

University of Nevada, Reno

The Interpersonal Context of Emotion

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Psychology.

By:

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We recommend that the dissertation
prepared under our supervision by

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The Interpersonal Context Of Emotion

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Abstract

Trauma-related distress is associated with disturbances in emotion regulation (Tull, Barrett, McMillan, & Roemer, 2007). The current study investigated associations of emotional reactivity, emotional sensitivity, and risk perception in an interpersonal context with individuals who endorsed varying levels of trauma-related distress. Participants were 64 college-aged women who endorsed a history of sexual trauma. All participants were randomized into conditions in which they either received validating or invalidating responses from an experimenter following their completion of stressful arithmetic tasks. Emotional reactivity was assessed with a self-report measure, emotional sensitivity was assessed through a facial affect recognition task, and risk perception was assessed by the length of time it took for an individual to choose to leave an increasingly threatening situation (in a computerized vignette). No statistically significant relationships emerged between the variables of interest. However, results helped illuminate several important questions for future research. Limitations of the study and future directions for research are discussed.

Dedication

For my parents, Geetha and Chellapa Vijay, who have been unwavering in their love for me and support of me throughout my academic career. I would not have finished this project without both of you. For the memory of my grandmother, Kamala Chellapa, who embodied the true essence of learning in all that she did. I miss you. There are no words to express how much it means to me to have had you all in my life.

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Exposure to traumatic events are frequent occurrences in our society.

Approximately 60% - 80% of individuals in the United States are exposed to events that are considered to be traumatic according to the definition set forth by the American Psychiatric Association (Breslau, 2009; APA 1994). In the United States approximately 3.5% of the population meet criteria for PTSD (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). Rates of PTSD do not fully capture the extent of the sequelae of trauma. Trauma-exposed individuals report higher rates of psychological problems and physical health problems than in comparison to their non-traumatized counterparts. Sexual victimization is one of the most commonly occurring stressors associated with the development of trauma symptoms. Twenty percent of a nationally representative sample of college women endorsed unwanted sexual intercourse (Brener, McMahon, Warren & Douglas, 1999). The sequelae of trauma are vast and include functional impairment, diminished quality of life and risk perception deficits. Recent research has identified emotion regulation as a contributing factor to the development and in the maintenance of trauma-associated distress (Tull, Barrett, McMillan & Roemer, 2007) Current intervention efforts are focused on PTSD symptoms and may therefore not be as effective for the treatment of associated trauma-related distress. The purpose of the current study was to examine the associations between trauma-related distress and the interpersonal context of emotion regulation.

Consequences of Trauma

The exposure to potentially traumatic events is associated with numerous long-term adverse outcomes including physical and mental health problems (Ellis, Atkeson, & Calhoun, 1982; Kendall-Tackett, Williams, & Finkelhor, 1993). Trauma exposure is

associated with poor physical health including heart disease, chronic bronchitis, hepatitis, diabetes, and asthma (Schnurr, Green & Kaltman, 2007). Female victims of interpersonal trauma endorse higher rates of gynecological problems, (Felitti et al., 1998), are sick more often, seek treatment from a doctor twice as much as their nonvictimized counterparts (Kendall-Tackett, 2002) and endorse higher rates of unintended pregnancies and abortions (Ellis, Atkeson, & Calhoun, 1982). Chronic trauma exposure was associated with increased likelihood of developing a chronic medical condition and increased rates of chronic pelvic pain (Ullman and Brecklin, 2003). PTSD mediates the relation between traumatic event exposure and poor physical health (Clum, Calhoun, & Kimerling, 2000) indicating the growing need to assess trauma and intervene in physical health settings.

The consequences of trauma are not limited to physical health problems; it is also associated with a range of mental health outcomes. PTSD is one possible psychological disorder that may develop in relation to a traumatic experience. The development of PTSD is best understood through the two-factor learning theory of psychopathology (Mowrer, 1947; 1960). The two-factor theory states that psychopathology, or in this case PTSD, is a function of classical conditioning (e.g. fear response is learned through associative principles) and instrumental learning (e.g. avoidance of anxiety provoking fear cues). PTSD is a maladaptive learning process that is maintained through the continued avoidance of feared stimuli (Keane, Zimering, & Caddell, 1985). From the population of individuals who experience an index trauma, lifetime rates of PTSD are estimated to range from 7.5% - 12.3% (Kessler, Chiu, Demler, & Walters, 2005; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). In the majority of trauma-exposed

individuals, trauma-related problems remit within the three to six months following the traumatic event (Foa, Steketee, & Rothbaum, 1989). In some respects, PTSD is controversial as a diagnostic category. Researchers have suggested that PTSD places too great of an emphasis on the consequences of a single event and does not adequately address the complex consequences of repeated traumas or the complexities and sequelae of early-onset of trauma (Ehring, & Quack, 2010; Cloitre, Miranda, Stovall-McClough, & Han, 2005).

The sequelae of trauma includes the development and maintenance of other forms of psychological distress (e.g. depression, anxiety, self-harm behaviors, substance abuse) (Polusny & Follette, 1995). Trauma survivors endorse higher rates of psychological problems in comparison to their counterparts without a trauma history. Depression is the most commonly reported disorder related to childhood sexual abuse (CSA). Women with histories of CSA are two to four times more likely to develop depression in comparison to control samples (Cloitre, Scarvalone, & Difede, 1997) and endorse higher rates of dysthymia and alexithymia, presumably due to disruption in their environment and the inability to achieve developmental goals in affect regulation and interpersonal relatedness (van der Kolk, 1996). A World Health Organization Study found a significant association between trauma exposure and suicidal behaviors with the strongest relation consistently found between sexual/interpersonal violence (Stein et al., 2011). High rates of co-occurring substance use and trauma-related problems have been documented (Kessler et al., 1995). Individuals who have experienced a trauma are also more likely to be dependent on substances, and are in many cases polysubstance users (Burnam, et al., 1988). It is believed that substances are used as a way to manage emotional distress

related to the trauma experience and treatment should focus on both areas (Mills, Teeson, Ross, & Peters, 2006).

An overemphasis on PTSD as the primary outcome related to trauma increases the likelihood of missing important components of the sequelae of trauma which include a range of adverse outcomes, separate from PTSD and other psychological disorders. Trauma-related distress is associated with lower levels of educational attainment, lower lifetime financial earnings, and marital difficulties (Kessler, 2000). Trauma-exposed women with subthreshold PTSD experienced similar levels of functional impairment to those with PTSD, suggesting that factors other than a PTSD diagnosis are associated with trauma and have a significant impact on general life outcomes. (Stein, Walker, Hazen, & Forde, 1997). Cloitre, Miranda, Stovall-McClough, and Han (2005) investigated problems in emotion regulation and interpersonal functioning to PTSD in relation to functional impairment in women with histories of childhood abuse. After controlling for PTSD severity, emotion regulation and interpersonal problems predicted impairment at a level equal to PTSD. In general, the experience of trauma is associated with higher levels of distress and an overall poorer quality of life.

One of the hallmarks of PTSD is the difficulty with all types of relationships (e.g. intimate, familial, friendship, professional), regardless of the type of trauma experienced (Beck, Grant, Clapp, & Palyo, 2009). An inability to manage one's own emotions when under stress affects relationships with other people. This is evident in situations or relationships that involve conflict management and the negotiation of power dynamics (Cloitre, Koenen, Cohen, & Han, 2002). Individuals with histories of sexual trauma report increased sensitivity to criticism, an inability to hear other viewpoints, difficulty

standing up for themselves, and a tendency to quit jobs and relationships without any attempt at negotiation. Trauma survivors endorse sexual problems in intimate relationships including decreased sex drive, sexual anxiety, sexual guilt, lower self-esteem, promiscuity, and prostitution (Gorcey, Santiago, McCall-Perez, 1986; Zwickl & Merriman, 2011). These characteristics contribute to poorer life satisfaction and are also barriers to engaging in a therapeutic relationship.

In addition to the physical and psychological problems resulting from trauma, other consequences are widespread and profound. It is often the case that trauma is underreported and often not disclosed. It can be assumed that given the high rates of trauma exposure, and the low rates of PTSD, general trauma-related distress affects a larger number of people than typically reported. The extensive nature of the sequelae of trauma, and the intensity with which it can impact social and occupational functioning speak to the need to develop more effective interventions for this population. Not all individuals who experience a trauma experience disturbances in all these domains, of course. However, challenges in even one of these areas can significantly impact quality of life. All too often the consequences of trauma are unidentified and therefore go untreated.

Trauma and Emotion Regulation

Responses to trauma do not occur in a vacuum; they represent a complex relationship between the individual, their social and emotional responses, and their social environment. The range of trauma-related outcomes includes psychological problems, disturbed interpersonal relationships, and general functional impairment, all of which involve problems with emotion sensitivity and reactivity. Of course, emotion sensitivity

and reactivity are key components of emotion dysregulation as well. Therefore, an emotion regulation model may offer a suitable framework within which to conceptualize a wider array of trauma-related distress and to intervene appropriately.

A historical lack of clarity of the definition of emotion has led to debate about the role of emotion in the development and maintenance of psychopathology (Mennin & Farach, 2007). At times emotions have been considered to be something inside a person, as opposed to a multi-systemic process. However, contemporary conceptualizations view emotion as a process involving neurobiology, awareness, cognition, and behavior that occurs within a social context (Fruzzetti, Crook, Erikson, Lee, & Worrall, 2009). There are multiple components involved in the process of emotions including responses to internal and external events, and encompassing emotional cues and the biological and psychological state of the individual (Linehan, Bohus, & Lynch, 2007). Additionally, the process of emotions includes the following interacting subsystems: “1) emotional vulnerability to cues; 2) internal and/or external events that serve as emotional cues, including attention to and appraisal of the cues; 3) emotional responses including physiological responses, cognitive processes, experiential responses, and action urges; 4) nonverbal and verbal expressive responses and actions; and 5) aftereffects of the initial emotional firing” (Linehan et al., 2007, p. 582). Any discussion of emotions would be incomplete without also considering the social context as a core factor in emotional responding (Fruzzetti & Iverson, 2006). The process of emotion regulation occur largely within a social context and is therefore an important component of the process.

