

A COMPARISON OF LIFE THREAT AND BETRAYAL AS RISK FACTORS FOR
POSTTRAUMATIC STRESS DISORDER

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A COMPARISON OF LIFE THREAT AND BETRAYAL AS RISK FACTORS FOR
POSTTRAUMATIC STRESS DISORDER

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DISSERTATION ABSTRACT

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POSTTRAUMATIC STRESS DISORDER

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Life threat has been underscored as the primary etiological factor for posttraumatic stress disorder (PTSD) since the publication of the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (DSM-III, APA, 1980). However, recent theoretical work suggests that other aspects of trauma may be relevant to the etiology of PTSD. Betrayal stands out from this literature as a pertinent, discrete, and complementary etiological factor. This study examined life threat and betrayal as risk factors for the development of PTSD. One-hundred-eighty-two participants who reported experiencing a traumatic event were assessed with four well-validated self-report

measures of PTSD symptomatology and a life threat and betrayal inventory. Results indicated a strong association between betrayal and PTSD and a modest association between life threat and PTSD. These results indicate that both life threat and betrayal are relevant factors in the etiology of PTSD and contribute to an emerging literature that suggests betrayal may impact the development of psychological symptoms following trauma exposure.

Style manual used: *Publication Manual of the American Psychological Association, Fifth Edition (2001)*

Computer software used: *Microsoft Word Release 10, Statistical Packages for the Social Sciences (SPSS) for Windows Release 16.0*

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INTRODUCTION

Since posttraumatic stress disorder (PTSD) was introduced as a diagnostic category in the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (DSM-III, APA, 1980), the PTSD diagnostic criteria and accompanying text have emphasized life threat as the primary etiological factor for the disorder. However, recent theoretical work suggests that life threat, although important, is one of many defining aspects of psychological trauma (Weathers & Keane, 2007). Moreover, empirical support for life threat as a predictor of PTSD has not been as consistent as might be expected for a primary etiological factor. The risk factor literature for PTSD has conceptualized life threat in terms of objective aspects, i.e., physical injury, and subjective aspects, i.e., perceived life threat. In general perceived life threat (PLT) has emerged as a better predictor of PTSD than has degree of physical injury and other objective medical criteria. Nonetheless, a number of studies have failed to identify either injury or PLT as risk factors for PTSD. Inconclusive results from the theoretical and empirical literature on PTSD prediction thus point to the need to further examine the role of life threat in the development of PTSD and to identify additional etiological factors.

To this end, researchers have proposed other potentially pathogenic aspects of trauma, including loss of control and predictability (Foa, Zinbarg, & Rothbaum, 1992), shattered assumptions (Janoff-Bulman, 1992), and betrayal (Freyd, 1996, 1999). Of these, betrayal stands out as a particularly relevant, distinct, and complementary etiological

factor. Betrayal is relevant given its explicit focus on the interpersonal aspect of trauma and may account for the observation in *DSM-IV-TR* (APA, 2000) that PTSD “may be especially severe or long lasting when the stressor is of human design (e.g. torture, rape)” (p. 464). Likewise, there is a well-articulated theoretical model of betrayal (Freyd, 1996) that suggests a number of testable hypotheses that have received little empirical investigation to date. Betrayal trauma theory, originally proposed by Freyd (1996), identifies the role social betrayal plays in the development of pathological responses to traumatic events. More recent iterations of Freyd’s model (1998, 1999) have noted that traumatic events likely evoke varying levels of fear and betrayal, depending on the nature of the event. Deviating from the “fear paradigm”, Freyd posits that the degree to which an event is traumatic may relate to the degree of fear and betrayal involved; the most harmful events, Freyd argues, involve both fear and betrayal. This argument—that traumatic events are associated with varying levels of fear and betrayal—extends fear conditioning models of the etiology of PTSD.

Freyd, DePrince, and Gleaves (2007) describe betrayal as, “a social dimension of trauma independent of the individual’s reaction to the trauma” (p.297). This description presents betrayal as a relatively objective aspect of the traumatic event and as completely confounded with event type. However, betrayal can also be conceptualized as an appraisal following exposure to a variety of trauma types. The current study considers betrayal in this way as a perception. Although it may be possible to define relatively objective aspects of a situation that would constitute betrayal, this is not as clear-cut as in the case of life threat, for which physical injury serves as an objective indicator. Moreover, as noted above, for life threat, subjective appraisal is a more powerful

predictor than is actual physical injury. Inasmuch as betrayal does not have as objective an indicator as physical injury is for life threat, it would be even more important to consider subjective appraisal, and thus conceptualize and measure betrayal as a perception. Further, when betrayal is operationally defined as a perception that leads to an emotional response, it can be conceptualized as a factor that leads to the outcome of fear, thus linking the concepts of betrayal and fear.

As noted earlier, life threat is suggested to be the primary etiological factor for PTSD. Implicit in the centrality of life threat is that it ultimately gives rise to the fear conditioning associated with PTSD symptoms. If fear is replaced by PLT in Freyd's 2 x 2 model, a more appropriate comparison is possible; betrayal and PLT are distinct perceptions that ultimately generate the experience of fear. This modified model allows for examination of perceived betrayal as an etiological factor that extends the life threat-centered model of PTSD. Guided by this modified version of Freyd's 2 X 2 model, this study examined perceived betrayal and life threat as risk factors for the development of PTSD.

A Brief History of the Development of the PTSD Construct

Posttraumatic stress disorder (PTSD) was first introduced as a diagnostic category in DSM-III (APA, 1980). The inclusion of PTSD in the DSM-III accomplished two goals: first, by formally delineating a posttraumatic syndrome, it recognized the legitimacy of chronic and debilitating psychopathology resulting from exposure to overwhelming life events. Second, by acknowledging that PTSD could arise from a variety of traumatic stressors, the decision to include PTSD in the DSM-III unified research on seemingly disparate stressors such as combat, sexual assault, and natural

disasters. Although the diagnostic criteria have evolved somewhat with the various revisions of the DSM, PTSD is now a well-established mental disorder supported by an extensive and rapidly growing body of empirical literature. It is seen as a characteristic syndrome that may result from a wide variety of traumatic events, including natural and human-made disasters, war, sexual assault, physical assault, motor vehicle accidents, and life-threatening illness or injury.

Although PTSD as a formal diagnostic category is less than three decades old, psychological symptoms in response to traumatic life events have long been recognized informally in literature, and have been scientifically investigated for the past 150 years (Herman, 1997; Bremner & Saigh, 1999). To a large extent, the phenomenology integrated into the PTSD diagnosis can be traced to earlier documented disorders following exposure to life-threatening events: “Soldier’s Irritable Heart,” “Shell Shock,” and “Combat Exhaustion” were all names for early attempts to diagnose such traumatic responses (Trimble, 1981; Schnurr, Friedman, & Bernady, 2002; Kinzie & Goetz, 1996). In the aftermath of World War II, researchers examined prisoners of war and concentration camps and identified in these subjects a syndrome analogous to the symptoms recognized in combat-exposed veterans in the wars (Chodoff, 1963; Nadler & Ben-Shushan, 1989).

Subsequently, the prevalence of this war-related syndrome compelled the American Psychiatric Association to include a stress related disorder in DSM-I, *gross stress reaction* (APA, 1952). In the two decades following DSM-I, investigations of psychological reactions to stressful events focused on civilian populations exposed to natural and man-made disasters. Again, the results of these investigations revealed the

presentation of a common syndrome in survivors. When the DSM-II was published in 1968, the classification *transient situational disturbance* (APA, 1968) replaced *gross stress reaction*. Both of these stress-related diagnoses acknowledged the relationship between stressful experiences and adverse psychological reactions. However, they failed to provide specific diagnostic criteria, and they did not identify the range and common characteristics of events capable of eliciting psychopathology post-trauma.

In the decade after the publication of the DSM-II, a growing number of clinical investigators identified similar symptomatic presentations in Vietnam veterans as well as in a variety of civilian trauma populations, such as survivors of natural disasters and sexual assault. During this time, Burgess and Holmstrom (1976) documented *rape trauma syndrome*, which was prevalent in the female sexual assault survivors they studied, while Horowitz and Solomon (1975) documented *delayed stress response syndrome*, which was prevalent in returning Vietnam veterans. Identification of these analogous syndromes offered additional evidence of the debilitating effects of traumatic stressors and underscored the need to classify a common syndrome across different types of traumatic events.

Recognizing the confluence of scientific evidence from disparate literatures, the Reactive Disorders Committee in 1980 created the diagnostic category posttraumatic stress disorder (Andreasen, 1980, 2004; Bremner & Saigh, 1999; Scott, 1990). The introduction of PTSD into the official nosology marked a critical turning point in the history of traumatic stress studies, because PTSD united differing scientific literatures and offered legitimacy to the idea that a range of stressors can evoke essentially the same syndrome. An explicit emphasis on life threat was established as one unifying feature of

PTSD. Although it was a readily identified aspect of the traumatic experience of combat, life threat was also implicated in *rape trauma syndrome*, as rape had been conceptualized as “an act of violence with sex as the weapon” (Burgess & Holmstrom, p.982). The emphasis on life threat allowed for recognition of other PTSD-genic trauma types while also preserving PTSD as a disorder that represented the deleterious psychological effects of combat (Scott, 1989).

The primacy of life threat to the PTSD diagnosis is best illustrated in the evolution of PTSD Criterion A. To formally distinguish events believed to give rise to PTSD, DSM-III offered a definition of trauma in the form of Criterion A. To satisfy Criterion A, a stressor needed to be deemed outside the range of usual human experience and had to evoke significant symptoms of distress in most people (APA, 1980). This provision was retained for the revised version of DSM-III (DSM-III-R, APA, 1987), and a list of events that met Criterion A was included. Moreover, DSM-III-R provided a more specific description of the emotional reactions associated with exposure to these events. When the DSM-III-R definition of Criterion A—that the event be outside the range of usual human experience—proved to be inadequate, the DSM-IV (APA, 1994) subcommittee replaced it with an amended form of Criterion A (Weathers & Keane, 2007). The amended Criterion A is composed of two parts: (1) exposure to events that involve actual or threat of death or injury and (2) a sense of fear, helplessness, or horror. The amendment of Criterion A—particularly the inclusion of A1—articulated what was previously an implicit emphasis on threat-to-life as a unifying feature of events capable of eliciting PTSD.

The *DSM-IV-TR* (APA, 2000) text also emphasized the significance of life threat in the development of PTSD. For instance, in the diagnostic features and differential diagnosis sections, there are frequent reminders that an event capable of eliciting PTSD must be of extreme nature, where “extreme” means life-threatening: “In Posttraumatic Stress Disorder, the stressor must be of an extreme (i.e., life-threatening) nature” (APA, 2000, 3.5).” Thus, the emphasis on life threat to PTSD can be traced from the origins of the disorder to its contemporary description.

Life Threat and PTSD

Life threat as injury. Injury has been identified as a risk factor that can increase a victim’s vulnerability to PTSD following exposure to a traumatic event. A review of the literature suggests that victims injured during exposure to a traumatic event are more likely to develop PTSD (Bownes, O’Gorman, & Sayers, 1991; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). The relationship between injury and the development of PTSD has been documented in a wide variety of traumatic life events, from sexual assault to military combat victims.

The following representative studies illustrate the role of injury in the development of PTSD across a range of event types. In a national study of crime victims, Kilpatrick, Saunders, Amick-McMullian, Veronen, and Resnick (1989) observed that sustaining an injury during a crime was positively correlated with the development of PTSD. Generally, sexual assault involving injury has been identified as a strong predictor of PTSD development (Epstein, Saunders, & Kilpatrick, 1997; Yehuda, Resnick, Schmeidler, Yang, & Pitman, 1998). In the most striking study in this literature, Winfield, George, Swartz, and Blazer (1990) observed that sexual assault victims

sustaining injuries were 22 times more likely to develop PTSD than noninjured rape victims. Similarly, results from chi-square analyses in a sample of rape survivors demonstrated that sustaining a physical injury at the time of the sexual assault occurred twice as frequently in victims who subsequently developed PTSD than similarly assaulted victims who did not develop PTSD (Epstein, Saunders, & Kilpatrick, 1997). Consistent with previous findings in crime victims, physical injury also discriminated PTSD status for childhood sexual assault victims. This research into the physical origins of PTSD underscores injury as a robust predictor of PTSD development.

Several studies in combat populations also identify injury as a robust predictor of PTSD. Helzer, Robins and McEvoy (1987) documented a higher prevalence of PTSD among Vietnam veterans who had been injured during combat than among non-injured combat-exposed veterans. Moreover, Pitman, Altman and Macklin (1989) reported higher lifetime prevalence of PTSD for veterans who sustained injuries during Vietnam than the general prevalence of PTSD identified in a large-scale epidemiological veterans study—the National Vietnam Veterans Readjustment Study (NVVRS) (Kulka, Schlenger, Fairbank, et al., 1990).

Together, these results indicate that experiencing physical injury during a traumatic event increases the likelihood of PTSD in a traumatized population. However, fewer studies have examined the role of injury severity in the development of PTSD, and the existing studies on injury severity have yielded mixed results. Injury severity was associated with higher levels of PTSD symptom reporting in rail accident victims (Selley, King, Peverler, et al., 1997) and victims of French civilian terror attacks (Abenhaim, Dab, & Salmi, 1992). However, injury severity was not related to PTSD in a study of

survivors of the Israeli-Palestinian conflict (Khamis, 1993). Burn survivors with less severe burns have also been shown to develop PTSD at equal rates as patients with more severe burns at 6 month and 12 month follow-ups, and survivors with less severe burns were *more* likely to develop PTSD at the 2-month post-trauma assessment (Perry, Difede, Musngi, Frances, & Jacobsberg, 1992). Finally, Curran's (1990) study of North Ireland terror bombing victims found that those with less severe injuries were more likely to develop PTSD than victims with injuries of greater severity.

