumatic growth after severe motor vehicle accidents. *Journal of Consulting and Clinical Psychology* *74*, 880-886.

Ransom, S., Sheldon, K.M., Jacobsen, P.B. (2008). Actual change and inaccurate recall contribute to posttraumatic growth following radiotherapy. *Journal of consulting and clinical psychology*, *76*, 811-819.

Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, *58*, 307-321.

- Rosen, G.M., & Lilenfeld, S.O. (2008). Posttraumatic stress disorder: An empirical evaluation of core assumptions. *Clinical Psychology Review, 28*, 837-868.
- Rothbaum, B. O., Foa, E. B., Riggs, D. S., Murdock, T., & Walsh, W. (1992). A prospective examination of post-traumatic stress disorder in rape victims. *Journal of Traumatic Stress, 5*, 455-475.
- Ruscio, A.M., Ruscio, J., Keane, T.M. (2002). The latent structure of posttraumatic stress disorder: A taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology, 111*, 290–301.
- Schorr, Y. H., & Roemer, L. (2002). *Posttraumatic meaning making: Toward a clearer definition*. Poster presented at the annual meeting of the International Society for Traumatic Stress Studies in Baltimore, Maryland, USA.
- Sears, S. R., Stanton, A. L., & Danoff-Burg, S. (2003). The yellow brick road and the emerald city: Benefit finding, positive reappraisal coping, and posttraumatic growth in women with early-stage breast cancer. *Health Psychology, 22*, 487–497.
- Sergestorm, S., & Alden, L. (2000). Worry and rumination: Repetitive thought as a concomitant and predictor of negative mood. *Cognitive Therapy and Research, 24*, 671-688.
- Shakespeare-Finch, J., & Enders, T. (2008). Corroborating evidence of posttraumatic growth. *Journal of Traumatic Stress, 21*, 421-424.
- Shalev, A. Y. (1992). Posttraumatic stress disorder among injured survivors of a terrorist attack. *The Journal of Nervous and Mental Disease, 180*, 505-509.
- Sheika, A.L., & Marotta, S.A. (2008). Best practices for counseling in cardiac rehabilitation settings. *Journal of Counseling & Development, 86*, 111-119.

- Shiri, S., Wexler, I.D., Alkalay, Y., Meiner, Z., & Kreitler, S. (2008). Positive psychological impact of treating victims of politically motivated violence among hospital-based health care providers. *Psychotherapy and Psychosomatics*, *77*, 315-318.
- Shmotkin, D., Blumstein, T., Modan, B. (2007). Tracing long-term effects of early trauma: A broad-scope view of Holocaust survivors in late life. In: *Modern terrorism and psychological trauma*. Trappler, Brian (Ed.). New York, NY Gordian Knot Books.
- Siegel, K., & Schrimshaw, E. W. (2003). Reasons for adopting celibacy among older men and women living with HIV/AIDS. *Journal of Sex Research*, *40*, 189–200.
- Siegle, G.J., Moore, P.M., Thase, M.E. (2004). Rumination: One construct, many features in healthy individuals, depressed individuals, and individuals with lupus. *Cognitive Therapy and Research*, *28*, 645-668.
- Snape, M.C. (1997) Reactions to a traumatic event: The good, the bad and the ugly? *Psychology, Health and Medicine*, *2*, 237-242.
- Stanton, A. L., Bower, J. E., & Low, C. A. (2006). Posttraumatic growth after cancer. In L. G. Calhoun & R. G. Tedeschi (Eds.), *Handbook of posttraumatic growth: Research and practice* (pp. 138–175). Mahwah, NJ: Erlbaum.
- Taylor, S.E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, *38*, 1161–1173.
- Teasdale, J.D. (1999). Emotional processing, three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy* *37*, S53–S77.
- Teasdale, J.D., & Green, H.A.C. (2004). Ruminative self-focus and autobiographical memory. *Personality and Individual Differences*, *36*, 1933–1943.
- Tedeschi, R. G. (1999). Violence Transformed: Posttraumatic Growth in Survivors and their Societies. *Aggression and Violent Behavior*, *4*, 319-341.