Over time, the notion of emotion as a central feature of psychopathology has come to be widely accepted. Barlow, Allen, and Choate (2005) describe a unifying theory

of treatment, which suggests that the common elements in the etiology and latent structure of topographically different disorders (e.g. depression, PTSD) are more important than the differences. Psychological disorders are characterized to some degree by attempts to control positive and negative emotions, and a unified protocol that addresses core features of emotions may be a more powerful approach to intervention.

The unifying theory of treatment suggests that “interventions should focus on: 1) altering antecedent cognitive reappraisals, 2) preventing emotional avoidance, and 3) facilitating action tendencies not associated with the disordered emotion function” (p. 217, Barlow, Allen, & Choate, 2005). This treatment approach addresses the underlying components of emotion regulation and can therefore be applied to a wide range of psychopathology.

Treating emotions through various strategies has been incorporated into many cognitive-behavioral interventions and applied to a range of disorders including generalized anxiety disorder (Mennin, 2006; Salters-Pedeneault, Roemer, Tull, Rucker, & Mennin, 2006), borderline personality disorder (Linehan, 1993), substance use (Marlatt, 1994), depression (Segal et al., 2002), and couples and family distress (Fruzzetti, 2006).

Emotions are distinct from the process of emotion regulation. The process of emotion regulation occurs when an individual attempts to modulate any type of emotional experience they are experiencing. Gross (1998) defined the process of emotion regulation as the “process by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (p. 275). Dysregulation occurs when an individual experiences high levels of emotional arousal such that they are no longer able to manage themselves in the service of their long term goals and values (Fruzzetti et al., 2009). In situations relevant to trauma survivors, high levels of

emotional arousal triggered by traumatic memories may interfere with their goals or self control (e.g. feeling in danger, poor decision making associated with “escape conditioning”). Thus, the process of emotion regulation includes managing cognitive processes, physiological arousal, attention, awareness, and facial expressions and body posture.

Linehan (1993) and Fruzzetti and colleagues (2005) proposed a transactional model, which describes a model for the development of chronic emotion dysregulation (Figure 1). This biosocial theory is grounded in contextual behavior theory; it suggests that emotional dysregulation results from emotion vulnerabilities transacting (mutually influencing) with and in an invalidating social environment. Although originally developed for chronic emotion dysregulation in Borderline Personality Disorder, this model is applicable to the experience of trauma survivors (Figure 2).

The biosocial theory suggests that BPD is a dysfunction in the emotion system, which leads to heightened emotional arousal and to pervasive invalidation, which serve to perpetuate the cycle. The proposed model for trauma and emotion dysregulation maps on to the transactional model for BPD. It suggests that traumatic events or reminders of traumatic events can disturb the emotion regulation system and lead to a similar cycle of reciprocally escalating responses in which heightened emotional arousal leads to inaccurate verbal expression and the sequelae of trauma, and ultimately to a pervasive pattern of invalidating responses, which in turn exacerbates negative emotional arousal and re-ignites the cycle.

Emotional Vulnerability

The biosocial theory defines emotion vulnerability as 1) heightened sensitivity to emotionally relevant stimuli; 2) higher reactivity to emotional stimuli, and; 3) a slower than normal return to baseline level of emotional arousal following activation (Linehan, 1993).

Trauma and Emotional Sensitivity. Emotional sensitivity is characterized by a lower threshold for emotional stimuli eliciting any emotional arousal, meaning that individuals with higher levels of emotional sensitivity will require fewer or less intense cues to activate their emotions. This has often been measured by the ability to accurately identify facial expressions in laboratory tasks (Wagner & Linehan, 1999; Lynch et al., 2006). The ability to process expressions of emotions is a central component of human interactions and has an impact on behavior. Research on emotional sensitivity and trauma is in the nascent stages. In an unpublished dissertation, Sta Maria (2002) compared individuals with PTSD, trauma-exposed individuals with no PTSD, and normal controls (i.e. no psychiatric diagnosis) on ability to recognize emotions in other people. The results indicated that the PTSD group made a significantly higher number of errors in comparison to the other two groups, and significantly higher number of errors in recognizing fear in comparison to other emotions.

As research on trauma and emotional sensitivity continues to emerge, we can turn to models of emotional sensitivity in other disorders to guide research in trauma. Lynch and colleagues (2006) investigated emotional sensitivity in BPD by examining accuracy of identification of emotional expression in 20 individuals with BPD and 20 normal controls. In this study participants with BPD were indeed more sensitive than healthy

controls in identifying emotional expressions, as measured by their accurate identification of emotional expression (Lynch et al., 2006). These findings were consistent with Wagner and Linehan (1999) who found that borderline patients displayed primarily accurate perceptions of others' emotions and showed a tendency toward heightened sensitivity on recognition of fear.

Such deficits in the ability to accurately identify facial expression are linked to problems relating to other people and may be associated with deficits in interpersonal sensitivity. Such interpersonal disturbances are also a hallmark of the sequelae of trauma. Survivors of trauma report difficulties trusting others and maintaining interpersonal relationships following trauma. In a study of combat veterans, individuals with Vietnam combat experience were compared to Vietnam-era veterans without combat experience. They found that veterans with PTSD reported a significantly higher number of problems dealing with intimacy and relationships than individuals without combat experience (Roberts et al., 1982). This finding was consistent with repeated sexual assault victims reporting a higher number of interpersonal difficulties than in comparison to individuals who experienced fewer sexual assaults (Classen, Field, Koopman, Nevill-Manning, & Spiegel, 2001).

The current state of the literature indicates that people with PTSD and with trauma-related distress exhibit a higher number of errors in the identification of facial expression than normal controls (Sta Maria, 2002). This study did not examine correlates or the context in which the errors were made which may yield important information. Moreover, there are no published studies that experimentally examine the effects of

interpersonal interactions or specific social responses on emotional sensitivity in people with trauma histories.

Trauma and Emotional Reactivity. Emotional reactivity is characterized by a higher intensity of emotional responses, once emotions are activated; individuals who are emotionally vulnerable are likely to respond more quickly and with greater intensity. PTSD has been associated with intense emotional reactions in response to relevant evocative stimuli in military samples (Amdur, Larzen, Liberzon, 2000), motor vehicle collisions (Veazey, Blanchard, Hickling, & Buckley, 2004), and female sexual abuse survivors (McDonagh-Coyle, et al., 2001). Houlihan and colleagues (2007) studied reactivity to trauma-related cues as measured by the N170 in response to faces with different emotional expressions (happy, sad, angry, surprised, and neutral). The N170 is an event-related potential (measures brain response related to thought or perception) that is reported to be very sensitive to human face stimuli. The group with PTSD responded to angry faces at a lower threshold, while their responses to all other emotions were at a significantly higher threshold.

Trauma-related reminders are associated with heightened physiological responses in military samples (Taft et al., 2007), motor vehicle collisions (Blanchard et al., 2010) and community samples (McTeague, et al., 2010). In a study of community members, those with PTSD exhibited higher resting heart rates and skin conductance levels. Recent research has examined the role of dissociation in emotional reactivity in trauma samples and the findings are mixed. A study of female sexual assault victims found a correlation between high levels of peritraumatic dissociation and physiological reactivity to trauma cues (Griffin, Resick, & Mechanic, 1997). This finding was not consistent in a study of

male military veterans, where high rates of dissociation were not associated with physiological reactivity. Taken together, these studies suggest that trauma-related distress is associated with higher rates of emotional reactivity. PTSD is characterized by intense emotional responding to trauma-related cues. These heightened emotional responses require greater internal resources and skills to regulate (Mennin & Farach, 2007).

Emotionally-Relevant Events. For the purposes of this model, an event refers to any thought, individual action, or entrance into a situation, or action of another person that serves as a cue for the traumatic event and its emotional sequelae. This may include smells, sounds, or similarities to the trauma situation that occur in the present (non-traumatic) environment.

Judgments. Judgments refer to any evaluation with an associated value (e.g. good or bad, right or wrong). The way in which an individual thinks about a particular event has an impact on associated levels of arousal, including both quality (type of emotion) and quantity or intensity. Therefore, any type of judgment, with a positive or negative valence, can lead to heightened emotional arousal. There also is a reciprocal relationship in which heightened emotional arousal also increases the likelihood of making judgments. In the case of trauma, people are often judgmental about decisions that may or may not have been made (that could have averted the trauma), actions that may or may not have been implemented, or even current reactions. When judgments are directed towards the self, feelings of guilt and shame typically follow.

Heightened Emotional Arousal. Heightened emotional arousal refers first to the primary emotional reaction in response to a particular situation or event, and then to secondary emotional responses that occur following conditioning or judgmental thinking

(Fruzzetti et al., 2009; Fruzzetti & Worrall, 2010). When an individual lives in a chronic state of emotional arousal, their baseline levels of arousal also may increase over time. Additionally, their emotional arousal may increase over time as a consequence of regular avoidance of situations or cues that they find difficult or aversive. States of chronically increased physiological arousal and chronic hyper-vigilance are common in many trauma survivors (Taft et al., 2007). In trauma survivors, heightened baseline levels of emotional arousal and heightened levels of emotional arousal in response to traumatic cues serve to perpetuate this cycle of emotion dysregulation.