These results suggest that the impact of injury severity differs by event type. The inconsistency of injury severity as a predictor of PTSD, however, is further demonstrated in studies of a single event type, such as motor vehicle accident (MVA). Several MVA studies have identified a significant relationship between injury severity and risk of PTSD (Frommberger, Stieglitz, Nyberg, et al., 1998; Blanchard, Hickling, Mitnick, et al., 1995), while most others have failed to identify a relationship (Bryant & Harvey, 1995; Ehlers, Mayou, & Bryant, 1998; Ehring, Ehlers, & Glucksman, 2008; Koren, Arnon, & Klein, 1999; Taylor & Koch, 1995). Using methodology characteristic of most injury severity studies, Blanchard, Hickling, Mitnick, et al. (1995) obtained injury scores by asking physicians to judge the extent of physical injury with details of the physical presentation of victims using the Abbreviated Injury Scale (AIS-85) (American Association of Automotive Medicine, 1985). Results identified injury severity as a good predictor of PTSD in MVA survivors. However, Bryant and Harvey (1995) and Koren, Arnon, and Klein (1999), using methodology similar to that used in Blanchard, Hickling, Taylor et al. (1995), found that injury severity scores in MVA survivors with PTSD did not

significantly differ from injury severity scores in MVA victims without PTSD. This literature, therefore, is riddled with conflicting conclusions.

Several confounds may account for the mixed findings in the literature examining the relationship between injury severity and PTSD. Green (1994) suggested that the mixed results in injury severity studies might be a consequence of a restricted range of injuries assessed in some studies. In other words, the probability of identifying a significant relationship between injury severity and risk for PTSD increased for studies that have included both injured and noninjured victims than for studies that included only injured victims.

Different assessment methods for establishing injury severity may also contribute to the variable findings in this literature. As previously noted, Blanchard, Hickling, Taylor et al. (1995) identified injury as a good predictor of PTSD in survivors of motor-vehicle accidents. However, it should be noted that severity scores were derived compiled from reports of victims, thereby introducing a subjective element to what the authors identified as an “objective measure.” In contrast, several studies investigating the relationship between life threat and PTSD in the oncology literature have conceptualized objective life threat as disease stage (Laubmeier & Zakowski, 2004; Kazak, Stuber, Barakat et al., 1998). Thus, even discussing the salience of injury or objective life threat across studies may be impossible given their idiosyncratic definitions in these studies.

However, the results from the injury severity literature consistently indicate that certain injury types, particularly more visible injuries, are more likely to correlate with PTSD development. Scotti (1992) reported that accidents causing visible injuries were likely to lead to PTSD symptoms than accidents with no visible injuries. Parker (1977 in

Taylor & Koch, 1995) made similar observations: “for the doctor, a scalp laceration without concussion or any underlying injury may be regarded as a minor consideration, but for the injured person who is bleeding profusely from the head it can provoke all manner of fears, and may be a major concern.” Thus, serious injuries that are less visible to the patient, such as life-threatening internal bleeding, may be less likely to elicit PTSD symptomatology (Taylor & Koch, 1995).

These findings, together with the low predictive capacity of injury severity, underscore the significance of perception in developing a sense of life threat. Although there are exceptions (Ironson, Wynings, Schneiderman, et al., 1997), perceptions of life threat generally do not translate directly from the degree of threat indicated by more objective medical criteria (Curran, Bell, Murray, et al., 1990; Bryant & Harvey, 1995). Therefore, *perception* of threat may be the more relevant life threat construct related to risk for PTSD.

Life threat as perception of threat. The primacy of perceived life threat (PLT) in the prediction of PTSD is rooted in the constructivist tradition and explained by the transactional model proposed by Lazarus and Folkman. A comprehensive theory about stress, appraisal, and coping, Lazarus and Folkman’s (1984) model differentiates between objective features of an event and those perceived by the victim. The model accordingly defines stress as: “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being (p.19).” Hence, the model posits that the victim’s interpretation of an event is more relevant to a pathological outcome than the objective characteristics of the event itself. As a departure from models emphasizing objective, medically based life

threat, the constructivist model suggests a victim's perception of life threat determines whether or not the victim ultimately develops PTSD. In support of this theory, a meta-analysis examining the relationship of interpersonal violence and psychological distress determined that subjective factors, such as PLT and perceived controllability, accounted for twice the magnitude as more objective factors, such as duration of the event and use of a weapon (Weaver & Clum, 1995).

According to the constructivist model (Lazarus & Folkman, 1984), PLT should better predict PTSD symptomatology than more objective, medically based injury measures. Support for this model comes from an extensive literature documenting the incremental—and generally superior—validity of PLT as a predictor of PTSD. In a probability study of men and women, Stein, Walker, and Forde (2000) explored risk factors for the development of PTSD. PLT and injury severity were assessed with a range of interview questions, and PTSD was assessed using the Modified PTSD Symptom Scale (MPSS; Falsetti, Resnick, Resick & Kilpatrick, 1993), which was modified to be used in interview form. Results from odds ratios derived from logistic regression analyses revealed that that PLT and physical injury predicted PTSD in the entire sample. This study recognized PLT as a salient predictor of PTSD severity across a range of trauma types. A host of studies also register support for PLT as a predictor of PTSD severity within more specific categories of trauma.

PLT and criminal victimization. In one of the most frequently cited PTSD risk factor studies, Kilpatrick, Saunders, Amick-McMullen, et al. (1989) examined the impact of criminal victimization on a large sample of women. They assessed life threat and injury using an interview that was later coded. PTSD was assessed using a modified

version of the Diagnostic Interview Schedule (DIS), with a set of questions to establish whether the victim met DSM-III criteria for PTSD. Hierarchical regression analysis indicated significant contributions of both variables in the prediction of PTSD. In other words, each variable accounted for unique variance in PTSD status. Moreover, hierarchical discriminant functional analysis revealed that PLT, injury, and completed rape had a synergistic effect, as victims reporting all three of the features developed PTSD over 8 times as often as victims who reported none of the features.

In a more recent criminal victimization study, Dunmore, Clark, and Ehlers (1999) examined the factors involved in the development and maintenance of PTSD in survivors of sexual and physical assault. They assessed injury severity using an interview that was later coded, and PLT was assessed with a single question on a 0-100 scale. PLT was later treated as a dichotomous variable, with PLT considered to be present only if endorsed at a level of 10. PTSD was assessed using the PTSD symptom scale: self-report version (PSS-SR: Foa et al., 1993). Results from chi-square analyses comparing PTSD and non-PTSD groups indicated that the PTSD group was more likely to report PLT despite a general lack of differences on more objective measures of event severity. Moreover, chi-square analyses comparing persistent and recovered groups revealed that PLT was also predictive of PTSD maintenance.

Within a more specific form of criminal victimization—sexual assault—Ullman and Fillipas (2001) investigated predictors of PTSD symptom severity in three samples of survivors. Physical injury during the assault and PLT during the assault were measured dichotomously (no or yes). In a series of regression analyses predicting PTSD symptom severity, PLT was identified as a significant predictor although report of physical injury

was not. It is worth noting that greater physical injury to victims was related to more PTSD symptom severity, but not at a level of significance.

An earlier study (Epstein Saunders, & Kilpatrick, 1997) of rape victims also examined whether the characteristics of the assault predicted the development of PTSD. PLT and injury were assessed through a series of interview questions asked of women about their first completed rape. PTSD symptomatology was assessed using measures from the National Women's Study Module. Chi-square analyses demonstrated that PLT and sustaining an injury at the time of the first rape occurred at nearly double the rate in women with PTSD than in women without PTSD. Congruent with the findings of Kilpatrick, Saunders, et al., (1989), chi-square analyses demonstrated that perception of threat to one's life and sustaining an injury at the time of the first rape occurred at nearly double the rate in women meeting criteria for PTSD than in women without PTSD. Also, using the variables that differentiated between non-PTSD and PTSD, logistic regression analyses were conducted to obtain coefficient estimates for the predictor variables. Results from these analyses identified PLT, but not injury, as significant predictors of PTSD diagnostic status. These studies suggest that PLT is superior to injury in the prediction of PTSD following criminal victimization, a category of trauma with a relatively high prevalence and conditional risk for PTSD (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Breslau, Davis, Andreski, & Peterson, 1991).

PLT and life-threatening illness. The life-threatening illness literature offers a more compelling argument for the superiority of PLT as a predictor of PTSD, in that many studies in this literature also utilized objective measures of life threat, such as disease stage. For instance, several studies involving oncology populations have

examined the relationship between medically-based measures of life threat (e.g. disease stage, type of cancer), PLT and PTSD. Most of these studies have reported that subjective factors related to cancer, such as PLT and perception of treatment intensity are more predictive of PTSD symptom severity than severity of the disease as determined by an oncologist (Barakat, Kazak, Meadows, Meeske, & Stuber, 1997; Hobbie, Stuber, Meeske, et al., 2000; Laubmeier & Zakowski, 2004). Results from a meta-analysis of the childhood cancer survivor literature support this notion. Taieb, Moro, Baubet, and Revah-Lévy (2003) reviewed 20 articles pertaining to the occurrence of posttraumatic stress symptoms after childhood cancer 1991 to 2001. They identified subjective factors, such as PLT, as more potent predictors of PTSD symptomatology than more objective, medically-based predictors.

In a study assessing childhood cancer survivors and their parents, Stuber, Kazak, Meeske, et al. (1997) investigated the relative contribution of a broad range of predictors of PTSD. PTSD symptomatology was assessed using Posttraumatic Stress Disorder Reaction Index (PTSD-RI; Frederick, Pynoos, & Nader, 1992) and PLT was assessed using the Assessment of Life Threat and Treatment Intensity Questionnaire (ALTTIQ), a seven item Likert scale measure assessing the extent of PLT and perceived treatment severity. Retrospective rating of PLT was identified as a significant independent predictor of PTSD symptomatology for childhood cancer survivors. Moreover, the mother's appraisal of retrospective PLT significantly contributed to the retrospective appraisal of PLT by the survivor.

In another study of parents of survivors of childhood cancer, Kazak et al., 1998 investigated the relative contribution of PLT and time since treatment as predictors of

PTSD symptom levels. PTSD was assessed using the Posttraumatic Stress Disorder Reaction Index, while PLT was assessed with a seven 5-point Likert-scaled items developed to assess the degree to which the disease and treatment were perceived as intense and life-threatening. Results from hierarchical regression analyses identified past and present PLT as significant predictors of PTSD for mothers and for fathers, although at a lesser degree for fathers. However, objective medical data was not identified as a significant predictor of PTSD symptom levels. Thus, parents' PLT was a significant predictor of PTSD, whereas objective medical data, such as prognosis, was not.

Moreover, in a study of adult cancer patients, Laubmeier and Zakowski (2004) examined the relationship of disease stage, PLT and psychological adjustment. PLT was measured using a 6-item face valid scale developed for the study, and disease stage was documented via the patients' medical charts. Psychological adjustment was assessed using the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979) and the Brief Symptom Inventory (Derogatis, 1975). Regression analyses demonstrated that PLT was significantly related to psychological adjustment and distress, whereas disease stage (objective life threat) was not. Multiple regression and path analyses were conducted to test the model. This was not a PTSD sample due to the sampling scheme and measurement limitations. Nonetheless, results from the study suggested that PLT was more related to psychological adjustment than objective life threat.

In one of the few studies in this literature to use a population other than oncology patients, Wu, Chan, and Ma (2005) examined the relationship between PLT and PTSD development in a sample of Hong Kong severe acute respiratory syndrome (SARS) survivors. PLT was assessed with a single rating of on a 5-point scale, from "not at all" to

“extremely serious.” PTSD symptomatology was assessed using the Impact of Event Scale—Revised (Weiss, 2004). PLT emerged from regression analysis as the best predictor of symptom severity on the IES-R. Again, these results suggested that PLT levels significantly predict PTSD symptom severity.

PLT and motor-vehicle accidents. Research examining MVA survivors also suggest that PLT is a more reliable risk factor for the development of PTSD symptoms than injury severity. Delahanty, Raimonde, Spoonster, and Cullado (2003) assessed the relationship between injury severity, PLT, and PTSD. Injury severity was assessed one month following the accident using the Injury Severity Scale of the AIS (Baker, O’Neill, Haddon & Long, 1974), while PLT was assessed with a single 7-point Likert scale item. PTSD was assessed using the PTSD module of the Structured Clinical Interview for DSM-IV (SCID, First, Gibbon, Spitzer, & Williams, 1996). Despite significantly lower injury severity scores, survivors meeting diagnostic criteria for PTSD reported significantly higher levels of PLT than victims who did not develop PTSD.