- Tedeschi, R., & Calhoun, L. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*, 455-471.
- Tedeschi, R., & Calhoun, L. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry, 15*, 1-18.
- Tedeschi, R.G., & Calhoun, L.G. (2009). The clinician as expert companion. In: *Medical illness and positive life change: Can crisis lead to personal transformation?* C. L. Park, S. C. Lechner, M. H. Antoni, & A. L. Stanton, (Eds.). Washington, DC: American Psychological Association, 215-235.
- Tedeschi, R.G., Calhoun, L.G. & Cann, A. (2007). Evaluating resource gain: Understanding and misunderstanding posttraumatic growth. *Applied Psychology, 56*, 396-406
- Tedeschi, R. G., Calhoun, L. G., & Cooper, L. (2000). *Rumination and posttraumatic growth in older adults*. Paper presented at the meeting of the American Psychological Association, Washington, DC.
- Trapnell, P. D., & Campbell, J. D. (1999). Self-consciousness and the five-factor model of personality: Distinguishing rumination from reflection. *Journal of Personality and Social Psychology, 76*, 284-304
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27*, 247–259.
- Ullrich, P.M., Lutgendorf, S.K. (2002). Journaling about stressful events: Effects of cognitive processing and emotional expression. *Annals of Behavioral Medicine, 24*, 244-250.
- Updegraff, J. A., & Taylor, S. E. (2001). From vulnerability to growth: Positive and negative effects of stressful life events. In J. H. Harvey & E. D. Miller (Eds.), *Handbook of loss and trauma*. New York: Bruner/Mazel.

- Val, E.B., & Linley, P. (2006). Posttraumatic growth, positive changes, and negative changes in Madrid residents following the March 11, 2004, Madrid train bombings. *Journal of Loss and Trauma, 11*, 409-424.
- Vrana, S., & Lauterbach, D. (2001). The relationship among personality variables, exposure to traumatic events, and severity of posttraumatic stress symptoms. *Journal of Traumatic Stress, 14*, 29–45.
- Wagner, B., Knaevelsrud, C., & Maercker, A. (2007). Post-traumatic growth and optimism as outcomes of an internet-based intervention for complicated grief. *Cognitive Behaviour Therapy, 36*, 156-161.
- Watkins, E. R. (2004). Adaptive and maladaptive ruminative self-focus during emotional processing. *Behaviour Research and Therapy, 42*, 1037–1052.
- Watkins, E.R. & Baracaia, S. (2002). Rumination and social problem-solving in depression. *Behaviour Research and Therapy 40*, 1179–1189.
- Weathers, F., Litz, B., Herman, D., Huska, J., & Keane, T. (1993). *The PTSD Checklist (PCL) – Civilian version. Reliability, validity and diagnostic utility*. Poster session presented at the annual meeting of the International Society for Traumatic Stress Studies. San Antonio, TX.
- Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality, 62*, 615-640.
- Weinrib, A.Z., Rothrock, N.E., Johnsen, E.L., & Lutgendorf, S.K. (2006). The assessment and validity of stress-related growth in a community-based sample. *Journal of Consulting and Clinical Psychology, 74*, 851-858.
- Weiss, T. (2002). Posttraumatic growth in women with breast cancer and their husbands: An inter-subjective validation study. *Journal of Psychosocial Oncology, 20*, 65–80.

Weiss, T. (2004). Correlates of posttraumatic growth in married breast cancer survivors. *Journal of Social and Clinical Psychology, 23*, 733-746.

Zautra, A. J., Potter, P. T., & Reich, J. W. (1997). *The independence of affects is context-dependent: An integrative model of the relationship between positive and negative affect*. In M. P. Lawton (Series Ed.) & K. W. Schaie & M. P. Lawton (Vol. Eds.), *Annual review of gerontology and geriatrics, Vol. 17: Focus on emotion and adult development* (pp. 75–103). New York: Springer.

Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology—A critical review and introduction of a two component model. *Clinical Psychology Review, 26*, 626–653.

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