Inaccurate Verbal Expression. Accurate expression refers to the ability of an individual to be aware of his or her emotions, thoughts, wants, desires, and to describe them without interpretations or judgment (Fruzzetti & Worrall, 2010). Inaccurate expression is what happens when an individual has difficulty accurately describing primary emotions, thoughts, wants or desires and linking them to the current situation or event. Instead, in states of high negative emotional arousal the person ends up in secondary emotions, and describes these experiences and their concomitant judgments. Primary emotions are universal and mostly adaptive responses to a situation (e.g. fear, sadness, surprise, disgust), while secondary emotions are typically conditioned reactions to the situation or event or result from judgments made about the situation or the person him- or herself (cf. Greenberg and Safran, 1989). It follows that in cases where individuals are in chronic states of heightened arousal due to trauma-related cues that they may have difficulty accurately identifying their internal state and/or have difficulties linking their emotional experience to the present situation, particularly in a way that would make sense to others.

Deficits in emotion processing, or the inability to identify, label and express affective states accurately have been linked to PTSD and other trauma related problems (Monson, Price, Rodriguez, Ripley, & Warner, 2004). In a sample of military veterans, emotional numbing one month following a traumatic event was the strongest predictor of PTSD (Roemer, Litz, Orsillo, & Wagner, 2001). An inability to identify internal states is an example of inaccurate verbal expression that can lead to difficulties interacting with other people. A diminished ability to identify and express emotional states is a barrier to effective communication, receiving support or providing support to others (Fruzzetti & Worrall, 2010) and therefore impedes the development of healthy relationships.

Trauma-Related Distress. The sequelae of trauma encompass a wide range of psychological responses and general life difficulties (e.g. depression, anxiety, self-esteem, disturbed interpersonal relationships). The criterion behaviors of posttraumatic stress disorder were found to be associated with multiple facets of emotion dysregulation, including lack of emotional acceptance, difficulty engaging in goal-directed behavior when upset, impulse control difficulties, limited use of effective emotion regulation strategies, and lack of emotional clarity (Tull, Barrett, McMillan, & Roemer, 2007). Ehring and Quack (2010) investigated the role of type of trauma and posttraumatic stress severity on emotion regulation difficulties. Symptom severity was associated with all facets of emotion regulation difficulties, with the strongest association with a ‘lack of clarity of emotions.’

Early-onset interpersonal trauma was positively associated with high rates of emotion dysregulation. In a sample of women with histories of childhood abuse, Stevens and colleagues (2013) examined the association between difficulties in emotion

regulation, social support, childhood abuse and interpersonal violence experienced as adults. They found that emotion regulation, lower social support, and greater exposure to adult interpersonal violence mediated the relation from childhood abuse to current trauma symptoms. In a sample of child abuse survivors, emotion regulation, lower social support, and greater exposure to adult interpersonal violence mediated the relation from childhood abuse to current trauma symptoms (Stevens et al., 2013). These results highlight the role of emotion dysregulation in the maintenance of current trauma symptoms. Initial findings suggest that trauma-related distress is associated with emotion regulation difficulties and may require increased resources to manage distress in stressful situations.

Invalidating/Self-invalidating Responses. In any attempt to understand the process of emotions and emotion regulation the social context or environment must be considered. The characteristics of the social environment have an impact on the development of emotion regulation skills and patterns of emotional responding (Stevens et al., 2013). Fruzzetti and colleagues (2005) have studied the validating and invalidating characteristics of the social environment and its role in the process of emotion regulation. In a sample of undergraduate students, participants who were exposed to invalidating feedback exhibited higher levels of negative affect, heart rate, and skin conductance levels in comparison to participants exposed to validating feedback (Shenk & Fruzzetti, 2011). Validation and invalidation refers to a specific set of responses that are characterized by the function and the relevance of a statement or behavior as opposed to the topography of the response. A validating response legitimizes a person's valid experiences (emotions, thoughts, wants, etc.) whereas an invalidating response delegitimizes or pathologizes a person's valid experiences. A validating response is not

necessarily a “positive” or “nice” response, simply a response that acknowledges or legitimizes the reality of a person’s valid experiences and behaviors.

Pervasive History of Invalidating/Self-invalidating Responses. Over time a pattern of invalidating or self-invalidating responses may develop in response to traumatic events in a variety of ways. Invalidating responses from other people in their responses to disclosures about the traumatic incident are common, especially around disclosures of sexual abuse or assault. Self-invalidating responses also may occur as the individual attempts to make sense of the traumatic experience. In addition, a variety of ordinary responses to sexual trauma, such as increased negative emotion (fear, sadness, shame, anger) and sometimes hypervigilance are often not understood by others, and can easily be invalidated. These invalidating responses from others, and/or self-invalidating responses, of course create even more negative emotional responses, which can elicit further invalidating responses. If this kind of transaction continues over time, this pervasive pattern of invalidating responses can have a longer term effect by increasing the individual’s sensitivity and reactivity to trauma-related cues (and, over time, to other more general cues) and thus can increase an individual’s vulnerability to becoming dysregulated. Chronic invalidating environments are associated with increased levels of baseline emotional arousal, cognitive processing deficits, and emotional skill deficits. In trauma survivors, these correlates can interfere with the processing of the traumatic event, thus maintaining psychological problems and other trauma-related distress.

As shown in Figures 1 and 2, emotional vulnerability is associated with heightened levels of emotional arousal. “Heightened emotional arousal” is prompted by some event and leads to “inaccurate expression”. Inaccurate expression can include a

variety of behaviors (e.g. self-harm, denying or misinterpreting internal emotional experiences) which in turn can lead to “invalidating responses” from the environment. Invalidating responses may increase “emotional arousal” and the cycle perpetuates itself. For example, a woman who has experienced a trauma may be emotionally vulnerable (heightened sensitivity, higher reactivity, and slow return to baseline following activation) to trauma-related cues. If she has difficulty identifying her internal state in a threatening situation (e.g. she feels scared in at a party), she may be invalidated by her environment (e.g. “you don’t feel that way,” or “you shouldn’t feel that way.”), and then the pattern of heightened emotional arousal and invalidating responses ensues.

In situations encountered by trauma survivors, it would be reasonable to assume that a higher level of emotion regulation resources would need to be utilized to manage the trauma-related distress, thus making it difficult to remain attentive, mindful, and effective in other life domains. Consequently, this type of process can increase the risk for future victimization, mental and physical health problems, and general life distress because the majority of coping resources are focused on managing distressed emotion.

Trauma and Risk Perception

Risk perception and trauma symptoms have been theorized to be associated with increased rates of sexual victimization (Breitenbecher, 2001; Classen, Palesh, & Aggarwal, 2005; Gidycz, McNamara, & Edwards, 2006). Deficits in risk recognition in the context of sexually threatening situations may serve to increase vulnerability to sexual victimization because the individual is likely to remain in the situation for a longer period of time and therefore have less time to implement protective strategies. Women with histories of sexual assault exhibited significantly longer latencies in recognizing risk in

dating interactions (Wilson, Calhoun, & Bernat, 1999; Marx, Calhoun, Wilson, & Meyerson, 2001). Marx and colleagues found that women who reported a higher frequency of sexual assault during the 2-month follow up period also exhibited longer response latencies before leaving a sexually threatening situation. A similar pattern was found where victims of sexual assault exhibited different patterns of psychophysiological reactivity in comparison to nonvictims in response to dating scenarios (Soler-Baillo, Marx, & Sloan, 2005). The process that women engage in during these situations is unclear, and more information about the underlying process may allow for the enhancement of current interventions. Trauma-related distress may also interfere with the deployment of protective resources and strategies. Emotion regulation is a variable to consider in the relation between risk perception and trauma-related distress.

Messman-Moore and Brown (2006) investigated the relation between risk perception and sexual revictimization in a prospective study with college-age women. Studies of risk perception and sexual victimization suggest that enhanced sensitivity to environmental risk serves as a protective factor; participants typically took longer to identify sexual threat in an acquaintance rape scenario than in the stranger scenario (Messman-Moore & Brown, 2006).

Risk appraisal and behavioral responses were influenced by sexual victimization history and relationship to the perpetrator (VanZile-Tamsen, Testa, & Livingston, 2005). The complex nature of interpersonal interactions (e.g. parties, hanging out with friends) appears to factor into making the determination of risk in a given situation. The social contingencies of situations (e.g. "I don't want him to be angry at me") can impede risk recognition by facilitating a process through which women focus more on the social

implications at the cost of acknowledging relevant threat cues. VanZile-Tamsen and colleagues found that women were less likely to perceive a rape-related threat when they had some type of relationship with the perpetrator. In intimate situations, women were less likely to perceive a rape-related risk and were therefore less likely to engage in direct resistance or safety strategies. Consistent with these findings, other studies have shown that relationship with the perpetrator was a significant factor in making determinations of risk (Messman-Moore & Brown, 2006). The victim did not have to know the perpetrator very well for such relationships to influence them. For example, if the perpetrator was someone known to a friend, women with histories of repeated sexual victimization took a significantly longer period of time to indicate that they would leave the situation, even in the face of threat cues that were increasing in intensity. Participants who were repeatedly sexually victimized were more likely to endorse a situation as threatening only after the occurrence of physical contact. Additionally, differences emerged between women with histories of childhood sexual victimization and histories of adolescent or adult victimization where childhood sexual abuse victims who reported feeling “uncomfortable” earlier in the acquaintance scenario were less likely to report a history of sexual revictimization. Difficulties with identifying threat may be associated with a “lack of emotional clarity” and an important component of the association between emotion regulation and sexual victimization. Given that the majority of reported sexual assaults are acquaintance rapes, accurate risk recognition abilities are critical in social or dating situations, (Bureau of Justice Statistics, 2000). As demonstrated by this body of literature, risk perception deficits are associated with increased risk for future victimization.