In a study mentioned earlier, Blanchard et al. (1995) also found that PLT also predicted PTSD symptoms more reliably than injury severity in a sample of MVA survivors. Although injury severity significantly predicted PTSD severity, the authors identified injury as lacking specificity. Blanchard et al. concluded their study by highlighting a significant discrepancy between injury severity and PLT, relating an instance in which a patient experienced no significant injuries despite meeting full criteria for PTSD and reporting extreme levels of PLT. From this case, they concluded that, “For some MVA victims, it is clearly the perceptions resulting from the accident rather than

the seriousness of the injuries that are very important in developing PTSD” (Blanchard, Hickling, Mitnick et al., 1995, p.533).

PLT in studies with mixed samples. The literature reviewed thus far shows PLT to be superior to injury in the prediction of PTSD symptomatology in three major categories of trauma: criminal victimization, life-threatening illness, and MVA. Several studies using other trauma types and mixed samples have yielded similar findings related to the predictive validity of PLT. First, King, King, Gudanowski, and Vreven (1995) examined the relative impact of PLT in the development of PTSD using structural equation modeling. Data were derived from the National Vietnam Veterans Readjustment study—a project designed to elucidate the etiology of PTSD—and included both men and women. Four dimensions of combat experience were identified: traditional combat, atrocities-abusive violence, perceived threat, and malevolent environment. Perceived threat, which encompassed PLT, was assessed with a measure that included the following items: “How often [if ever] did you find yourself in a combat situation in which you thought you would never survive?”; “In your opinion, how often were you in danger of being killed or wounded in [or around] Vietnam?” Results from structural equation modeling demonstrated that the relationship between combat and PTSD was mediated by perceived threat. Thus, these results emphasize the primary role of PLT in the development of combat-related PTSD.

Next, Udwin, Boyle, Yule, Bolton, and O’Ryan (2000) investigated a variety of risk factors in a sample of young adults that the researchers believed to be significantly associated with PTSD development. The young adults had all survived a shipping disaster in adolescence; PLT was evaluated in this group using a 3-point scale, and PTSD

was assessed using the Clinician-Administered PTSD Scale (CAPS; Blake, Weathers, Nagy, et al. 1990). Eighty risk factors examined in the study fell into three primary categories: pre-disaster child and family vulnerability factors, objective and subjective disaster-related experiences, and post-disaster factors. When all these risk factors were considered, measures of PLT, intensity of exposure to the disaster, and anxiety levels reported five months post-disaster best predicted the development of PTSD.

Finally, results from a highly cited study conducted by Resnick, Kilpatrick, Dansky, Saunders and Best (1993) identified PLT and injury as having a cumulative effect in the prediction of PTSD in a sample of 4,008 women, half of whom were comprised of a national probability sample. PTSD was assessed using the National Women's Study (NWS) PTSD Module (Kilpatrick, Resnick, Saunders, & Best, 1989) and PLT and injury severity were assessed through follow-up questions and then coded dichotomously. Victims reporting both PLT and injury developed PTSD at twice the rate of victims reporting neither PLT nor injury. Chi-square analyses further indicated that victims reporting combined PLT-injury manifested lifetime PTSD significantly more than the other three subgroups: PLT only, injury only, and no PLT or injury. Likewise, victims reporting no PLT or injury manifested PTSD at rates significantly lower than any other subgroup. With regards to current PTSD, victims reporting combined PLT-injury developed PTSD at a higher rate than the PLT only and no PLT-injury groups. Physical injury was identified as the event most likely to elicit PTSD and was characterized by the highest levels of PLT and injury, again suggesting that PLT and injury are risk factors for PTSD, particularly in combination.

Equivocal findings on PLT. Although a range of studies have identified PLT as a predictor of PTSD symptomatology, few studies support PLT as the principal etiological factor for PTSD. In fact, a number of studies have failed to identify PLT or injury as risk factors at all for PTSD. The following seven studies represent the mixed findings in the PLT literature, each highlighting limitations of PLT as a predictor of PTSD.

First, Jeavons (2000) assessed MVA victims three, six, and twelve months following major accidents in the victims' lives. PLT was assessed using the Posttraumatic Stress Disorder Interview (PTSD-I) (Watson, Juba, Manifold, Kucala & Anderson, 1991) and injury severity was measured using a 3-point self-report measure and physician ratings from medical records. Results from multiple regression analyses identified PLT as predictive of 3-month and 6-month PTSD symptoms, but not 12-month outcomes. In contrast, self-report of injury was identified as predictive of PTSD only for 12-month outcomes. Physician ratings of injury were not predictive of PTSD at any stage of evaluation.

Second, in a similar MVA study, Koren, Arnon, and Klein (2000) assessed injured victims 1, 3, 6, and 12 months following major accidents in their lives, evaluating these victims against a comparison group of patients hospitalized for elective orthopedic surgery. PTSD was formally assessed at each follow-up session using the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979) and the DSM-III-R Scale for the Severity of PTSD symptomatology (Lerer, Bleich, Ktoeer, Garb, Hertzberg et al., 1987), and PTSD was formally assessed at 12 months using the Structured Clinical Interview for DSM-III-R, Non-Patient Edition (SCID-NP; Spitzer, Williams, Gibbon & First, 1990). PLT was assessed with an interview during the initial evaluation within one week of

admission to the hospital and injury severity was evaluated by a surgeon using the Abbreviated Injury Scale (Association for the Advancement of Automotive Medicine, 1990). Neither PLT nor injury severity predicted PTSD one year after the MVA.

Third, in a study of young adult survivors of cancer, Hobbie, Stuber, Meeske, et al. (2000) examined the relationship between perceived treatment intensity, past PLT and current PLT as risk factors for PTSD development. PTSD symptomatology was assessed using the SCID-I, Impact of Event Scale (IES), and the Posttraumatic Stress Disorder Reaction Index (PTSD-RI). PLT and treatment severity were assessed using the Assessment of Life Threat and Treatment Intensity Questionnaire. (ALTTIQ), a measure comprising seven items assessing the extent to which the survivor experienced PLT and perceived severe treatment. Although PTSD and non-PTSD groups significantly differed on levels of current life threat, there was no difference between the PTSD and non-PTSD survivor groups in levels of previous PLT.

Fourth, Daly and Johnston (2002) examined the role of PLT in the development of PTSD in survivors of a terrorist incident in which religious radicals held up a bar in Northern Ireland. PLT was assessed as part of larger diagnostic interview. Results revealed that PLT was not associated with a diagnosis of PTSD. The authors attributed these null findings to a hypothesized protective role of being victimized in a group.

Fifth, Michaels, Michaels, Moon, et al. (1998) conducted a prospective study of PTSD risk factors in a sample of accident victims admitted to a Level I trauma center. PLT was assessed with a single Likert scaled item, and PTSD levels were assessed using the Civilian Mississippi Scale for PTSD (Vreven, Gudanowski, King, et al., 1995).

Results indicated only a .18 weighted correlation between PLT and PTSD symptom levels.

Sixth, using a longitudinal research design, McFarlane (1988) examined the role of PLT, event severity, and loss sustained in predicting PTSD in firefighters following relief work during a natural disaster. PTSD was assessed with a structured interview based on DSM-III, and PLT was assessed through participants' report of whether they believed they were close to dying at the time of the event. Results unexpectedly suggested that PLT was not a predictor of PTSD development.

Last, Hanson et al. (2001) examined associations between trauma-related variables and PTSD in a study of adult survivors of childhood assault (rape, physical assault, or a combination rape/physical assault). PTSD was assessed using the National Women's Study (NWS) PTSD Module (Kilpatrick, Resnick, Saunders, & Best, 1989) and PLT and injury severity were assessed through follow-up questions and coded dichotomously. Additional chi-square analyses examined whether life threat or injury was associated with PTSD, independent of assault type. Victims reporting both PLT and injury were twice as likely to develop PTSD, and nearly five times more likely to qualify for a diagnosis of current PTSD at the time of the assessment. Hierarchical regression analyses were also conducted in this study. Although injury was identified as a significant predictor of both lifetime and current PTSD, PLT was not predictive of current or lifetime PTSD in the final model.

Likewise, results from two meta-analyses of risk factors for PTSD best illustrate the mixed findings in the life threat literature. Ozer, Best, Lipsey and Weiss (2003) conducted a meta-analysis of risk factors of PTSD and PTSD symptoms and identified

peritraumatic life threat as one of seven sufficiently studied variables recognized as predictors of PTSD. However, the weighted correlation for the relationship between PLT and PTSD symptoms or diagnosis was .26, placing the effect into the small-to-medium range. The effect sizes in studies examining the relationship between peritraumatic PLT and PTSD severity ranged from .13 to .49. A similar meta-analysis conducted by Brewin, Andrews, and Valentine (2000) identified a weighted correlation for the relationship between PLT and PTSD symptoms of .23—an even smaller effect than identified by Ozer, Best, Lipsey, and Wess (2003). Taken together, these studies suggest that PLT has a relatively modest, but significant, effect on the development of PTSD symptomatology.

Measurement limitations in the life threat literature. In addition to mixed findings, the ability to summarize the PLT literature is limited by several problems with measurement and research design. First, the vast majority of studies examining PLT as a risk factor have utilized non-DSM correspondent measures of PTSD. For instance, the Impact of Event Scale (Horowitz, 1975) and the Mississippi Scale for Combat-Related PTSD (Keane, Caddell & Taylor, 1988) are two of the most commonly utilized instruments, although neither of these is DSM-correspondent.

Second, studies also differ in whether they measure PTSD dimensionally—using symptom severity as an indicator of PTSD—or categorically—based on whether a participant met DSM criteria for PTSD. Also, studies differ in classifying PTSD according to lifetime or current status. Studies stipulating a PTSD diagnosis as part of the inclusion criteria may contain a greater number of chronic cases, and risk factors in chronic cases of PTSD have been posited to be somewhat distinctive compared to the risk factors for more brief episodes of the disorder (Brewin, Andrews, & Valentine, 2000).

Third, studies in this literature have used different scales to assess PLT. Studies differ in whether they assess PLT using continuous measurement or dichotomously. For instance, Blanchard, Hickling, Mitnick, et al. (1995) assessed PLT with a scale from 0 to 100, while Ullman and Fillipas (2001) used a single-item, dichotomous measure of PLT. The use of different metrics inevitably introduces variability between data sets, thereby making it difficult to summarize findings across studies.

Fourth, researchers have assessed PLT as a peritraumatic perception and as post-hoc perception without acknowledging that PLT may differ as a function of time since the event. This is problematic given that peritraumatic PLT may differ from post-hoc PLT. For instance, in a study mentioned earlier, Hobbie et al. (2000) found that peritraumatic life threat, but not post-hoc PLT, predicted PTSD symptomatology.

Fifth, life threat has generally been examined within a single trauma-specific category (e.g. MVA, sexual assault) with no comparison among event types. However, different traumas may give rise to different reactions. A risk factor in a sample of female sexual assault survivors with PTSD may not manifest in the same capacity for male motor-vehicle accident survivors also diagnosed with PTSD. This will be discussed in more detail later in this review.

Given the findings noted above, it is clear that the degree to which reports of injury and PLT are associated with increases in reported symptoms of PTSD has not sufficiently been examined. The mixed findings and various limitations in this literature make it difficult to draw valid conclusions about the salience of PLT as a risk factor for the development of PTSD.

Betrayal: Beyond the Life Threat Paradigm

The inconsistent and modest predictive capacity of injury and PLT suggest that life threat does not adequately capture the scope of trauma or account for the etiology of PTSD. Much of the traumatic stress literature, however, has neglected other etiological factors that may be associated with the development of PTSD. Unable to extend beyond itself, the life threat paradigm only generates questions and answers related to itself (Kuhn, 1970, Turner, 1965). The conceptual framework upon which researchers depend for research design is crucial to the outcomes of their studies. Amending Criterion A in DSM emphasized the role of life threat in the development of PTSD, and researchers have since implicitly defined the disorder accordingly. Consequently, research derived from this paradigm has failed to adequately investigate other etiological factors that may enhance the explanatory ability of PLT.

Several researchers have reassessed the life threat paradigm and consequently identified other salient aspects of trauma (Foa, Zinbarg, & Rothbaum, 1992; Janoff-Bulman, 1992; Newman, Riggs, & Roth, 1997). These new theories augment our understanding of the breadth of reactions to trauma, moving the field away from the implicit emphasis on life threat as the underpinning etiological factor for PTSD. In other words, these theories offer a new paradigm through which characteristics and responses beyond life threat can be examined.

Freyd's (1996) betrayal model is especially relevant, as it uniquely expands the explanatory capacity of the current life threat-centered model. Freyd, Klest, and Allard (2005) define betrayal traumas as events "in which individuals or institutions that people depend on for survival harm or violate them in some way...[they] involve the depended-

upon person or institution breaking an explicit or implied social agreement, such that a violation of trust occurs” (p. 84). Betrayal Trauma Theory (BTT) was initially a cognitive framework proposed to account for memory impairment following trauma—specifically child abuse. Freyd (1996) explains why humans are excellent at detecting betrayal and identifies the evolutionary basis for these skills; at the same time, Freyd acknowledges that remembering such detections may be jeopardize survival: “[h]umans are social beings, fundamentally dependent on relationships, alliances, and trust. Betrayal violates the basic ethic of human relationships, and though we are skilled at recognizing betrayal when it occurs, this ability may be stifled for the goal of survival” (p.164).