A better understanding of this relation will be helpful in identifying clinical targets. A growing body of research points to the importance of emotion dysregulation as a factor in diminished risk perception and thereby an increased risk of sexual victimization. In a study of college-age women with CSA and CPA histories, emotion dysregulation was found to be a distal predictor of sexual revictimization, after controlling for risky sexual behavior (Messman-Moore, Walsh, & DiLillo, 2010). Similar findings were evident in a sample of female prison inmates where revictimized women reported greater difficulties with emotion regulation in comparison to singly victimized or nonvictimized women (Walsh, DiLillo, & Scalora, 2011).

Summary

Exposure to traumatic events is an almost statistically normative event in our society, with approximately 60-80% of individuals in the United States exposed to potentially traumatic events (Breslau, 2009). Despite the frequency of exposure, a minority of trauma-exposed individuals develop PTSD; a larger number of trauma-exposed individuals endorse trauma-related distress. The sequelae of trauma encompass a wide range of diverse outcomes including psychological and physical health problems, disturbed interpersonal relationships, general distress, and functional impairment. Diminished risk perception and increased vulnerability to future sexual victimization is associated with the sequelae of trauma. However, the mechanisms through which this occurs remain unclear (Gidycz, McNamara, & Edwards, 2006). The interpersonal context of sexual victimization has not been a focus of research, but is an important variable to consider.

In summary, emotion regulation may be an underlying process in psychological disorders, interpersonal distress, and risk perception. Some research has begun to focus on the association between PTSD and emotion regulation, but has not closely examined the role of emotion regulation in trauma-related difficulties. Moreover, the application of the transactional model of chronic emotion dysregulation to trauma may allow for a coherent framework within which to conceptualize trauma-related distress, lead to a better understanding of the sequelae of trauma, and ultimately to enhanced treatment outcomes.

The Current Study

The proposed research seeks to examine the relationships among trauma-related distress, emotion regulation, and risk perception. The primary hypotheses of the current study are: 1) Baseline levels of emotionality and emotion dysregulation are associated with levels of trauma related distress; 2) Baseline levels on measures of emotional sensitivity are associated with level of trauma-related distress; 3) There will be an interaction effect between trauma-related distress and condition (validating vs. invalidating) on emotional sensitivity; 4) There will be an interaction effect between trauma-related distress and condition (validating vs. invalidating) on emotional sensitivity; 5) There will be an interaction effect between trauma-related distress and condition (validating vs. invalidating) on perceptions or risk, and; 6) There will be a main effect for emotional sensitivity and a main effect for emotional reactivity.

Method

Participants

A total of 439 women were screened to form the final sample size. Participants were 64 female undergraduate students from a medium-sized university and community college in the Western United States with 31 randomly assigned to the validating condition and 33 to the invalidating condition. Sample size was determined based on a power analysis to detect a medium effect size ($\alpha = .05$, Power = .80, *Cohen's d* = .60). Recruitment was conducted in classrooms, through flyer postings, and through a web-based recruitment site (SONA system). Inclusion criteria included being female, exposure to a sexually traumatic event, 18 years of age or older, and fluent in written and spoken English. Exclusion criteria included current psychosis (as measured by a *T* score ≥ 63 on the psychoticism subscale on the BSI) or high proficiency in mathematics (per participant self-report).

All participants were full- or part-time college students and their ages ranged from 18 to 52 years ($M = 25.36$, $SD = 8.77$). Most participants were White/Caucasian (59%) with other racial groups represented as follows: Hispanic/Latina = 16%, Black/African-American = 5%, Asian-American/Pacific Islander = 8%, and Multicultural = 12%. These demographic characteristics are fairly representative of the overall university and community college populations.

Measures

Demographic Questionnaire. This measure is a 23-item self-report measure adapted for use in this study and designed to assess general demographic information

including age, income, race/ethnicity, level of education, and any current or prior psychological service utilization.

Psychological Distress. The Brief Symptom Inventory (BSI; Derogatis, 1993) is a 53-item self-report measure designed to reflect patterns of psychological symptoms in community, medical, and psychiatric populations. Respondents rate the distress experienced for each item on a five-point Likert scale from 0 (“Not at all”) to 4 (“Extremely”). The BSI demonstrates good psychometric properties with internal consistency coefficients ranging from .71 to .85 and test-retest reliability coefficients ranging from .80 to .90 (Derogatis, 1993). Scores from the BSI were used to evaluate general psychological distress as this may impact emotional responding. The psychoticism subscale was used to provide an assessment of psychosis, with participants who scored higher than the clinical cut off ($T \geq 63$) being excluded from the study.

Emotion Regulation. The Difficulties in Emotion Regulation Scale (DERS) is 36-item self-report measure designed to measure emotion dysregulation and regulation strategies (Gratz & Roemer, 2004). The DERS is comprised of 6 subscales including Non-acceptance of Emotional Responses, Difficulties Engaging in Goal-Directed Behavior, Impulse Control Difficulties, Lack of Emotional Awareness, Limited Access to Emotion Regulation Strategies and Lack of Emotional Clarity. The DERS has been shown to have good internal consistency with an alpha coefficient of .93.

Positive and Negative Affect Scale. The Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item self-report measure designed to measure emotional responding. The PANAS was used as the measure of emotionality and emotional reactivity.

Posttraumatic Stress Symptoms. The Posttraumatic Stress Disorder Checklist (PCL-C) is a 17-item self-report measure that assesses the severity of the symptom clusters (Avoidance, Reexperiencing and Hyperarousal) associated with posttraumatic stress disorder (Weathers, Litz, Huska, & Keane, 1994). Respondents rate the degree to which they have been bothered by a particular item in the past month on a five-point Likert scale with responses ranging from 1 (“Not at all”) to 5 (“Extremely”). The PCL-C was designed for civilians and does not focus on a specific traumatic event. Instead, it assesses for general distress related to traumatic or stressful incidents. Scores on the PCL-C range from 17 to 85. For the purposes of the current study, the total score on the PCL-C was used to represent the level of traumatic stress symptoms.

Trauma Exposure. The Stressful Life Events Screening Questionnaire (SLESQ; Goodman, Corcoran, Turner, Yuan, & Green, 1998) is a standardized instrument that measures exposure to traumatic events including sexual assault, physical assault, illness, accidents, traumatic deaths and natural disasters. The SLESQ was used to determine whether an individual has been exposed to a traumatic event.

Multimorph Facial Affect Recognition. The Multimorph Facial Affect Recognition was based on the work of Blair and colleagues (2001) and Lynch and colleagues (2006). On each trial, participants observe as a face morphs from a neutral facial expression to one of sadness, happiness, surprise, anger, fear, or disgust. The facial stimuli are from the empirically validated Pictures of Facial Affect (Ekman & Friesen, 1976; Ekman & Matsumoto, 1992). Thirty-six trials are presented (6 for each emotion: sadness, happiness, surprise, anger, fear, and disgust). Each trial begins with a neutral face that gradually morphs into a prototypic emotion over 39 stages. Participants saw

each stage for 450 ms. Participants were instructed to identify the emotion as soon as they were able by clicking on the appropriate emotion.

Risk Perception Survey. Participants read and responded to a vignette that depicted an interpersonal conflict common on college campuses. This stimulus was developed for this study to ensure that the participant is able to indicate when he or she would likely choose to “opt out” of a potentially risky situation. The purpose of this vignette is to provide participants an opportunity to become accustomed to the procedure of reading the vignette and indicating when they feel uncomfortable in the situation. This vignette is administered prior to the Sexual Risk Perception Survey.

Sexual Risk Perception Survey (SRPS; Messman-Moore, 2006). The SRPS is designed to evaluate risk perception. Participants are presented with one vignette that depicts an interpersonal situation common on college campuses and one vignette that depicts a typical stranger assault. The vignettes were developed to include clear and ambiguous risk factors for sexual assault as described by Norris, Nurius, and Graham (1999). Clear risk factors include sexual comments, verbal persuasion, physical pressure while fondling and male persistence. Ambiguous risk factors include alcohol consumption and degree of isolation. Participants’ risk perception is evaluated by asking them to imagine themselves in this situation and indicate when they would feel uncomfortable and when they would leave the scenario and to indicate this through the computer. For scoring purposes, each statement in the scenario is numbered. Responses are scored and higher numbers indicate greater risk for victimization and lower rates of effective risk perception.

Procedure

Study procedures are outlined in Figure 3. Participants completed screening measures through a web-based site. Participants who met the inclusion criteria (as described earlier) were contacted to invite them to participate in Phase 2 of the experiment (Laboratory tasks); if they indicated interest, they were scheduled for an appointment. The awareness of the validating and invalidating experimental conditions could interfere with participants' natural responses, therefore the study design required incomplete disclosure. All steps were taken to minimize any discomfort and all participants were fully debriefed upon completion of the study. All participants in the second part of the study were randomly assigned to either the validating or invalidating condition immediately prior to their scheduled research appointment. All experimenters (those delivering validating and invalidating feedback) were blind to participants' trauma-related distress.

Participants completed the first set of Multimorph Facial Affect Recognition tasks. Each set of Multimorph Facial Affect Recognition Task included 18 trials (three trials for each of the six emotions). A randomization procedure was utilized to determine the order in which emotions were presented at each time point. The Multimorph Facial Affect Recognition task presented facial expressions that morphed from a neutral expression to one of six possible emotions (sadness, happiness, surprise, anger, fear, and disgust). Participants were asked to identify the emotion on the morphing face by clicking on the corresponding button on the computer screen as soon as she thought she was able to identify the emotion correctly. Participants were provided with the following

instructions, which are based on prior studies that have used this task (Lynch et al., 2006):

“You will be presented with a series of faces. These faces are initially neutral, that is, they have a blank expression. However, the faces will slowly change over many stages to reveal one of the six target emotions listed on the screen. For each face you will have to determine which expression is displayed as soon as possible in as few stages as possible, without merely guessing. So remember, the aim is to say which emotion is being shown as soon as you recognize it by choosing one of the six emotions: sadness, happiness, surprise, anger, fear, and disgust. Once you have given your answer, you can change your mind when you want to, and as often as you want, by clicking a different button. For example, if you think the face is express “fear” and you click the “fearful” button, and later decide the face is actually expressing “disgust” you may then press the “disgust” button. Finally, for each face you will be asked to give a final answer.”

Following the administration of the first set of trials of the Multimorph Facial Affect Recognition task participants’ completed the first administration of the PANAS.

Participants were then asked to complete a total of twelve mental arithmetic tasks designed to increase levels of physiological arousal (cf. Shenk & Fruzzetti, 2011). Each participant was administered the same arithmetic problems in the same order, regardless of condition. Participants had forty seconds to complete each arithmetic problem. At the end of the third, sixth, ninth, and twelfth mental arithmetic tasks, participants were asked to describe their emotional experience, were then exposed to either validating or invalidating responses depending upon the experimental condition into which they were randomized, and then completed the PANAS.

Participants were exposed to validating or invalidating responses from the experimenter for two minutes at each interval. In the validating condition, the participant may say, for example, “This is hard (or frustrating, disappointing, etc.)” and the experimenter may respond by saying, “Many people have difficulty with this” or “This is a difficult task,” or “Of course, it was designed to be stressful.” In the invalidating condition the experimenter may respond by saying things like, “I don’t know why this is so difficult for you,” or “Other people don’t find this hard to do.” The experimenter did not comment on the subject’s performance on the arithmetic tasks, but exclusively validated or invalidated the subject’s expression of emotion about the task, the experiment, and his or her own performance.

Participants provided a self-report of their emotional reactions by completing the PANAS. The PANAS was administered a total of 5 times through the experiment. The first PANAS was administered prior to the stressful task (mental arithmetic) to establish a baseline level of emotionality, then four additional times, each following the periods of receiving validating or invalidating feedback. After the administration of the third PANAS, the participant completed another 18 trials of the Multimorph Facial Affect Recognition task.

Participants then completed the seventh, eighth, ninth, tenth, eleventh, and twelfth mental arithmetic tasks. After completion of the twelfth arithmetic task, participants read and responded to a total of three vignettes. In this task, participants were asked to read a vignette that depicts the following three situations: 1) peer pressure to drink at a party; 2) a typical college party, and; 3) a stranger assault. (See Appendix E). Participants are asked to indicate when they felt “uncomfortable” in a given situation that they would

leave the situation. The first vignette depicts a college party in which an individual is pressured to drink alcohol. The purpose of the first vignette was to orient the participant to the procedure, and ensure that they were comfortable indicating when they began to feel uncomfortable in the situation described. The second and third vignette depicted sexual assault scenarios. These vignettes were based on work by Messman-Moore and Brown (2006) and include risk factors for sexual assault. As the vignette progressed the level of risk increased. Participants were provided with the following instructions for all the vignettes, which are based on studies that have used the Sexual Risk Perception Survey (Messman-Moore & Brown, 2006):

“Pretend you are participating in each activity as it is described. Indicate if at any point over the course of this activity if you would feel uncomfortable enough to leave.”

Upon completion of the vignettes, the experimenter debriefed the participant. The experimenter reviewed the purpose of the study and the reasons incomplete disclosure was used. Participants were asked whether they suspected that the experimenter was deliberately providing them with validating or invalidating feedback. Participants were invited to ask any questions about the study.

Results

Baseline Group Differences. Differences between experimental conditions were examined for key demographic variables (i.e. age and ethnicity), baseline differences on trauma-related distress (PCL), difficulties in emotion regulation (DERS), baseline positive affect (PANAS-P) and baseline negative affect (PANAS-N). There were no significant differences between groups in terms of age, $t(62) = .51, p = .614$, ethnicity, $t(62) = .25, p = .29$, trauma related distress (PCL), $t(62) = -1.05, p = .30$, positive affect

(PANAS-P), $t(62) = .68, p = .5$, or negative affect (PANAS-N), $t(62) = -.99, p = .33$, at baseline. These results indicate that random assignment was effective in producing groups that were similar on demographics, current positive and negative affect, general psychological distress, and trauma-related difficulties at the time of their participation. Table 1 provides descriptive statistics on these variables.

Believability Check. Following the completion of the experimental procedures participants were asked whether they “suspected” that experimenter feedback was related to the outcome of the study. One participant in the validation condition (total $n=31$) and 10 participants in the invalidation condition (total $n=33$) reported that they “suspected” that experimenter feedback was related to the outcome of the study. For the validating condition there was only 1 participant who reported “suspecting” that the feedback was not valid, therefore no further analyses were conducted within the validating condition. A MANOVA was used to assess differences in positive and negative affect (as measured by PANAS scores after the final round of feedback) between participants in the invalidation condition who reported “suspecting” deception and those who did not report this. Results indicated no significant differences in positive or negative affect within the invalidation condition for people who “suspected” deception (positive affect: $M=22.70, SD=6.89$; negative affect: $M=15.80, SD=4.87$), and those who did not have this suspicion (positive affect: $M=20.91, SD=9.07$; negative affect: $M=17.00, SD=5.74$), $F(2,30) = .28, p = .76$, Wilk’s $\Lambda = .98$. No participants reported that they were aware of the use of deception prior to participation in the study, therefore all participant data were included in the data analysis.

Associations among Emotionality, Emotion Regulation, and Trauma-Related Distress (Hypothesis #1). Prior to data analysis, all variables were examined for skewness and kurtosis. The scores on the PANAS-N were skewed and therefore a logarithmic transformation was used to standardize the responses on the PANAS-N. Regression analyses were conducted. Results indicated that trauma-related distress (PCL) was not related to positive affect ($\beta = .20$, $R^2=.02$, $t(61)= 1.10$, $p = .28$) or negative affect ($\beta = -.04$, $R^2=.02$, $t(61)= -.25$, $p = .81$) at baseline.

Similarly, difficulties with emotion regulation (DERS) were not related to positive affect ($\beta = -.05$, $R^2=.02$, $t(61)= -.27$, $p = .78$) or negative affect ($\beta = .18$, $R^2=.02$, $t(61) = .99$, $p = .33$) at baseline. Subscales of the DERS were examined in relation to baseline positive and negative affect. Non-acceptance of emotional responses ($\beta = .07$, $R^2=.00$, $t(62)=.53$, $p=.60$), difficulties engaging in goal-directed behavior ($\beta = .13$, $R^2=.18$, $t(62)=1.04$, $p=.30$), impulse control difficulties ($\beta = -.07$, $R^2 = .01$, $t(62) = -.57$, $p = .57$), lack of emotional awareness ($\beta = .07$, $R^2=.01$, $t(62)=.53$, $p=.60$), limited access to emotion regulation strategies ($\beta = .11$, $R^2=.01$, $t(62)=.86$, $p=.39$), and a lack of emotional clarity ($\beta = -.08$, $R^2=.01$, $t(62)=1.44$, $p=.15$), are not significantly associated with positive baseline affect. Impulse control difficulties ($\beta = .23$, $R^2=.05$, $t(62)=1.86$, $p=.08$), lack of emotional clarity ($\beta = .24$, $R^2=.06$, $t(62)=1.95$, $p=.06$), and the lack of emotional awareness ($\beta = -.25$, $R^2=.06$, $t(62)=.53$, $p=.05$) were trending towards a significant association with negative emotion at baseline. The non-acceptance of emotional responses ($\beta = .08$, $R^2=.01$, $t(62)=.63$, $p = .53$), difficulties engaging in goal directed behavior ($\beta = .18$, $R^2 = .03$, $t(62) = 1.42$, $p = .16$), and limited access to

emotion regulation strategies subscales were not significantly associated with baseline negative emotion. See Table 2.

Association of Baseline Levels of Emotional Sensitivity with Trauma-Related Distress (Hypothesis #2). Analyses were conducted to examine the association between emotional sensitivity and trauma-related distress. Response times on the facial affect recognition task were employed as measures of emotion sensitivity, and were measured in three ways: 1) mean response times to first correct response for all trials; 2) mean response times for positive and negative emotions separately, and; 3) mean response times for each emotion separately (sadness, fear, anger, surprise, disgust, and happiness). Table 3 provides the means and standard deviations for all response times on the first 18 trials of the facial affect recognition task.

The mean response times to the first correct response were examined for skewness and kurtosis, and were found to be significantly skewed. Therefore, a logarithmic transformation was performed to standardize the mean response times to the first correct response. The transformed values were used as the dependent variable. Results indicated that baseline levels of trauma-related distress (PCL) were not significantly associated with emotional sensitivity, and may be seen in Table 4.

The mean response times for positive emotions and negative emotions were examined separately for skewness and kurtosis. Positive emotion and negative emotion scores were significantly skewed, and therefore logarithmic transformations were performed to standardize the scores. The transformed values for positive emotion and negative emotion were used as the dependent variables. Results indicated that levels of

trauma-related distress (PCL) at baseline were not significantly associated with positive emotion or negative emotion (see Table 4).

The mean response times for each emotion (anger, disgust, fear, happy, sad, and surprise) were examined for skewness and kurtosis. The responses for fear and happiness also were significantly skewed and so logarithmic transformations on these variables were performed. Transformed (normalized) responses were used for response times for fear and happiness stimuli. None of the response times to emotional stimuli were significantly associated with trauma-related distress (PCL). However there was a trend towards trauma-related distress being a significant predictor of the number of errors made in the accurate identification of facial expression. Results from the regression analyses are presented in Table 4.