Drawing upon the research on cheating conducted by Cosmides (1989), Freyd (1996) suggests that humans are adept betrayal detectors. She posits that there is social utility in psychogenic amnesia when a caregiver perpetrates abuse, an argument which accounts for the dependency in many relationships involving betrayal trauma. The act of forgetting betrayal is posited to be particularly adaptive in traumatized children, because the child’s survival may be contingent upon forgetting the egregious violation of trust. It is generally adaptive for victims to remove themselves from relationships that involve betrayal. Freyd argues, however, that for a child who depends on the source of trauma for his or her survival needs, avoidance and withdrawal may conflict with survival. Instead, forgetting or isolating knowledge of the betrayal is a more adaptive way of insuring that survival needs are met. BTT theory identifies dissociation as the mechanism behind memory impairment following traumatic exposure. BTT posits that the experience of betrayal, although not conscious, is laid down in codes that are “sensory, dynamic, and

continuous” (Freyd, 1996, p.111). Thus, the experience of betrayal is integrated into the fabric of the individual, regardless of whether it is explicitly acknowledged.

The Current Study: Extending Freyd’s Model

Freyd’s (1996; 1998; 1999) model has been a catalyst for contemporary research on betrayal trauma and vital in defining betrayal as salient to the development of PTSD. The current study, however, departs from Freyd’s original model. As noted above, Freyd’s (1996) original betrayal trauma theory identifies betrayal as an implicit, but central aspect to traumatic situations. In contrast, the current study considers betrayal and life threat as perceptions rather than as essential characteristics of a traumatic event. While earlier models that have extended beyond the life threat -centered paradigm have focused on outcomes of trauma and characteristics of the traumatic event, few studies have considered how the perception of trauma ultimately affects outcomes. For instance, Janoff-Bulman’s (1987) shattered assumptions model emphasizes the shattering of assumptions that occurs as a result of perceptions during the event. In this model, life threat and betrayal are perceptions that lead to the shattering of core assumptions rather competing outcomes with the phenomena of shattered assumptions. Thus, when operationally defined as perceptions life threat and betrayal may be viewed as intervening variables associated with outputs such as fear and shattered assumptions. The current study departs from Freyd’s model, and others, by examining these factors as perceptions rather than characteristics of the event or as competing outcomes.

It is relevant to note briefly that both life threat and social-betrayal can be conceptualized continuously or dichotomously (Freyd, Klest, & Allard, 2005). The experience of trauma can include or not include these dimensions, but the experience can

also involve these dimensions in differing degrees. For instance, acquaintance rape may be higher in social-betrayal than rape perpetrated by a stranger.

Betrayal and Interpersonal Trauma

As a departure from a life threat-centered model, betrayal emphasizes the relational aspect of trauma and also offers credence to the interpersonal nature of some events. Green (1990) noted that traumas differ in the degree of deliberateness and harm, identifying stressors that embody deliberate harm as the most detrimental. Similarly, Herman (1992) identifies differences between “acts of God” and those that come “from outside social order” and “events of human design” (p. 33). She suggests that differing sources of perpetration lead to qualitatively different outcomes—with the most deleterious outcomes resulting from purposeful human-induced perpetration. Echoing this notion, LaMothe (1999) notes a major difference between interpersonal and natural trauma: “the terror and pain of natural trauma does not include the absence of trust and fidelity” (p. 1202). These putative differences point to the need to account for the interpersonal context of trauma, underscoring the potential utility of betrayal as a complementary etiological factor.

Epidemiological studies have affirmed the added negative impact of interpersonal trauma by demonstrating an association between these traumas and higher levels of PTSD. Coker, Weston, Creson, Justice, and Blakeney (2002) conducted a cross-sectional analysis of the National Violence Against Women Survey to examine the impact of interpersonal violence on PTSD development in a sample of 185 men and 369 women. Results indicated that victims of interpersonal violence developed PTSD at significantly higher rates than victims of other forms of traumatic events. Moreover, in a study

mentioned earlier in this review, Stein, Walker, and Forde (2000) recognized assaultive traumas—identified as involving intention and personal features—as more likely to be associated with PTSD than nonassaultive trauma. Invoking betrayal as a complementary etiological factor helps explain the impact of these most damaging traumas—those that are perpetrated by humans and involve interpersonal violence and violation—beyond life threat alone.

Life threat and betrayal in the context of a single event type. The incremental validity of betrayal as it relates to PTSD is best illustrated in the context of Sexual Assault (SA), a prototypical Criterion A event (Kilpatrick, Saunders, Amick-McMullen, et al., 1987; Resick, 1987). Freyd (1996) identifies adult SA as betrayal trauma but has focused her research on childhood trauma. Although SA is most likely to lead to PTSD, there is little evidence to suggest that sexual assault involves the highest degree of PLT. However, it is possible that SA may involve high levels of *both* betrayal and PLT. Other traumatic events found to be less associated with PTSD in the epidemiological literature, such as MVA, may be lower in betrayal. Thus, betrayal may account for the higher levels of PTSD observed following exposure to certain event types.

Other betrayal literatures. In theory, betrayal is a salient risk factor for the development of PTSD. However, this construct has not been examined in conventional traumatic stress studies. The largest risk factor studies have failed to include betrayal in their investigations (Weaver & Clum, 1995; Ozer, Best, Lipsey, & Weiss, 2003; Brewin, Andrews, & Valentine, 2003). Despite the lack of recognition in empirical trauma research, betrayal is recognized in other literatures as a salient feature of psychological trauma. The most common source of this information comes from the literature

discussing the role of betrayal in the traumatic experience of male Vietnam veterans, particularly in combat. Shay (1992) draws a parallel between military authority figures and private authority figures, highlighting the comprehensive influence of both (Freyd, 1997, p.63). He argues that betrayal is central to the traumatic experience of military combat. For instance, Shay (1992) argues that soldiers experience betrayal as a part of combat when they are provided with faulty weapons, a common occurrence in Vietnam combat, or when leaders fail to make decisions to limit preventable casualties. Betrayed soldiers, who depend on their superior officers much like children depend on their caregivers, are left after trauma with a disturbed trust and a worldview that includes their own leaders as a source of danger.

Charles Figley (1990), another combat veteran advocate, observed the following about trauma during the Vietnam War: “One feature of post-Vietnam experience for the combatant is the pervasive sense of betrayal. It is a permanent emotional scar in which the political and psychological are not easily separated” (p. 12). Like Shay (1992), Figley (1990) suggests that betrayal by superior officers contributed to the chronic pathological posttraumatic responses of many Vietnam personnel. As with sexual assault for women, this literature highlights betrayal as a component of combat trauma, traditionally viewed as the prototypical “male” Criterion A event. Viewing combat in the context of a combined life threat and betrayal model suggests that perhaps not all of the impact is explained by life threat or injury. Instead, there is a possibility that betrayal accounts for some of the development of cases of combat-related PTSD.

The betrayal construct has also received theoretical support from a leading traumatic stress researcher, Chris Brewin. Brewin (2003) argues that PTSD is

distinguished from other anxiety disorders because trauma affects a person's beliefs and his or her identity; it violates a person's sense of place in the social world. Brewin suggests that one of the major violations of man-made trauma is broken trust that results from betrayal and abandonment—actions that can be viewed as a type of betrayal. Accordingly he asserts, “Once this trust is disturbed and we question the benevolence of those on whom we rely to be safe, our relationship with others becomes a perpetual source of danger” (p.82). Brewin also notes that betrayal can result from a violation of an institution or a human relationship and that, “the degree of betrayal depends on the extent of any relationship or obligation” (p.82).

Methodological considerations in betrayal research. Betrayal is a relatively new research domain in studies of traumatic stress. Consequently, most studies with the capacity to study betrayal have been limited in depth and quality for three important reasons. First, most traumatic stress studies have neglected to explicitly examine the betrayal construct despite recognition of this failure more than a decade ago (Weaver & Clum, 1995). Next, as noted earlier, of the studies that have examined betrayal, most have conceptualized betrayal as a characteristic of a traumatic event as rather than as an explicit and conscious perception involved in the traumatic experience. Finally, earlier investigations have failed to note sources of betrayal beyond direct human relationships. Although betrayal is theoretically linked with a range of sources (Brewin, 2003; Figley, 1990; Shay, 1992), investigations have limited the construct to individual human relationships. The study of betrayal as a peritraumatic perception necessitates the inclusion of a range of sources of betrayal—from institutions to religion; from individual to group relationships.

OBJECTIVES OF THE CURRENT STUDY

This study examined the relative role of injury, PLT, and betrayal as etiological factors for PTSD. Within this general purpose, this study had several distinct aims. The first objective was to evaluate a modified version of Freyd's 2X2 model. Freyd's model, which suggests that degree to which an event is traumatic is determined by the degree of betrayal and fear involved, guides much of the research and theory pertaining to the betrayal construct. However, it has never been tested empirically. Consistent with the modified version of Freyd's model depicted in this paper, the "fear" dimension was replaced by PLT. Betrayal and PLT were tested as the two dimensions of this model with a series of 2 X 2 ANOVA using median splits to create high and low betrayal and PLT groups.

The next specific objective was to establish the incremental utility of injury, PLT, and betrayal in the prediction of PTSD symptomatology. Hierarchical regression analyses were utilized to assess the utility of these targeted variables in the prediction of PTSD. Changes in incremental R^2 were interpreted as indicating the relative impact of these variables in the prediction of PTSD.

The third objective was to determine whether injury, PLT, and betrayal significantly differ as a function of trauma type. Given that betrayal is qualitatively different from life threat, events that primarily involve betrayal were recognized as likely to yield outcomes that differed from outcomes following events that involve life threat

alone. This examination entailed comparing broad event types that involve a perpetrator (interpersonal) and event types that do not involve a perpetrator (noninterpersonal).

Although several writers have hypothesized that levels of life threat and betrayal differ by event type (Freyd, 1996; Brewin, 2003), at this point there are no empirical data about this issue.

The fourth objective was to improve the quality and scope of measurement for the three central constructs in this study—injury, PLT, and betrayal—as well as to improve upon the assessment of PTSD used in other studies that have examined these constructs. Betrayal is most frequently assessed using the Betrayal Trauma Inventory (Freyd, DePrince, & Zurbriggen, 2001) and the Brief Betrayal Trauma Survey (Goldberg & Freyd (in preparation)). The BBTS assesses exposure to 14 stressful life events that are later coded as high, medium, and low betrayal events. The BBTS is highly inferential because betrayal levels are predetermined by event type. The BTI is a self-report measure that assesses a number of variables—such as memory impairment and feelings about the trauma—related to traumas experienced across the lifespan. Betrayal is measured dichotomously among a host of other variables, and a range of non-Criterion A events are assessed. For example, one prompt reads: “Before you were the age of 16, someone seriously invaded your privacy (for example read your private diary without your permission, secretly listened in on your private phone conversations, etc.)” (p.28). The BBTS and BTI also fail to measure intensity of perceived betrayal and do not assess a full range of sources of betrayal, including sources beyond individual human relationships. The current study improved measurement by (a) measuring betrayal as a perception; (b)

assessing the full range of betrayal sources; and (c) quantifying the intensity of betrayal with continuous measurement.

With regard to PLT, previous studies have tended to employ poorly scaled or dichotomous measurement of the construct. The current study improved on these measurement schemes by assessing PLT and betrayal using adapted versions of measures used by Blanchard, Hickling, Mitnick, et al. (1995), Nixon, Resick, and Griffin (2004), and Freyd, DePrince, and Zurbriggen (2001). Moreover, the current study assessed these constructs by having participants generate narratives detailing why they experienced PLT and betrayal, while also identifying their relationship with the perpetrators. With regard to injury, the current study improved measurement by assessing injury according to self-reported level of care received. Anchoring assessment of injury to level of care was intended to improve levels of discriminant validity relative to previous studies.

With regard to PTSD assessment, most studies investigating the relationship between these constructs and PTSD have utilized non-DSM correspondent measures. The current study used two DSM-correspondent self-report measures of PTSD symptomatology, each with sound psychometric properties. The use of DSM-correspondent measurement ensured that all DSM symptoms were evaluated and available for analysis.

The fifth objective was to explore the dimensions of betrayal. A new self-report measure of PLT and betrayal was developed for this study. In addition to the development of this new measure, the current study attempted to explicate the dimensions that contribute to betrayal levels.

Hypotheses

In the context of these objectives, the current study posited five hypotheses concerning the differential relationship of injury, PLT, and betrayal with PTSD. The first hypothesis was that 2 X 2 ANOVA would demonstrate a significant main effect for PLT and betrayal, as well as a significant interaction, on PTSD symptom severity. This hypothesis was the main focus of the present study and was consistent with the adapted version of Freyd's model presented in this study, which suggests that posttraumatic symptomatology is directly related to the degree to which the traumatic event involved life threat and betrayal. The second hypothesis was that hierarchical regression analyses would distinguish PLT from injury and betrayal as the superior predictor of PTSD symptom levels. This hypothesis was consistent with the existing life threat literature (Resnick et al., 1993; Kilpatrick, Saunders, Best et al., 1989) and the emphasis placed on life threat in the PTSD diagnostic criteria. The third hypothesis was that hierarchical regression analyses would demonstrate that betrayal contributes significantly to the prediction of PTSD symptoms above and beyond the contribution of injury and PLT; this was predicted to occur at the PTSD total, cluster, and symptom level, as well as for other dedicated measures of trauma-related pathology and distress. This hypothesis was consistent with the conceptualization of betrayal as a complementary etiological factor.

The fourth hypothesis was that injury level, PLT, and betrayal would significantly differ as a function of trauma type. The fifth hypothesis was that the predictive capacity of the three targeted independent variables—injury, PLT, and betrayal—would differ as a function of trauma type. The fourth and fifth hypotheses were consistent with the notion that distinct traumas may give rise to distinct perceptions and posttraumatic sequelae.