Interaction between Trauma-Related Distress and Condition on Emotional Reactivity (Hypothesis #3). Multiple regression analyses were conducted to examine the main effect of trauma-related distress, main effect of condition, and the interaction effect of trauma-related distress and condition on positive emotional reactivity and negative emotional reactivity. Two change scores were calculated for both positive and negative affect. The first change score was calculated for the changes in affect following the first round of validating or invalidating feedback (between PANAS #1 and PANAS #2) which were not significant for positive affect ($F(3, 59) = .37, p = .78$) or negative affect ($F(3, 59) = 3.09, p = .03$). The second change scores were calculated for the changes in affect over the course of the whole experiment (between PANAS #1 and PANAS #5) and again were not significant either for positive affect ($F(3,59) = .38, p = .77$) or negative affect ($F(3,60) = .17, p = .92$).

Trauma-related distress ($\beta = -.13$, $R^2 = .01$, $t(59) = -.66$, $p = .51$), condition ($\beta = .03$, $R^2 = .01$, $t(59) = .17$, $p = .86$), and the interaction of trauma-related distress by condition ($\beta = -.02$, $R^2 = .01$, $t(59) = -.06$, $p = .95$), were not significantly associated with changes in positive affect following the first round of feedback. Similarly, there were no significant effects for trauma-related distress ($\beta = -.05$, $R^2 = .019$, $t(60) = -.24$, $p = .81$), condition ($\beta = -.16$, $R^2 = .019$, $t(60) = -.84$, $p = .41$), or the interaction of trauma-related distress by condition ($\beta = .06$, $R^2 = .019$, $t(60) = .22$, $p = .83$) for the overall changes in positive affect.

Trauma-related distress ($\beta = .34$, $R^2 = .14$, $t(59) = 1.87$, $p = .07$), condition ($\beta = -.08$, $R^2 = .14$, $t(59) = .425$, $p = .67$), and the interaction of trauma-related distress by condition ($\beta = .02$, $R^2 = .14$, $t(59) = .08$, $p = .93$) also were not significantly associated with changes in negative affect following the first round of feedback. Thus, trauma-related distress and negative affect appeared to be trending towards significance for initial changes in negative affect. There were no significant effects for trauma-related distress ($\beta = .12$, $R^2 = .00$, $t(60) = .64$, $p = .52$), condition ($\beta = .03$, $R^2 = .00$, $t(60) = .17$, $p = .86$), or the interaction of trauma-related distress by condition ($\beta = -.07$, $R^2 = .00$, $t(60) = -.27$, $p = .78$) for overall changes in negative affect. See Figure 4.

Interaction between Trauma-Related Distress and Condition on Emotional Sensitivity (Hypothesis #4). Multiple regression analyses were conducted to examine the main effect of trauma-related distress, condition, and their interaction on measures of emotional sensitivity. Mean response times to the first correct response, separately for positive and negative emotions, and then separately for all individual emotions in the

experiment (anger, disgust, fear, happy, sad, surprise) were examined for skewness and kurtosis. Response time to first correct response positive emotion, happy, and surprise were significantly skewed. Logarithmic transformations were performed for these variables. Means, standard deviations, and ranges of latency to first correct response, positive and negative emotions, and for each individual emotion (anger, disgust, fear, happy, sad, surprise) are presented in Table 5.

Results of the regression analysis are presented in Table 6. Neither trauma-related distress, condition, nor the interaction significantly predicted response latency for the first correct response overall, first correct positive emotion, first correct negative emotion, or any latency to first correct identification of any of the individual emotions (i.e. anger, disgust, fear, happy, sad, and surprise).

Interaction between Trauma-Related Distress and Condition on Perceptions of Risk (Hypothesis #5). Two vignettes were presented to participants, one depicting a series of events leading to an acquaintance rape and the other a series of events leading to a stranger rape. Risk perception (dependent variable) was measured by the number of “steps” it took for participants to report that they were uncomfortable in the situation, and thus would choose to leave (and thereby become safe). Table 7 provides descriptive information on the number of steps participants required to indicate distress, or identify significant danger, on this measure.

Multiple regression analyses were conducted to examine the main effect of trauma-related distress, main effect of condition and the interaction effect of trauma-related distress and condition on perceptions of risk for both scenarios. The full models

for the acquaintance rape scenario were not significant ($F(3,60) = .78, p=.51$), and nor were they for the stranger rape scenario ($F(3,60) = 1.26, p=.30$).

More specifically, there was no effect for trauma-related distress ($\beta = -.08, R^2=.04, t(60) = -.43, p=.67$), condition ($\beta=.04, R^2=.04, t(60)=.22, p = .83$), or an interaction effect ($\beta = -.15, R^2=.04, t(60)=-.61, p = .55$) on perceptions of risk in the acquaintance rape scenario. There also was no effect for trauma-related distress ($\beta=.17, R^2=.06, t(60)=.91, p = .36$), condition ($\beta=.34, R^2=.06, t(60)=1.76, p = .08$), or an interaction effect ($\beta = -.434, R^2=.06, t = -1.76, p = .08$) on perceptions of risk in the stranger rape scenario.

Emotional Reactivity and Emotional Sensitivity as Predictors of Risk Perception (Hypothesis #6). Regression analyses were conducted to examine the main effect of emotional reactivity and the main effect of emotional sensitivity on perceptions of risk. As previously described, in order to examine emotional reactivity change scores were calculated to examine the change in emotional reactivity both after one round of validating or invalidating feedback and again to examine the change in emotional reactivity from the beginning until the end of the experiment. Results indicated that there was no significant association ($F(1,62) = 1.70, p=.20$) between positive affect and perception of risk after the first round of feedback ($\beta=.18, R^2=.03, F(1,61)= 2.18, p=.15$) nor in overall change in positive affect ($F(1,62) = 2.87, p=.10$) during the experimental procedure, ($\beta=.21, R^2=.04, F(1,62)=2.87, p=.09$), in the acquaintance rape scenario. There was no main effect for change in negative affect after the first round of feedback ($\beta = -.21, R^2= .05, F(1,61)=2.92, p=.09$), or for overall change ($\beta=-.05, R^2=.00$,

$F(1,62)=.15, p=.69$) in negative affect on perceptions of risk in the acquaintance rape scenario.

There was no significant association for change in positive affect after the first round of feedback ($\beta = -.02, R^2 = .00, F(1,61)=.03, p=.87$) or for the change in overall positive affect during the experimental procedure ($\beta = -.03, R^2 = .00, F(1,62)=.05, p=.83$) on perceptions of risk in the stranger rape scenario. There was no main effect for change in negative affect after the first round of feedback ($\beta = -.13, R^2 = .02, F(1,61)=.97, p=.33$) or for overall change ($\beta = -.05, R^2 = .00, F(1,62)=.18, p=.67$) in negative affect on perceptions of risk in the stranger rape scenario.

Emotional sensitivity was measured by the response latency in identifying emotion on the facial affect recognition task. As previously described, response latency was measured in the following three ways: 1) mean response times to first correct response for all trials; 2) mean response times for positive and negative emotions separately, and; 3) mean response times for each emotion separately (sadness, fear, anger, surprise, disgust, and happiness). As described earlier, data was examined for normality of distribution and transformed if necessary. The results of the regression analyses for emotional sensitivity and risk perception in an acquaintance rape scenario and in a stranger rape scenario are presented in Tables 8 and 9. As shown in Tables 8 and 9, emotional sensitivity variables did not significantly predict risk perception in the acquaintance rape scenario or in the stranger rape scenario.

Post Hoc Analyses. From the screening sample of 439 participants, 145 endorsed having experienced sexual trauma during their lifetime. Analyses were conducted to examine differences between women with sexual trauma who opted to participate and

those who declined to participate in Phase 2. Descriptive data including the average age at the time of the assault, perpetrators, and physical abuse is presented in Table 10. An independent samples t-test was conducted to examine differences between eligible participants who chose to participate in Phase 2 and eligible participants who declined to participate in Phase 2 on levels of trauma-related distress and general psychological distress (as measured by the Global Severity Index of the BSI). There was no significant difference in level of trauma-related distress between the group who participated and those who did not participate $t(123)=.69, p=.49$. There was no significant difference in level of general psychological distress between the group who participated in Phase 2 and the group who did not participate, $t(142)=1.25, p=.21$. These results suggest that there were no significant differences between the groups in terms of trauma-specific distress or general psychological distress.

Discussion

The sequelae of trauma are associated with psychological difficulties, physical health problems, difficulties in interpersonal relationships, deficits in risk perception, and diminished quality of life. Past research has demonstrated the association of trauma-related distress with deficits in emotion regulation (Tull et al. 2007). The purpose of the present study was to examine the role of emotion regulation in a sample of college-aged women with a history of sexual trauma. It investigated the relations of emotional reactivity, emotional sensitivity, and risk perceptions to levels of trauma-related distress in an interpersonal context. The interpersonal context was tested by examining the impact of validating and invalidating responses on measures of emotional reactivity, emotional sensitivity, and risk perception in women with histories of sexual trauma. The results of

this study indicated that the components of emotion regulation and risk perception were generally not associated with levels of trauma-related distress in this sample of college students.

The current study did not provide clear support for any of the proposed hypotheses. Based on the results of this study, one possible interpretation is simply that emotion dysregulation is not a significant variable vis-a-vis trauma-related distress. In this sample, interpersonal interactions (e.g. validation or invalidation) did not interact with trauma-related distress to affect measures emotional reactivity, emotional sensitivity, or risk perception. However, the growing body of literature indicates that emotion regulation has been found to be a significant predictor of diminished risk perception and increased risk for sexual victimization (e.g. Walsh, DiLillo, & Messman-Moore, 2011). Thus it is not clear that we should dismiss the role of emotion dysregulation in trauma-related problems.

Despite the limited support for the association of emotion regulation and trauma-related distress in this sample it is possible that there were methodological constraints that limited the ability to truly evaluate this association. In hindsight, the present design, which did not utilize a control group, may have limited our ability to identify and evaluate the association of validating/invalidating feedback, emotion regulation-related variables, and trauma-related distress. For example, there may be large differences in these relationships between people with sexual trauma histories and those without these prior experiences. By including only those with sexual trauma histories, we could only look *within* this sample, and hence at more subtle variations in severity of distress or subtypes or domains of problems related to trauma. In retrospect, the use of a control

sample would have allowed for a more complete test of the hypotheses and likely would have been more illuminating. Consequently, before abandoning the hypothesis that emotion dysregulation may be a relevant process for people with prior sexual trauma and trauma related problems, further research should compare this population with a non-trauma control.

Emotional Reactivity and Trauma-Related Distress. Emotional reactivity is characterized by a higher intensity of emotional responses, and emotionally vulnerable individuals are likely to respond faster and with a greater intensity to emotionally evocative stimuli. Levels of emotionality were examined at baseline and following each round of validating or invalidating feedback. The hypotheses that higher levels of trauma-related distress would be associated with higher levels of reactivity at baseline and in the invalidating condition were not supported.

There were no significant differences in terms of positive and negative affect between the validating and invalidating condition at baseline. However, there was a change in negative affect for people in the invalidating condition, following the first round of feedback, which indicates that the manipulation worked. However, contrary to expectations, the change in negative affect appeared to return to baseline following the subsequent rounds of feedback. In a borderline personality disorder sample (Erikson, & Fruzzetti, 2011) and in undergraduate samples (Shenk & Fruzzetti, 2011) emotional reactivity was consistently significantly associated with invalidating feedback over time. One possible reason for less reactivity in this study may have to do with characteristics related to the sample. In the current study all participants endorsed a history of sexual trauma and exhibited higher than average distress levels than normal comparison groups

(Derogatis, & Melisaratos, 1983). Patterns of invalidation are often associated with distress in trauma-exposed individuals. One possibility is that participants in this study were used to this type of invalidation, based on prior experiences related to their trauma history. They may have learned to acclimate to this kind of feedback. Therefore the higher levels of negative affect evoked through the manipulation did not distress them to the degree seen in other similar studies. Participants appeared to habituate to the evoked distress by the last round of invalidation, which may be a function of their specific histories. On the other hand, subjects in a BPD sample did not habituate, and presumably also had high levels of prior invalidation, so further research is needed to understand the present findings. Again, the use of a control group would have allowed for a more robust test of the impact of the interpersonal interactions on emotional reactivity.

Stimuli used in other studies of emotional reactivity in trauma samples were directly related to the type of trauma being study (e.g. studies of motor vehicle collisions used pictures/sounds of car accidents). In the current study we were interested in whether general stress and increased distress would affect emotional reactivity and did not use stressors directly related to the sexual trauma. Given the personal nature of trauma, the disconnect between serious and stressful events they reported that they had experienced and the research stimuli may partially account for the lack of association between the validating/invalidating feedback for math tasks and emotional reactivity. However, we cannot determine a set of stimuli that would be ethical to employ with a sample of people with sexual trauma experiences that would be related to sexual trauma. Nevertheless, further research on this possible habituation process is possible and desirable.

Emotional Sensitivity and Trauma-Related Distress. Individuals with higher levels of emotional sensitivity require fewer or less intense cues to activate their emotions. In this study there was no effect for trauma-related distress, condition, or an interaction on measures of emotional sensitivity. This was surprising because deficits in interpersonal sensitivity have been associated with longer response latencies on facial affect recognition tasks (Wagner and Linehan, 1999) and are one of the hallmarks of PTSD. One study examined response latencies in identification of facial expression in individuals with PTSD, trauma-exposed individuals without a PTSD diagnosis, and a control sample (no psychological diagnoses). The researcher found that there was a trend towards significance for the number of errors made by individuals with PTSD as compared to both the group of trauma-exposed individuals and the control group (Sta Maria, 2002). In the present study, on the first set of responses on the Multimorph Facial Affect Recognition Task, the number of errors made was significantly associated with trauma-related distress. On the second set of responses on the Multimorph Facial Affect Recognition Task, the full model (trauma-related distress, condition, and the interaction) was approaching a statistically significant association with the number of errors made. This at least minimally supports hypotheses.

The sample in this study was comprised of women who on average endorsed rates of distress that were above clinical cut offs. Therefore it was reasonable to expect to see an effect on more responses to emotional stimuli, that perhaps varied by rates of trauma-related distress. As a consequence, it was unexpected that there were not significant differences in response latencies on the Multimorph Facial Affect Recognition Task. Again, there could be quite significant differences overall between this sample and a

normative, non-trauma sample, and thus our evaluation of this relationship may have been limited by the lack of control condition. It is possible that all individuals with trauma performed somewhat similarly and in a slightly different range from a normative sample, and that a comparison to a control sample would have allowed us to answer that question more effectively.

Risk Perception and Trauma-Related Distress. Trauma-related distress, condition and the associated interaction did not have an effect on risk perception in the acquaintance rape or stranger rape scenario. In this study risk perception was conceptualized as the amount of time it took to report discomfort in scenarios that led to a sexual assault, signaling recognition of the danger in the scenario. There is a vast body of literature that has documented that risk perception is influenced by (and becomes poorer as a result of) prior victimization history (e.g., Gidycz, McNamara, & Edwards, 2006; Messman-Moore, & Brown, 2006). In the current study, all participants endorsed a similar victimization history (e.g. history of sexual assault) and therefore the only comparisons were within this sample, and thus comparisons with these earlier studies is impossible. This again points to the need for further study in which a normative control group is employed. . Nevertheless, it was hypothesized that there would be some type of difference on measures of risk perception related to levels of distress. The habituation to changes in negative affect (as measured by the self-report measures of emotional reactivity), in particular, may have precluded a full test of this hypothesis.

Emotion Regulation and Risk Perception. Emotional reactivity also did not have an effect on risk perception. The only relationship approaching statistical significance was the change in negative affect following the first round of validating/invalidating

feedback, so it is not surprising that any other effect would be limited. This hypothesis was not supported by the data in this sample, but largely due to the fact that there was not a significant change in affect, as noted above. Although the data show that the manipulation did work (e.g. increase in positive affect/decrease in negative affect in the validating condition, increase in negative affect/decrease in positive affect in the invalidating condition), it did not appear to function in the same way as it did in other studies that used a similar protocol (e.g. Erikson, & Fruzzetti, 2011; Shenk & Fruzzetti, 2011). Participants appeared to habituate to the evoked distress by the last round of invalidation. This is different than earlier studies, and it may have been that participants were not as upset by invalidating feedback related to a task completed in the context of a research project. Anecdotal evidence suggests that women's histories may have blocked the distress evoked through the validating/invalidating procedure. For example, several participants stated that there was nothing that could be done in a lab that would compare to their prior traumatic life experiences. The context of the research setting could have offered a certain degree of comfort and safety that served as a buffer which protected against a high degree of distress and in turn impacted the ability to fully test the impact of interpersonal interactions on emotional reactivity

Implications and Limitations. The findings of the current study stand in contrast to a growing body of literature that examines the association between sexual victimization history, emotion regulation, and trauma-related problems. Recent research has found sexual victimization and emotion dysregulation to be significantly positively associated with sexual victimization in college students (Walsh, DiLillo, & Messman-

Moore, 2012) and in samples of female prison inmates (Walsh, DiLillo, & Scalora, 2011).

Findings from other studies indicate that it is premature to conclude, based on the current study that emotion dysregulation is not a factor in trauma-related distress and risk perception. However, results to give us pause, and suggest that there may be many nuances about emotion dysregulation that need to be explored. The present study is one of the first to examine experimentally the effects of interpersonal interactions on components of the process of emotion regulation and risk perception in a sample of women with histories of sexual trauma. A majority of earlier studies have relied upon survey methodology and quasi-experimental designs. Therefore, this study adds to the literature by examining the process of emotion regulation with an experimental design and in a more ecologically valid manner. Given that the current study is one of the first known experimental design to test emotion regulation, it may have been more reasonable to begin with a study that included a normative control group and simply compared that group to the present sample. The inclusion of a normative control group would have allowed for a test of the differences between trauma and non-trauma samples in an interpersonal context, and thus the lack of a control group is a significant limitation of the present study.

Of course, the present study only evaluated emotion dysregulation-related phenomena in a context of interpersonal invalidation. This may not be the most salient set of stimuli related to subjects' distress. Perhaps quite different stimuli, such as self-judgments, or self-invalidation, or more personal criticisms, would show a different effect. These may all be useful avenues for future research.

In light of these somewhat surprising findings, the characteristics of the sample itself must be examined to determine whether it may have impacted the results. One possible explanation for the findings is related to the characteristics noted in the sample itself. Post hoc analyses indicated that eligible participants who declined to participate were not significantly different from those who chose to participate on measures of distress, on both trauma-specific and general distress measures. However, the two most often cited reason not to participate from eligible participants was too much stress or that they did not want to talk about experiences disclosed in the first phase of the study. This suggests that perhaps there were self-selected difference between the present sample and the large population of people with sexual trauma histories. There may be different process in these two groups in terms of how they manage difficult emotions, and this may have contributed to some type of self-selection and subsequent bias.

The sample used in this study is different than those studied in other studies of emotion regulation and sexual victimization. The current study examined trauma-related distress in relation to sexual victimization as opposed to simply having had any experience of sexual victimization. This difference also this might be a possible reason for the discrepant findings. In other similar studies (e.g. Walsh et al. 2011) inclusion criteria were based on severity of abuse (e.g. repeated victimization). There is a cumulative effect of trauma which often translates into higher levels of distress and functional impairment. Although the variables under consideration are the same, the method of measurement (e.g. severity of trauma history vs. current distress) may create groups that are significantly different and may partially account for the discrepant findings. In the current study, individuals who reported histories of contact sexual trauma

and all levels of trauma-related distress were eligible to participate. This is a subtle but important difference and another area where a control group would have allowed for stronger conclusions. Age at the time of the index trauma (or the trauma being endorsed) also was different between earlier studies and the current study. In prior studies (e.g. Walsh et al, 2011, Messman-Moore & Brown, 2006, Stevens, et al., 2012), the majority of participants were individuals whose index sexual assault was experienced as a child. In the current study, the average age at the time of the assault reported was 14.7 years (SD = 5.7 years). This difference is quite significant from a developmental perspective, as age, emotional, social, cognitive and sexual development could qualitatively change the nature and experience of the abuse/assault. Childhood is also a significant stage in the acquisition and development of emotion regulation skills; sexual abuse at that time could significantly impact this trajectory. The women in this sample, whose index assault was later in life, may have already developed effective emotion regulation skills that they are able to utilize in stressful situations.