METHOD

Participants

Participants were 326 undergraduate students attending a large public university in the Southeastern United States who self-identified as having experienced “a very stressful event, such as a serious car accident, natural disaster (tornado, hurricane, and flood), physical or sexual assault, or similarly stressful event.” First, eight participants (2.4%) were eliminated because of failure to complete any portion of a measure. Next, 46 (14.1%) participants were eliminated because their PAI profiles were presumed to be invalid due to random responding, carelessness, reading difficulty, confusion, neglecting to follow instructions, or biased response style, as indicated by Infrequency scale scores $\geq 75 T$, Inconsistency scale scores $\geq 73 T$, Positive Impression Management scores ≥ 75 , or Negative Impression Management scores ≥ 75 (Morey, 1996). Then, 78 (23.9%) were eliminated because their index event did not satisfy the definition of a traumatic event in Criterion A according to the LEC or their event severity was scored below a 3 (mild traumatization) on the severity index described below. Finally, 12 (3.6%) participants were eliminated because they reported experiencing betrayal that was deemed to be atypical according to the betrayal coding system described later in this paper. This resulted in a final sample of 182 available for data analysis, with women constituting 76.4% ($n=139$) of the sample. The ethnic composition of the sample was 149 (81.9%) White, 25 (13.7%) African-American, 1 (0.5%) Hispanic, 6 (0.5%), and 1 (0.5%) other.

Mean age was 20.1 (SD = 2.1). Measures of PLT, betrayal, and PTSD severity did not significantly differ by age or ethnicity.

Procedure

Participants completed a questionnaire packet that included measures assessing symptoms of posttraumatic stress disorder, life threat, betrayal, personality functioning and emotional difficulties, anxiety, depression, dissociation, cognitive distortions, and trauma related cognitive schemas. Participants were compensated with documentation of their participation that could be used for extra credit in many undergraduate psychology courses. Participants received 3 hours of extra credit for participating. To enhance compliance with the extensive assessment battery, participants whose test scores indicated they followed the directions to the best of their ability on each measure were entered into a drawing for a \$15 Wal-Mart gift card. For every 20 participants entered into the drawing one was chosen randomly to receive a gift card.

At least one graduate and one undergraduate student provided participants with a questionnaire packet to complete. Participants first read and signed the informed consent form and provided contact information. Next, participants were informed that if they completed the questionnaires to the best of their abilities, responding to the content of the items and not responding randomly, they would be entered into a drawing in which 1 in 20 eligible participants would be randomly selected to win a \$15 Wal-Mart gift card. The participants were then instructed to complete the questionnaire packet. After completing the questionnaires, participants were provided with a debriefing form briefly describing the purpose of the study, a list of mental health resources available in the community and an extra credit slip for 3 hours of research participation.

Measures

Participants completed the measures described below in their questionnaire packet. Packets were ordered such that participants first completed a demographics form, followed by measures of trauma exposure. The PTSD measures and other measures were counterbalanced such that the longest measure (PAI) was always presented either first or last, and the PTSD measures were always separated by another measure. Within this organization, the orders of the PTSD measures and the orders of the other measures were randomly assigned. Measures that were administered in the self-report measure battery that were not included in the current study were the Stressful Events Impact Form, the Cognitive Distortion Scale, the Inventory of Altered Self-Capacities, the Trauma and Attachment Belief Scale, the Beck Depression Inventory—second edition, and the Beck Anxiety Inventory.

Trauma Exposure. Trauma history was assessed using the Life Events Checklist, (LEC; taken from the Clinician-Administered PTSD Scale; Blake et al., 1995). The Life Events Checklist (LEC) is the self-report trauma assessment portion of the Clinician-Administered PTSD Scale (Blake, Weathers, Nagy, et al., 1990), the most widely used structured interview for PTSD. The LEC consists of 17 items, including 16 items that assess exposure to specific categories of traumatic events (natural disaster, sexual assault, etc.) and one item, labeled “other,” that assess exposure to events that do not fit into one of the specific categories. Respondents indicated their lifetime exposure to each of the categories of events by checking one or more of the following options: happened to me, witnessed it, learned about it, not sure, and does not apply. Next, they identified the worst event (the one that has caused the most problems) and reported whether that event met

DSM-IV-TR Criterion A1 (actual or threatened death or serious injury, or a threat to the physical integrity of self or others) and Criterion A2 (intense fear, helplessness, or horror). Finally, they provided a brief narrative of their worst event.

Criterion A. A research team composed of a doctoral level supervisor and three graduate students used an extensive coding system to determine whether an index event met Criterion A1 based on all information on the event reported in the participant's measures. Events with a mismatched code, in which one rater coded there was not enough information available and the other rater coded that the event was definite criterion A1 were submitted to further analysis with the doctoral level supervisor, and a consensus code was reached. Those identified as subthreshold Criterion A1, Not Criterion A1, and Not Enough Information were deemed ineligible for inclusion in the study. Interrater reliability was computed with these codes. Excellent reliability was found, with 94.9% agreement and a kappa of .87.

Severity Ratings. Prior to data analyses, and independent of the Criterion A1 ratings described above, a team of two doctoral level graduate students, with guidance from a doctoral level supervisor, independently rated the severity of each participant's identified trauma using the *DSM-III* (1980) suggested rating scale for the severity of psychosocial stressors on Axis IV. Reported stressors were evaluated on several dimensions (e.g., level of threat or injury, level of exposure, unpredictability, uncontrollability, closeness of perpetrator or victim, and chronicity). The raters independently coded 90 participants' events and discussed scoring discrepancies. Following these calibration exercises the two raters again independently rated each event. The anchor values provided by the *DSM-III* authors and used for the ratings in this study

were as follows: 1 = None; 2 = Minimal; 3 = Mild; 4 = Moderate; 5 = Severe; 6 = Extreme; 7 = Catastrophic. All rating discrepancies were resolved through discussion, and consensus ratings were developed for all narratives. Given that a seven-point scale was used, bivariate correlations were calculated to gauge interrater reliability, yielding a correlation of $r = .733$.

Also, for those events judged to meet Criterion A, up to three LEC codes were applied to each index event. Raters were encouraged to employ the fewest codes possible to capture the nature of the event. Thus, additional codes were employed only for those events that were too complex to be categorized with one code.

The current study involved comparisons of interpersonal and non-interpersonal event types. Participants who reported as their worst event either physical assault, assault with a weapon, SA, other unwanted or uncomfortable sexual experience, combat, or captivity were selected for the interpersonal trauma group. In contrast, participants who reported as their worst event a trauma less likely to involve human perpetration—including natural disaster, fire or explosion, MVA or serious accident at work, home, or during a recreational activity—were selected for the non-interpersonal trauma group.

The questionnaire packet assessed prevalence and severity of PTSD symptoms using four self-report measures:

The PTSD Checklist (PCL; Weathers, 1993). The PCL is a 17-item self-report measure that assesses each of the 17 DSM-IV-TR symptoms of PTSD. There are three versions of the PCL. The civilian and military version (PCL-C and PCL-M) are used when a specific traumatic event has not been identified. On the specific version (PCL-S) that was used in the present study, respondents first identify an index event and then refer

to this event as they complete the items. On all three versions of the PCL respondents indicate how much they were bothered by each PTSD symptom in the past month, using a five-point scale (1 = not at all to 5 = extremely). The PCL has been used extensively in a wide variety of trauma populations and has shown to possess excellent psychometric properties (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Ruggerio, Del Ben, Scotti & Rabalais, 2003).

Detailed Assessment of Posttraumatic Stress (DAPS; Briere, 2001). The DAPS is a 105-item self-report measure multiscale measure of trauma-related symptomatology. The DAPS provides comprehensive information pertaining to an array of trauma-related parameters, including a person's history of exposure to traumatic events, peritraumatic cognitive and emotional responses, Posttraumatic Stress Disorder (PTSD) and Acute Stress Disorder (ASD) symptoms, posttraumatic dissociation, substance abuse, and suicidality. The DAPS yields information for two validity scales, four trauma specification scales, five posttraumatic stress scales, and three associated features scales. The DAPS is currently the most comprehensive dedicated self-report measure available for the assessment of trauma-related symptomatology. Initial analyses reported in the professional manual indicated that the DAPS demonstrated good internal consistency, as well as good convergent and discriminant validity with other self-report measures of PTSD.

Posttraumatic Stress Diagnostic Scale (PDS; Foa1997). The PDS is a 49-item self report measure based on the DSM-IV diagnostic criteria for PTSD. The PDS yields both continuous measurement of PTSD symptom severity and a PTSD diagnosis. The PDS has demonstrated high internal consistency, and convergent validity with other measures of

PTSD. The PDS demonstrated high agreement with the Structured Clinical Interview for *DSM-III-R* (SCID; Spitzer, Williams, Gibbons, & First, 1990).

Impact of Event Scale-Revised (IES-R; Weiss, 2004). The IES-R is a 22-item self-report measure of PTSD symptoms. The IES-R evaluates the presence and intensity of intrusion, avoidance, and hyperarousal symptoms represented by the *DSM* criteria for PTSD. However, the IES-R does not directly correspond to *DSM-IV* criteria. The IES-R has demonstrated adequate internal consistency and convergent validity with respect to other self-report measures (Creamer et al., 2004).

The Life Threat and Betrayal Inventory. The Life Threat and Betrayal Inventory (LTBI; Appendix A) was developed for the current study. It combines adapted components of measures used by Blanchard, Hickling, Mitnick, et al. (1995), Nixon, Resick, and Griffin (2004), and Freyd, DePrince, and Zurbriggen (2001). It consists of three sections intended to measure the level of injury, PLT, and betrayal associated with an index traumatic event. The injury component assesses injury according to self-reported level of care received and requires that the participant describe the need for this care. The PLT component consists of a global rating scale and prompts participants to generate a narrative describing what was going on during the worst event that made them feel like their life was in danger. The betrayal component consists of a global rating and prompts participants to generate narratives describing their relationship with the perpetrator of betrayal and why they felt betrayed. Finally, a single 5-point Likert scaled item assesses how much participants have been able to forgive each of the people or entities identified in the betrayal section.

Coding the LTBI. Given the definitional ambiguity of betrayal, a research team developed a coding system for the betrayal component of the LTBI measure. The LTBI betrayal subscale was coded for these six betrayal-related dimensions: (a) acts of commission vs. omission, (b) prototypicality of the betrayal, (c) level of trust prior to perpetration of betrayal, (d) intentionality, (e) primary vs. secondary betrayal, and (f) perpetrator type: individual(s), institution, God, self, or other. Under the direction of the doctoral level supervisor, an expert in the field of traumatic stress, the team trained together on coding these dimensions of betrayal. Training included interactive rating exercises and independent coding exercises. Following initial training, two raters independently coded all LTBI betrayal narratives. All discrepancies were discussed until the raters reached a consensus. Interrater reliability for the six betrayal dimensions was high: Prototypicality (91.3% agreement with a kappa of .63); Commission/Omission (92.1% agreement with a kappa of .84); Physical/Verbal (85.6% agreement with a kappa of .73); Trust Prior to Perpetration (92.0% agreement with a kappa of .83); and Intent (93.8% agreement with a kappa of .68); Perpetrator type (97.1% agreement with a kappa of .84).

The following are fictional examples based on actual narratives receiving prototypicality scores of Atypical, Somewhat Atypical, Somewhat Typical, and Typical: “I felt betrayed by one of the policemen because he was extremely rude to my friend’s dad who broke his arm and fractured his leg.” (Atypical); “My friend: she was my best friend all through high school. She knew what the guy was like and should’ve warned me” (Somewhat Atypical); “I felt betrayed by my friend who was driving. He said that he was the designated driver, but evidently he had been drinking all along (Somewhat

Typical); “My father who raped me. Before he always told me he would protect me from something like that happening, and I trusted him. It hurt so bad that he would treat me that way, like I wasn’t his daughter” (Typical). Only the prototypicality dimension was used as selection criteria for the current study. Participants were excluded in the study if their description of betrayal significantly strayed from common conceptions of betrayal and was coded “Atypical”.

Dissociation. The Dissociative Experiences Scale – Second Edition (DES-II) is a 28-item measure of a wide range of experiences related to dissociation (e.g., feeling their body does not belong to them, feeling as though the world around them is not real; Bernstein & Putnam, 1986). The DES-II is a modified version of the original DES, with the major alteration being a change from a visual analog to an 11-point Likert scale. For the DES-II, participants will endorse the percentage of the time that they have had each experience on an 11-point likert scale (0 to 100 in increments of 10). The total DES-II score is an index of the average frequency of dissociative experiences (range 0–100). Carlson and Putnam (1993) reviewed the use of the DES in an array of populations. The DES demonstrated good psychometric properties. Results from test-retest reliability and internal reliability analyses ranged from .79 to .96, and .83 to .93, respectively. The DES has convergent, construct, and discriminant validity in a range of samples.

Personality Assessment Inventory (PAI). The PAI (Morey, 1991) is a 344-item self-report measure designed to assess symptoms of a broad range of psychopathology and personality traits. The PAI is generally recognized as possessing good psychometric properties and covers a wide range of Axis I and II disorders (Morey, 1991; 1996). The PAI includes 22 non-overlapping scales. Four validity scales—Inconsistency (ICN),

Infrequency (INF), Negative Impression Management (NIM), and Positive Impression Management (PIM) — assess departures from conscientious responding and the tendency to present oneself in an overly negative or positive light. Eleven clinical scales assess Anxiety (ANX), Anxiety-Related Disorders (ARD), Somatic Complaints (SOM), Mania (MAN), Paranoia (PAR), Schizophrenia (SCZ), Borderline features (BOR), Antisocial features (ANT), Alcohol Problems (ALC), and Drug Problems (DRG). Five treatment scales that assess Aggression (AGG), Suicidal Ideation (SUI), Stress (STR), Nonsupport (NON), and Treatment Rejection (RXR). Two interpersonal scales assess Dominance (DOM) and Warmth (WRM).

RESULTS

LTBI Analyses

Convergent and discriminant validity. Support for convergent validity for the LTBI injury subscale was demonstrated by the significant correlations between LTBI injury and items intended to measure injury on the PDS (“Were you physically hurt”; $r = .68$) and LEC (“I was seriously injured”; $r = .57$). Similarly, evidence for convergent validity for the LTBI PLT scale was demonstrated by the comparison of the PLT scale with items intended to measure PLT on the PDS (“Do you think your life was in danger”; $r = .67$) and LEC (“Was anyone’s life in danger”; $r = .65$). Evidence for discriminant validity for the injury, PLT, and betrayal scales of the LTBI was established by comparing these scales with PAI scales presumably less related to PTSD (i.e. Mania, Aggression, and Antisocial). Low correlations were found between the LTBI subscales and these measures, with a range from .005 to .179.

LTBI betrayal subscale. One hundred ninety-five participants completed at least one narrative for the betrayal subscale of the LTBI; 111 completed two narratives; and 54 completed three narratives, resulting in a total of 360 narratives. The narratives generated for the betrayal subscale of the LTBI were coded along seven dimensions. Results from these coding exercises are presented in Table 1. To facilitate the clearest comparison of participant’s reports of betrayal, analyses were conducted comparing only the first narrative of each participant. Using 1/3 splits, the narratives of each participant were classified as high betrayal (upper third) or low betrayal (lower third) according to their

response on the betrayal index (range: 0-100). As indicated in Table 2, results from chi-square analyses indicated significant differences in the distribution of high betrayal and low betrayal groups (created by 1/3 splits) along 5 of the 6 coded dimensions of betrayal: Commission/Omission ($\chi^2 = 5.03$; $p = .025$); Trust Prior to Perpetration ($\chi^2 = 9.56$; $p = .023$); Intentionality ($\chi^2 = 6.16$; $p = .046$); Primary/Secondary ($\chi^2 = 4.11$; $p = .043$); and Physical/Verbal ($\chi^2 = 7.95$; $p = .019$). No differences were identified on the “Source of Perpetration” dimension ($\chi^2 = 2.92$; $p = .571$). Thus, with the exception of perpetration source, these results suggest that a significant relationship exists between these dimensions and perceived betrayal levels.

Comparisons of Injury, PLT, and Betrayal on PTSD outcome measures

For descriptive purposes, the means and standard deviations for all trauma-related measures completed by participants included in this study are presented in Table 3. To test a modified version of Freyd’s 2 X 2 model, which suggests PTSD symptom severity is determined by the degree of betrayal and life threat involved in the traumatic event, a series of 2 X 2 ANOVAs were conducted. Betrayal and PLT were split into high and low groups by the medians of their index scores and tested as factors in 2 X 2 ANOVAs with measures of PTSD symptom severity and posttraumatic sequelae as dependent variables.

As presented in Table 4, results from 2x2 ANOVAs indicate there was a significant main effect for betrayal on 13 of the 16 trauma-related outcome measures, with PCL-B, DAPS-TDIS, and DAPS-PDIS as the only exceptions. There was also a main effect for PLT on five of the trauma-related measures. As expected, the consistent main effects for PLT were generally related to hyperarousal symptoms. The only outcome for which there was a main effect for PLT and not for betrayal was the DAPS

Peritraumatic Dissociation subscale. Together, these results partially support Hypothesis 1 in that there was a main effect for betrayal and PLT on many of the measures of PTSD symptomatology. Also, only one significant Betrayal/PLT interaction was indicated on the Dissociative Experiences Scale ($p = .048$). This result fails to support Hypothesis 1, in that PLT and betrayal demonstrated combined effects above and beyond their individual contributions for only one outcome measure.

Regression analyses. To test the incremental utility of the injury, PLT, and betrayal in the prediction of PTSD symptomatology, two series of hierarchical regression analyses were conducted. In both series, the three subscales of the LTBI were entered as independent variables and each of the trauma-related outcome measures as dependent variables. First, however, intercorrelations among the subscales of the LTBI were computed to address concerns of collinearity. As expected, the injury and PLT scales moderately correlated ($r = .410$; $p < .001$). Betrayal did not significantly correlate with either injury ($r = -.001$; $p = .984$) or PLT ($r = .040$; $p = .478$). Given the moderate correlation between injury and PLT, collinearity diagnostics were evaluated for the two series of hierarchical regressions. No problematic levels of collinearity were identified, in that in no case did the variance inflation factor exceed 10 or the condition index exceed 30 (Tabachnick & Fidell, 2006).

Table 5 presents the results of the regression analyses conducted with composite and subscale scores from the PCL, DAPS, PAI, and DES as dependent variables. As indicated on the left side of Table 6, forced entry of betrayal in the third step provided a test of the incremental predictive capacity of betrayal beyond injury and PLT. Betrayal significantly increased the prediction of scores on all PTSD outcome measures, with the

exception of the two DAPS dissociation subscales (PDIS, TDIS), beyond the variance already accounted for by injury and PLT. Significant F change scores ranged from 5.98 to 61.23 for step 3; R^2 change scores accordingly ranged from .033 to .233 for step 3.

In the reverse models presented on the right-hand side of Table 6, forced entry of PLT in the third step provided a test of the incremental predictive utility of PLT beyond injury and betrayal. PLT evidenced significant increased prediction of scores on PCL-B, PDS-B, DAPS-Reexperiencing, DAPS-Peritraumatic Distress, and DAPS-PTSD Total. Significant F change scores ranged from 4.03 to 19.80; R^2 change scores accordingly ranged from .022 to .077. These results, coupled with the results of the reverse model presented above, fail to support Hypothesis 2, in that PLT showed significant increment in R^2 only for a few scales, and the increments were generally smaller than those observed for betrayal. In contrast, these results provide strong support for Hypothesis 3, as betrayal predicted PTSD symptomatology well above and beyond the contribution of injury and PLT.

In addition to these two sets of analyses, the entire series of hierarchical regressions was reconducted with the addition in the fourth step of a PLT and betrayal interaction factor. The contribution of an interaction between PLT and betrayal was significant for analyses with two dissociation measures: DAPS-PDIS ($F_{Chg}(1,309) = 5.75, p < .05$) and DES ($F_{Chg}(1,309) = 6.06, p < .05$). Thus, the interaction of PLT and betrayal failed to account for additional variance beyond injury and their individual contributions for the majority of PTSD outcome measures used in this study.

Trauma type comparisons

To test the hypothesis that levels of injury, PLT, and betrayal significantly differ as a function of trauma type, a series of one-way ANOVAs were conducted. Results from these analyses are presented in Table 6. These analyses involved comparisons of interpersonal with non-interpersonal event types. As noted earlier, the interpersonal group consisted of participants who reported experiencing events involving a perpetrator, such as physical assault, assault with a weapon, sexual assault, other unwanted or uncomfortable sexual experience, combat, or captivity. In contrast, the non-interpersonal group consisted of participants who experienced events less likely to involve a perpetrator, such as natural disaster, fire or explosion, motor-vehicle accident, or a serious accident at work, home, or during a recreational activity. Results from these analyses revealed a significant main effect for trauma type for betrayal ($F_{(1, 155)} = 49.01, p < .001$) and injury ($F_{(1, 155)} = 5.949, p = .016$). The main effect for trauma type was nonsignificant for PLT ($F_{(1, 155)} = .344, p = .558$). These results therefore partially support Hypothesis 4, in that injury and betrayal levels significantly differed by trauma type.

To test the hypothesis that the contribution of injury, PLT, and betrayal to PTSD symptomatology significantly differ by trauma type, hierarchical regressions were conducted using the interpersonal group in one model and the non-interpersonal group in the other model. As indicated in Table 7, betrayal demonstrated significant predictive utility in both the interpersonal and non-interpersonal groups. Injury and PLT failed to demonstrate significant predictive utility in either group. Strikingly, the groups differed dramatically in the overall predictive capacity of the target variables, as the R^2 for the

interpersonal group was almost 3 times larger than the R^2 for non-interpersonal group. Although there is no test to compare the R^2 associated with different models, the target variables clearly accounted for a significantly greater proportion of the variability in PCL Total scores in the interpersonal group than in the non-interpersonal group. These results therefore support Hypothesis 5, in that the predictive capacity of the three targeted independent variables differed as a function of trauma type.

DISCUSSION

The purpose of the current study was to examine life threat and betrayal as risk factors for the development of PTSD. To date, this is the only study to examine perceived betrayal as a complementary etiological factor to life threat for PTSD. There were three key findings in the current study.

First, results indicated that betrayal levels were associated with PTSD symptom levels, as analyses indicated a main effect for betrayal on the majority of measures of PTSD symptomatology. Moreover, results from regression analyses indicated that when life threat and betrayal were considered together, betrayal was more potent than life threat in predicting PTSD symptomatology. Betrayal contributed significantly to the prediction of PTSD symptom levels on all outcome measures, with the exception of two scales measuring dissociation and PCL-B. These results suggest that betrayal plays a role in the phenomenology of PTSD.

These results add weight to theories that have argued that betrayal is a distinct dimension of trauma that leads to the development of PTSD symptoms (Brewin, 2003; Figley, 1990; Freyd, 1996, 1998; Shay, 1992). Specifically, the results are in accord with the modified version of Freyd's model presented in this paper, which suggests that betrayal predicts variance in PTSD symptom levels independent of life threat. These findings represent a new contribution because betrayal was assessed as a peritraumatic perception elicited by a wide range of sources and event types. Previous studies

considered betrayal only as an implicit quality in interpersonal traumas, and a quality completely confounded by event type.

Given that betrayal predicted PTSD severity on most measures, the failure of betrayal to predict symptom severity on measures of peritraumatic dissociation and trauma-specific dissociation was particularly striking. This finding was surprising considering the centrality of dissociative symptoms to the original formulation of betrayal trauma theory. Betrayal, however, did predict dissociative symptoms measured by the DES. The reason for this discrepancy can be clarified by the differences intrinsic to the specific tests used to measure PTSD. Briere, Scott, and Weathers (2005) suggest that the forms of dissociation measured by the DAPS subscales are unique from the dissociation measured by the DES. They note that the DES measures generalized dissociation, a reflection of the summative dissociative experiences an individual has encountered across multiple events. Conversely, the DAPS subscales, specifically peritraumatic and trauma-specific dissociation, measure dissociation in response to a single index event. This suggests that betrayal may be less associated with dissociation related to a specific event and more associated with the generalized dissociation that arises from the sum of an individual's traumatic experiences. Generalized dissociation may be associated with the effects of repeated traumatization, a phenomenon theoretically more connected with betrayal traumas, such as sexual abuse (Freyd, 1996).

In addition to examining the relationship between betrayal and PTSD, this study examined whether betrayal levels were related to dimensions theoretically linked to the betrayal construct. As expected, acts of commission, significant trust prior to perpetration, intentionality, and primary betrayal were disproportionately associated with

high betrayal. Surprisingly, perpetrator type was not differentially associated with betrayal levels. Nonetheless, these results indicate that betrayal levels are linked to perceived characteristics of the event and premorbid beliefs.

The second key finding of the study was that life threat was only modestly associated with PTSD symptom severity. Analyses indicated a main effect for PLT on five of the seventeen measures of PTSD symptomatology. Also, results from regression analyses indicated that PLT contributed to the prediction of PTSD symptoms above and beyond the contribution of betrayal for five of sixteen measures of posttraumatic symptomatology. Thus, although life threat accounts for variance among some aspects of PTSD, life threat is not uniformly related to PTSD symptom severity across all measures.

These results challenge life-threat centered theories of PTSD and the prominence of life threat in the description of PTSD in *DSM-IV-TR* (APA, 2000). However, these results are consistent with the extant literature on life threat, considering research studies have revealed that a tenuous relationship exists between life threat and PTSD severity. Thus, although life threat is a relevant factor in the etiology of PTSD, it not the ultimate etiological factor for PTSD.

It is of interest that although betrayal and PLT independently predicted PTSD symptoms, the correlation between them was low. This is consistent with the modified version of Freyd's theory presented in this paper, which suggests that life threat and betrayal are independent factors. Also, it is noteworthy that the interaction of life threat and betrayal as contributors to PTSD symptom levels was insignificant on most outcome measures. This is inconsistent with theory that suggests the interaction of life threat and

betrayal accounts for additional variance in PTSD beyond their combined individual contributions.

The third central finding of the study was that injury and betrayal significantly differed by event type. Analyses indicated a main effect for trauma type, such that betrayal levels were significantly higher following interpersonal traumas and injury levels were significantly higher following non-interpersonal traumas. Whether these factors differ by trauma type at a more specific level (e.g. sexual assault, MVA) remains a question for future research. These results suggest that injury and betrayal are influenced by trauma type and are consistent with theories postulating that some event types, particularly interpersonal traumas, are more likely to involve betrayal than others. More specifically, these results suggest that betrayal may account for the higher levels of PTSD following traumas perpetrated by humans. For example, betrayal may help account for the relatively high levels of PTSD documented in victims of sexual assault, where life threat is less frequently reported.

The results of the current study must be qualified by several methodological limitations. First, the sample was recruited in a non-clinical setting and therefore demonstrated lower levels of PTSD symptoms than would a clinical sample. Still, PCL total scores found in the current sample exceed those reported in recent PTSD studies with college student samples (Flack, Milanak, & Kimble, 2005; Lawler, Quimette, & Dahlstedt, 2005; Ruggiero et al., 2003) and are comparable to scores reported in unselected community samples (Gillock, Zayfert, Hegel, & Ferguson, 2005; Magruder, Frueh, & Knapp, 2004). Moreover, there is evidence that PTSD is a dimensional condition (Ruscio, Ruscio, & Keane, 2002). Thus, data from assessment instruments

yielding continuous severity scores still inform understanding of the PTSD construct regardless of the relatively low symptom severity of the sample.

Second, the sample was self-selected and thus may not be representative of the population of civilian trauma survivors. Caution is therefore advisable in generalizing beyond this sample. Third, data were derived from a retrospective self-report. Although the outcome measures used in this study have excellent psychometric properties, a structured interview with a mental health professional is the “gold standard” for the assessment of PTSD symptomatology. The use of retrospective self-report may have also increased risk of participant response bias. The present study attempted to control for bias by eliminating from analyses any participant whose response patterns evidenced random responding, carelessness, reading difficulty, confusion, failure to follow instructions, or biased response style.

Fourth, given the exploratory nature of the current study, a large number of analyses were conducted. The family alpha level of conducting so many analyses is quite high, and therefore it is possible that some of the individual significant findings in this study could be the result of a Type I error. It is important to note that the objective of this study was to identify patterns of results, rather than extrapolate from individual findings. Given the robust findings of this study, changes in a few outcomes would unlikely alter the general pattern of results. Nonetheless, given the high probability of Type I error, it is important to interpret results from individual analyses with caution.

Taken together, the results suggest several directions for future research. First, this study should be replicated and extended to involve interview measures of PTSD. Second, if the finding that betrayal contributes to PTSD symptom severity beyond the

variability accounted for by life threat proves to be replicable and generalizable, future research should examine whether the relationship between betrayal and PTSD responding is mediated by Criterion A2. Criterion A2 stipulates that events capable of precipitating PTSD must elicit a response involving “intense fear, helplessness, or horror” (APA, 2000). The current study conceptualized PLT and betrayal as inputs that precipitate outputs such as fear, helplessness, and horror. Explicating the extent to which PLT and betrayal are mediated by the emotional responses captured in Criterion A2 would better our understanding of the relationship between these factors and PTSD.

Third, betrayal should be included in subsequent PTSD risk factor studies. The largest risk factor studies have failed to include betrayal, and the results of this study highlight this failure as a notable limitation. Similarly, the role of betrayal should be assessed in studies that involve interpersonal traumas.

Fourth, future studies should utilize an expanded version of the LTBI that provides a broader assessment of these factors. The LTBI used to assess life threat and betrayal was limited for the purposes of this study. Specifically, the LTBI required participants to provide a single index score for betrayal rather than provide a score for each source of betrayal. Also, injury was assessed with an interval scale assessing level of care received, thereby precluding continuous measurement. Future versions of the LTBI should therefore include betrayal indices for each source of betrayal and a continuous measure of injury.

Finally, these findings may have implications for the assessment and treatment of PTSD stemming from traumas involving betrayal. In clinical settings, clients may be less likely to disclose perceived betrayal than other aspects of the event. Given the salience of

betrayal in this study, clinicians should be vigilant to features of betrayal in traumas that elicit PTSD symptoms. Moreover, while most psychological interventions recognize the importance of the therapeutic relationship, PTSD stemming from trauma involving betrayal might best be treated with treatments that focus on relationships.

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Table 1

<i>Frequency by Betrayal Dimension</i>		
	Frequency	Percentage
<i>Prototypicality</i>		
Atypical	61	16.9
Somewhat Atypical	128	35.6
Somewhat Typical	115	31.9
Typical	51	14.2
No Rating	5	1.4
<i>Perpetrator</i>		
Institution	40	11.1
Individual	248	68.9
God/higher being	52	14.4
Self	15	4.2
Other	5	1.4
<i>Intentionality</i>		
Premeditated	40	11.1
Not premeditated	318	88.3
No Rating	2	.6
<i>Level of Trust</i>		
Significant trust	249	69.2
Acquaintance	45	12.5
Never met/no trust	66	18.3
<i>Primary vs. Secondary</i>		
Primary Betrayal	141	39.2
Secondary Betrayal	219	60.8
<i>Commission vs. Omission</i>		
Commission	206	57.2
Omission	154	42.8
<i>Form of Commission</i>		
Physical	136	66.0
Verbal	34	16.5
Physical and Verbal	32	15.5
No Rating	4	1.9

Table 2
Low and High Betrayal Comparisons by Dimension

	Low Betrayal	High Betrayal	Chi-square	p
	n	n		
<i>Commission vs. Omission</i>			5.029	.025
Commission	39	27		
Omission	51	15		
<i>Prototypicality</i>			21.771	.000
Atypical	18	6		
Somewhat Atypical	24	11		
Somewhat Typical	18	27		
Typical	6	22		
<i>Betrayer Identifier</i>			2.920	.571
Institution	6	7		
Individual	46	52		
God/higher being	9	5		
Self	1	1		
Other	3	1		
<i>Level of Trust</i>			9.563	.023
Significant trust	41	55		
Acquaintance	9	3		
Never met/no trust	16	7		
Does not apply	0	1		
<i>Intentionality</i>			6.156	.026
Premeditated	5	14		
Not premeditated	61	52		
<i>Primary vs. Secondary</i>			4.112	.043
Primary Betrayal	37	48		
Secondary Betrayal	28	17		
<i>Type of Commission</i>			7.952	.019
Physical	31	32		
Verbal	5	3		
Physical and Verbal	3	16		

Note. High Betrayal and Low Betrayal groups were determined using 1/3 splits.

Table 3
Outcome Measure Means and Standard Deviations Across Betrayal-PLT Groups

Outcome Measure	Full Sample N = 172-182 M (SD)	High Betrayal - High PLT n = 46-47 M (SD)	High Betrayal - Low PLT n = 38-44 M (SD)	Low Betrayal - High PLT n = 42-44 M (SD)	Low Betrayal - Low PLT n = 42-44 M (SD)
<i>PCL</i>					
B cluster	8.8 (3.8)	10.0 (4.7)	8.5 (2.8)	8.6 (3.7)	8.1 (3.5)
C cluster	10.7 (4.5)	12.6 (5.3)	11.5 (5.0)	9.5 (3.8)	9.1 (2.6)
Avoidance	3.8 (2.3)	4.6 (2.7)	4.3 (2.3)	3.1 (1.7)	3.3 (1.9)
Numbing	6.9 (2.8)	8.0 (3.3)	7.3 (3.3)	6.4 (2.5)	5.8 (1.2)
D cluster	8.2 (3.4)	9.7 (4.3)	8.0 (2.7)	7.9 (3.1)	7.1 (2.7)
Total	27.7(10.1)	32.3 (2.7)	28.1 (8.5)	26.0 (9.3)	23.4 (7.7)
<i>DAPS</i>					
Reexperiencing	57.6 (12.8)	63.0 (15.4)	57.1 (11.3)	55.7 (11.0)	54.6 (11.5)
Avoidance	54.6 (12.6)	60.0 (14.7)	57.1 (14.6)	51.6 (9.1)	50.0 (8.3)
Arousal	54.9 (12.4)	59.4 (15.1)	55.2 (10.9)	55.0 (10.0)	50.1 (11.0)
PTSD - Total	56.2 (12.5)	61.9 (15.1)	56.9 (11.9)	54.3 (9.8)	51.7 (10.2)
PDST	59.9 (11.3)	67.0 (9.0)	61.5 (10.6)	59.1 (11.0)	52.3 (9.6)
PDIS	61.1 (14.5)	63.8 (15.0)	61.7 (13.2)	63.6 (15.6)	55.6 (13.2)
SUB	57.9 (19.6)	57.9 (18.0)	61.2 (24.7)	56.6 (18.7)	56.0 (16.8)
TDIS	54.3 (13.9)	57.2 (16.7)	55.0 (15.2)	52.8 (11.8)	52.3 (11.2)
IMP	52.2 (10.6)	55.9 (13.1)	54.2 (12.5)	49.3 (5.7)	49.3 (7.8)
<i>PAI</i>					
ARDT	55.8 (12.6)	61.7 (14.4)	60.1(12.2)	52.3 (11.0)	49.1 (7.1)

Note: High and Low Betrayal and PLT groups were created using median splits from scores on their respective scales on the LTBI.

Table 4
 2 X 2 ANOVA results for High/Low Betrayal, High/Low PLT, and Interaction

Outcome Measure	Betrayal (median split)		PLT (median split)		Betrayal/PLT Interaction	
	F	p	F	p	F	p
<i>PCL</i>						
B cluster	2.810	.095	3.090	.080	.795	.374
C cluster	18.337	<.001	1.167	.282	.282	.569
Avoidance	14.071	<.001	.033	.857	.773	.380
Numbing	14.308	<.001	2.476	.117	.018	.894
D cluster	7.853	.006	6.600	.011	.849	.358
Total	12.078	.001	4.067	.045	.787	.376
<i>DAPS</i>						
Reexperiencing	6.707	.010	3.336	.070	1.588	.209
Avoidance	18.406	<.001	1.559	.213	.152	.213
Arousal	6.702	.010	6.150	.014	.032	.858
PTSD - Total	12.214	.001	4.293	.040	.435	.510
PDST	32.728	<.001	16.776	<.001	.186	.667
PDIS	2.116	.148	5.634	.019	1.892	.171
SUB						
TDIS	2.833	.094	.426	.515	.158	.692
IMP	14.075	<.001	.306	.581	.266	.606
<i>PAI</i>						
ARDT	35.851	<.001	2.112	.148	.221	.639
<i>DES</i>						
Mean Score	10.672	<.001	.005	.942	3.966	.048

Note: High and Low Betrayal and PLT groups were created using median splits from scores on their respective scales on the LTBI. Perceived Life Threat (PLT); Personality Assessment Inventory Anxiety Related Disorders – Traumatic Stress Subscale (PAI ARD-T); Detailed Assessment of Posttraumatic Stress (DAPS); DAPS Peritraumatic Distress Scale (PDST); DAPS Peritraumatic Dissociation Scale (PDIS); DAPS Posttraumatic Impairment (IMP); DAPS Trauma-Specific Dissociation (T-DIS); DAPS Substance Abuse Scale (SUB); Dissociative Experiences Scale (DES).

Table 5.
Hierarchical Regressions with Injury, PLT, and Betrayal

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting PCL total scores</i>													
Step 1				.015	.015	2.622	Step 1				.015	.015	2.622
Injury	.696	.430	.122				Injury	.696	.430	.122			
Step 2				.033	.018	3.195	Step 2				.138	.123	24.529***
Injury	.315	.477	.055				Injury	.679	.403	.119			
PLT	.042	.023	.150				Betrayal	.088	.018	.351			
Step 3				.151	.118	23.728***	Step 3				.151	.013	2.589
Injury	.357	.449	.063				Injury	.357	.449	.063			
PLT	.035	.022	.127				Betrayal	.086	.018	.344			
Betrayal	.086	.018	.344				PLT	.035	.022	.127			
<i>Predicting PCL B cluster scores</i>													
Step 1				.001	.001	.215	Step 1				.015	.015	2.622
Injury	.075	.162	.035				Injury	.075	.162	.035			
Step 2				.027	.026	4.567*	Step 2				.051	.050	9.001**
Injury	-.096	.179	-.045				Injury	.071	.158	.033			
PLT	.019	.009	.180				Betrayal	.021	.007	.223			
Step 3				.073	.046	8.421*	Step 3				.073	.022	4.025*
Injury	-.086	.175	-.040				Injury	-.086	.175	-.040			
PLT	.017	.009	.165				Betrayal	.020	.007	.214			
Betrayal	.020	.007	.214				PLT	.017	.009	.165			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting PCL C cluster scores</i>													
Step 1				.013	.013	2.318	Step 1				.013	.013	2.318
Injury	.291	.191	.115				Injury	.291	.191	.115			
Step 2				.016	.003	.459	Step 2				.177	.164	34.271***
Injury	.227	.214	.089				Injury	.283	.175	.112			
PLT	.007	.011	.057				Betrayal	.045	.008	.405			
Step 3				.178	.162	33.710***	Step 3				.178	.001	.154
Injury	.248	.196	.098				Injury	.248	.196	.098			
PLT	.004	.010	.030				Betrayal	.045	.008	.403			
Betrayal	.045	.008	.403				PLT	.004	.010	.030			
<i>Predicting PCL D cluster scores</i>													
Step 1				.030	.030	5.330*	Step 1				.030	.030	5.330**
Injury	.330	.143	.173				Injury	.330	.143	.173			
Step 2				.053	.023	4.241*	Step 2				.098	.068	12.930***
Injury	.184	.158	.097				Injury	.326	.138	.171			
PLT	.016	.008	.171				Betrayal	.022	.006	.260			
Step 3				.117	.063	12.274***	Step 3				.117	.019	3.663
Injury	.195	.153	.102				Injury	.195	.153	.102			
PLT	.014	.008	.154				Betrayal	.021	.006	.252			
Betrayal	.021	.006	.252				PLT	.014	.008	.154			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting PCL – C (Avoidance) scores</i>													
Step 1				.000	.000	.059	Step 1				.000	.000	.059
Injury	.023	.097	.018				Injury	.023	.097	.018			
Step 2				.001	.001	.064	Step 2				.121	.121	23.659***
Injury	.011	.108	.009				Injury	.020	.091	.016			
PLT	.000	.005	.021				Betrayal	.020	.004	.348			
Step 3				.121	.120	23.450***	Step 3				.121	.000	.000
Injury	.021	.102	.016				Injury	.021	.102	.016			
PLT	.000	.005	-.002				Betrayal	.020	.004	.348			
Betrayal	.020	.004	.348				PLT	.000	.005	-.002			
<i>Predicting PCL – C (Numbing) scores</i>													
Step 1				.029	.029	5.097*	Step 1				.029	.029	5.097*
Injury	.268	.119	.169				Injury	.268	.119	.169			
Step 2				.033	.004	.787	Step 2				.165	.136	27.981***
Injury	.215	.133	.136				Injury	.263	.110	.166			
PLT	.006	.007	.074				Betrayal	.026	.005	.369			
Step 3				.167	.133	27.387***	Step 3				.167	.002	.410
Injury	.228	.124	.144				Injury	.228	.124	.144			
PLT	.004	.006	.050				Betrayal	.026	.005	.366			
Betrayal	.026	.005	.366				PLT	.004	.006	.050			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting DAPS PDST scale scores</i>													
Step 1				.015	.015	2.676	Step 1				.015	.015	2.676
Injury	.486	.297	.124				Injury	.486	.297	.124			
Step 2				.111	.095	18.201***	Step 2				.267	.252	58.427***
Injury	-.110	.316	-.028				Injury	.465	.257	.119			
PLT	.066	.016	.344				Betrayal	.087	.011	.502			
Step 3				.344	.233	60.159***	Step 3				.344	.077	19.804***
Injury	-.071	.272	-.018				Injury	-.071	.272	-.018			
PLT	.060	.013	.310				Betrayal	.084	.011	.484			
Betrayal	.084	.011	.484				PLT	.060	.013	.310			
<i>Predicting DAPS PDIS scale scores</i>													
Step 1				.068	.068	12.540***	Step 1				.068	.068	12.540***
Injury	.990	.280	.261				Injury	.990	.280	.261			
Step 2				.070	.002	.364	Step 2				.079	.011	1.988
Injury	.907	.312	.239				Injury	.986	.279	.260			
PLT	.009	.015	.050				Betrayal	.017	.012	.104			
Step 3				.081	.010	1.880	Step 3				.081	.001	.267
Injury	.915	.312	.241				Injury	.915	.312	.241			
PLT	.008	.015	.043				Betrayal	.017	.012	.101			
Betrayal	.017	.012	.101				PLT	.008	.015	.043			

Step	B	SE	β	R^2	ΔR^2	F_{change}	Reverse	B	SE	β	R^2	ΔR^2	F_{change}
<i>Predicting DAPS Reexperiencing scale scores</i>													
Step 1				.000	.000	.031	Step 1				.000	.000	.031
Injury	.048	.277	.014				Injury	.048	.227	.014			
Step 2				.032	.032	5.491*	Step 2				.084	.084	15.253***
Injury	-.263	.304	-.704				Injury	.019	.226	.005			
PLT	.035	.015	.199				Betrayal	.047	.012	.290			
Step 3				.108	.076	14.021***	Step 3				.108	.024	4.379*
Injury	-.248	.292	-.069				Injury	-.248	.292	-.069			
PLT	.031	.015	.172				Betrayal	.045	.012	.227			
Betrayal	.045	.012	.277				PLT	.031	.015	.172			
<i>Predicting DAPS Avoidance scale scores</i>													
Step 1				.000	.000	.068	Step 1				.000	.000	.068
Injury	.077	.296	.020				Injury	.077	.296	.020			
Step 2				.021	.020	3.437	Step 2				.174	.174	35.212***
Injury	-.195	.328	-.051				Injury	.049	.269	.013			
PLT	.030	.016	.159				Betrayal	.072	.012	.417			
Step 3				.185	.165	33.561***	Step 3				.185	.011	2.203
Injury	-.150	.300	-.039				Injury	-.150	.300	-.039			
PLT	.022	.015	.117				Betrayal	.070	.012	.408			
Betrayal	.070	.012	.408				PLT	.022	.015	.117			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting DAPS Arousal scale scores</i>													
Step 1				.009	.009	1.436	Step 1				.009	.009	1.436
Injury	.348	.291	.093				Injury	.348	.291	.093			
Step 2				.037	.028	4.879*	Step 2				.062	.053	9.351**
Injury	.027	.322	.007				Injury	.332	.284	.088			
PLT	.035	.016	.189				Betrayal	.039	.013	.231			
Step 3				.083	.046	8.277**	Step 3				.083	.022	3.858
Injury	.052	.315	.014				Injury	.052	.315	.014			
PLT	.031	.016	.165				Betrayal	.036	.013	.216			
Betrayal	.036	.013	.216				PLT	.031	.016	.165			
<i>Predicting DAPS PTST scale scores</i>													
Step 1				.002	.002	.407	Step 1				.002	.002	.407
Injury	.505	.792	.050				Injury	.505	.792	.050			
Step 2				.036	.034	5.735*	Step 2				.120	.118	21.852***
Injury	-.441	.875	-.043				Injury	.414	.746	.041			
PLT	.105	.044	.206				Betrayal	.157	.034	.344			
Step 3				.142	.106	20.023***	Step 3				.142	.022	4.153*
Injury	-.348	.828	-.034				Injury	-.348	.828	-.034			
PLT	.085	.042	.167				Betrayal	.150	.034	.328			
Betrayal	.150	.034	.328				PLT	.085	.042	.167			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting DAPS IMP scale scores</i>													
Step 1				.007	.007	1.253	Step 1				.007	.007	1.253
Injury	.169	.151	.086				Injury	.169	.151	.086			
Step 2				.010	.003	.465	Step 2				.174	.166	33.785***
Injury	.119	.168	.060				Injury	.152	.138	.077			
PLT	.006	.008	.058				Betrayal	.036	.006	.408			
Step 3				.174	.164	33.125***	Step 3				.174	.000	.080
Injury	.133	.154	.068				Injury	.133	.154	.068			
PLT	.002	.008	.022				Betrayal	.036	.006	.406			
Betrayal	.036	.006	.406				PLT	.002	.008	.022			
<i>Predicting DAPS TDIS scale scores</i>													
Step 1				.003	.003	.455	Step 1				.003	.003	.455
Injury	-.057	.084	-.052				Injury	-.057	.084	-.052			
Step 2				.008	.005	.832	Step 2				.019	.017	2.829
Injury	-.094	.094	-.086				Injury	-.061	.084	-.055			
PLT	.004	.005	.078				Betrayal	.006	.004	.129			
Step 3				.023	.015	2.578	Step 3				.023	.004	.595
Injury	-.092	.093	-.084				Injury	-.092	.093	-.084			
PLT	.004	.005	.066				Betrayal	.006	.004	.124			
Betrayal	.006	.004	.124				PLT	.004	.005	.066			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>Predicting DES average score</i>													
Step 1				.000	.000	.052	Step 1				.000	.000	.052
Injury	.104	.454	.017				Injury	.014	.454	.017			
Step 2				.000	.000	.027	Step 2				.049	.049	8.797**
Injury	.141	.509	.024				Injury	.093	.444	.015			
PLT	-.004	.025	-.014				Betrayal	.058	.020	.221			
Step 3				.050	.049	8.843**	Step 3				.050	.001	.119
Injury	.169	.498	.028				Injury	.169	.498	.028			
PLT	-.008	.024	-.029				Betrayal	.059	.020	.222			
Betrayal	.059	.020	.222				PLT	-.008	.024	-.029			
<i>Predicting PAI ARD-T scale scores</i>													
Step 1				.010	.010	1.798	Step 1				.010	.010	1.798
Injury	.295	.220	.101				Injury	.295	.220	.101			
Step 2				.020	.009	1.655	Step 2				.274	.264	62.437***
Injury	.154	.245	.053				Injury	.283	.189	.097			
PLT	.015	.012	.109				Betrayal	.066	.008	.513			
Step 3				.278	.259	61.277***	Step 3				.278	.004	1.056
Injury	.186	.211	.064				Injury	.186	.211	.064			
PLT	.011	.010	.075				Betrayal	.065	.008	.509			
Betrayal	.065	.008	.509				PLT	.011	.010	.075			

Table 6
PLT, Betrayal, and Injury by Trauma Type

	Interpersonal n = 45 M(SD)	Non-Interpersonal n = 112 M(SD)	F	p
Injury	.72 (1.40)	1.52 (1.96)	5.949	.016
PLT	41.38 (34.38)	45.09 (36.02)	.344	.558
Betrayal	67.71 (41.02)	24.12 (32.73)	49.01	.000
PCL Total	31.11 (11.82)	26.87 (9.66)	5.434	.021

Note: Perceived Life Threat (PLT); Posttraumatic Stress Disorder Checklist (PCL)

Table 7

Hierarchical Regressions with Injury, PLT, and Betrayal in Interpersonal and Non-Interpersonal Traumas

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
<i>PCL Total score for Interpersonal traumas</i>													
Step 1				.044	.044	1.872	Step 1				.044	.044	1.872
Injury	1.755	1.283	.209				Injury	1.755	1.283	.209			
Step 2				.081	.037	1.606	Step 2				.211	.168	8.506**
Injury	1.454	1.296	.173				Injury	1.174	1.196	.140			
PLT	.066	.052	.196				Betrayal	.118	.040	.415			
Step 3				.242	.162	8.328**	Step 3				.242	.031	1.596
Injury	.904	1.207	.108				Injury	.904	1.207	.108			
PLT	.061	.048	.179				Betrayal	.116	.040	.408			
Betrayal	.116	.040	.408				PLT	.061	.048	.179			
<i>PCL Total scores for Non-Interpersonal traumas</i>													
Step 1				.029	.029	3.154	Step 1				.029	.029	3.154
Injury	.850	.479	.171				Injury	.850	.479	.171			
Step 2				.037	.007	.808	Step 2				.092	.063	7.211**
Injury	.586	.563	.118				Injury	.593	.475	.119			
PLT	.027	.030	.102				Betrayal	.076	.028	.256			

Step	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}	Reverse	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	F_{change}
Step 3				.098	.062	7.044**	Step 3				.098	.006	.708
Injury	.354	.554	.071				Injury	.354	.554	.071			
PLT	.025	.030	.092				Betrayal	.075	.028	.254			
Betrayal	.075	.028	.254				PLT	.025	.030	.092			

*** $p < .001$ ** $p < .01$ * $p < .05$

APPENDIX

THE LIFE THREAT AND BETRAYAL INVENTORY

Life Threat and Betrayal Inventory

We would like to know more about your experience during the worst event, including whether your life was in danger and whether you felt betrayed in some way.

Actual Physical Injury

Please check one statement below to rate the level of medical care you received because of any physical injuries you may have had during the event.

NOTE: If you needed medical care but did not receive it, check two statements. First check "Needed care but did not receive it." Then check one more statement to rate the care you should have received.

- _____ Needed care but did not receive it

- _____ No medical care
- _____ First-aid required, no visit to doctor
- _____ Visit to a doctor but not the hospital
- _____ Visit to Emergency Room (not admitted to the hospital)
- _____ Admitted to the hospital but not given extreme care
- _____ Extreme care (e.g. ICU, blood transfusion, surgery with general anesthesia)

Please describe why you needed this care:

Perceived Life Threat

During the worst event, how much did it seem to you that your life was in danger, even if you weren't actually injured? Using a scale from 0 to 100 (0 = My life was not in danger at all; 100 = I was certain I was going to die) write your rating in the space below.

Briefly describe what was going on during the worst event that made you feel like your life was in danger.

Betrayal

In this section please describe how much you felt betrayed during the worst event.

By betrayed we mean feeling as though someone (or something) who should have supported you or protected you wound up being responsible in some way for the event. This could have happened because of something they actually did or something they failed to do. For example, you might feel betrayed by another person, by God or a higher being, by an institution (for example a hospital, or the police or the courts), or even by a whole community.

A. During the worst event, how much did you feel betrayed? On a scale from 0 to 100 (0 = Did not feel betrayed at all; 100 = Felt completely betrayed) write your rating in the space below.

B. List up to three people or things you felt betrayed by during the worst event. For each one, briefly identify your relationship and describe why you felt betrayed.

#1:

#2:

#3:

C. Using the scale below, rate how much you have been able to forgive each of the people or things identified in Section B. Give each person or thing from Section B a rating from 1-5 and enter the number in the correct space on the right.

1 = I will never forgive them 2 = I don't know if I will ever forgive them 3 = I may forgive them, but haven't yet considered it 4 = I am in the process of forgiving them 5 = I have forgiven them	Forgiveness rating for #1: _____ Forgiveness rating for #2: _____ Forgiveness rating for #3: _____
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