The findings on risk perception raise questions about the differences in perception of risk and the behavioral repertoire needed to act on the threat. In situations where sexual threat is relevant, do women with sexual trauma histories have greater difficulty detecting the threat? Or, is there a deficit in their behavioral repertoire (e.g. they are not sure what to do, how to get safe, in a threatening situation)? Although the present study did not address this question, the current findings suggest that a closer examination of this question is warranted and that this might have implications for clinical treatment.

Part of the original premise of this study was to investigate factors that lead to difficulties engaging in treatment that people with significant sexual trauma often

demonstrate. The results demonstrate that samples of women with sexual trauma histories consistently endorse higher than average levels of distress, although it did not impact measures of emotional reactivity, emotional sensitivity, or risk perception in this sample. Although we did not offer hypotheses related to subscales on the DERS, there was a trend towards significant associations between impulse control difficulties, lack of emotional clarity, and a lack of emotional awareness with baseline levels of negative emotion. This can offer limited insight into issues that may serve as barriers to treatment, and requires further investigation. Although it is not possible to infer ways in which we would adjust clinical interventions, this certainly suggests that these areas may play a role both in barriers to treatment and in general life stress.

This study did not find a significant association between emotion regulation, risk perception, and trauma related distress. The fact that these results are in contrast to many other published studies suggests that the refinement of the method (e.g. adding a control sample) may yield interesting results and would be a worthwhile next step. This study focused on testing these associations in a sample of college-aged women. In the next iteration, in addition to the control group, it may be useful to include individuals who are seeking treatment as part of the study sample. And, future research should attempt to block on, or control for, age of trauma itself, given the significant impact that age would have developmentally. The unique contribution of this paper is that an experimental paradigm was utilized to test these associations, which is different from the methodology used in other research in this area. This paper suggests that future research should examine the process of emotion regulation in trauma samples in more ecologically valid manners to better understand the process.

Thus, although most hypotheses were not confirmed, the present study may have considerable heuristic value. Results have helped to identify important nuances of trauma samples, and key research design and process questions that should be explored.

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Table 1
Descriptive Data on Demographic and Baseline Variables

	Condition	
	Validation (n=31) M or n	Invalidation (n=34) M or n
<i>Demographic Data</i>		
Age	25.94 (9.65) years	24.82 (7.97) years
Ethnicity		
White/Caucasian	58%	61%
Asian/Pacific Islander	13%	3%
Hispanic/Latino	13%	18%
Black/African American	6%	3%
Other/Bi-cultural	10%	15%
<i>Measures</i>		
PANAS-P	28.09 (8.54)	26.69 (7.97)
PANAS-N	13.12 (3.93)	14.03 (3.32)
PCL	40.35 (17.55)	44.51 (13.92)
DERS	94.22 (15.85)	94.96 (14.16)
GSI-BSI	1.07 (.71)	1.08 (.79)

Note. PCL = Posttraumatic Stress Disorder Symptom Checklist, DERS = Difficulties in Emotion Regulation, GSI = Brief Symptom Inventory (Global Severity Index), PANAS-P = Positive and Negative Affect Schedule-Positive Affect Subscale, PANAS-N = Positive and Negative Affect Schedule – Negative Affect Subscale.

Table 2
Bivariate Associations

	PCL	DERS	GSI	PANAS-P	PANAS-N
PCL	1	.725*	.776*	.165	.087
DERS		1	.706*	.095	.149
GSI			1	.034	.166
PANAS-P				1	-.062
PANAS-N					1

Note. PCL = Posttraumatic Stress Disorder Symptom Checklist, DERS = Difficulties in Emotion Regulation, GSI = Brief Symptom Inventory (Global Severity Index), PANAS-P = Positive and Negative Affect Schedule-Positive Affect Subscale, PANAS-N = Positive and Negative Affect Schedule – Negative Affect Subscale. * $p < .01$

Table 3.
Mean, Standard Deviations, and Range of Latency for the Reaction Time (in ms) on the First 18 Trials on the Facial Affect Recognition Task

Outcome Variable	M (SD)	Range
<i>Validating Condition</i>		
First Correct Response	12911.31 (2740.73)	8411.25 – 19136.0
Positive Emotion	11349.53 (3062.02)	6895.0 – 18696.0
Negative Emotion	13490.61 (2860.57)	9133.0 – 20867.0
Anger	13561.88 (4596.60)	3672.0 – 25492.0
Fear	12396.15 (4905.14)	6902 – 19766.0
Disgust	13065.17 (4222.11)	5326 – 20663.0
Happy	8992.50 (3794.77)	4039 - 18060
Sad	13302.26 (3953.71)	7043 - 21101
Surprise	13680.85 (3139.61)	8592-21989
<i>Invalidating Condition</i>		
First Correct Response	12199.17 (2368.58)	8342.0 – 18521.0
Positive Emotion	10254.87 (3039.58)	4221.50 – 18168.0
Negative Emotion	12999.79 (2516.73)	8814.0 – 18947.0
Anger	12580.46 (3415.45)	3672.0 – 19357.0
Fear	12921.69 (2919.60)	6902.0 – 20359.0
Disgust	13451.75 (4124.54)	7522.0 – 22193.0
Happy	7705.54 (3614.66)	2988.0 – 18225.0
Sad	12974.96 (3201.19)	8270.0 – 20312.0
Surprise	12743.26 (3578.31)	4540.0– 20168.0

Table 4
Regression Analysis for Emotional Sensitivity for First 18 Responses on Multimorph Facial Affect Recognition Task

	SE (B)	b	T	Sig	R ²	ΔR^2
Latency to First Correct Response	.00	-.02	-.16	.88	.00	-.02
Positive Emotion	.00	.08	.58	.56	.01	-.01
Negative Emotion	.00	-.02	-.16	.88	.00	-.02
Anger	31.79	-.09	-.76	.45	.01	-.01
Disgust	33.27	.04	.32	.75	.00	-.01
Fear	.00	-.05	-.37	.72	.00	-.01
Happy	.00	-.01	-.06	.95	.00	-.02
Sad	28.61	-.02	-.11	.91	.00	-.02
Surprise	26.99	.11	.87	.39	.01	-.00
Number of Errors	.01	-.23	-1.89	.06	.05	.03

Note: Predictor Variable – PCL, $p < .05^*$

Table 5
Means, SDs, Ranges of Response Latency Times on Overall Facial Affect Recognition Task.

Outcome Variable	M (SD)	Range
<i>Validating Condition</i>		
First Correct Response	13009.08 (3048.41)	8200.9-20787.88
Positive Emotion	11757.55 (3924.79)	5432.25-21644.00
Negative Emotion	13611.49 (2944.01)	7653.03-20405.28
Anger	13772.26 (3068.01)	8218.8-20844.67
Fear	14159.10 (2971.26)	9197.2-21934.6
Disgust	13438.32 (3067.83)	8158.4-22142.25
Happy	9461.22 (4597.64)	3997.5-23511.00
Sad	13846.15 (3689.76)	5652.67-22298.60
Surprise	13765.71 (4862.96)	6867-29561.83
<i>Invalidating Condition</i>		
First Correct Response	11882.05 (2493.47)	7866.75 -18641.10
Positive Emotion	10120.99 (3187.01)	6298.17-18994.35
Negative Emotion	12872.54 (2255.02)	8511.67-18734.00
Anger	12601.23 (2944.58)	7701.50-19388.83
Fear	13351.78 (2847.82)	7992.00-21334.60
Disgust	12872.93 (2790.64)	7030.50-18249.00
Happy	8095.68 (3618.97)	4114.50-18666.50
Sad	12664.16 (2675.19)	8765.33-18780.00
Surprise	12143.21 (3791.84)	4346.80-19322.20

Table 6
Summary of Regression Analyses of Effect of Trauma-Related Distress and Condition on Emotional Sensitivity

		SE (B)	β	T	Sig	R ²	ΔR^2
Latency to First Correct Response						.05	.01
	PCL	33.46	-.12	-.63	.53		
	Condition	1067.97	-.33	-1.72	.09		
	PCL X Condition	73.08	.22	.88	.38		
Positive Emotion						.07	.03
	PCL	.00	-.204	-1.09	.28		
	Condition	.05	-.39	-2.05	.04		
	PCL X Condition	.00	.30	1.22	.23		
Negative Emotion						.03	-.02
	PCL	31.54	.01	.05	.96		
	Condition	1006.64	-.22	-1.12	.27		
	PCL X Condition	68.88	.11	.45	.65		
Anger						.04	-.00
	PCL	36.34	-.04	-.23	.82		
	Condition	1159.76	-.28	-1.46	.15		
	PCL X Condition	79.36	.14	.56	.58		
Disgust						.01	-.04
	PCL	35.50	-.03	-.14	.89		
	Condition	1132.74	-.14	-.74	.46		
	PCL X Condition	77.51	.08	.30	.76		

		SE (B)	β	T	Sig	R ²	ΔR^2
Fear						.02	-.03
	PCL	35.28	-.02	-.09	.93		
	Condition	1125.93	-.16	-.09	.42		
	PCL X	77.04	.03	.13	.90		
	Condition						
Happy						.05	-.00
	PCL	.00	.02	.10	.92		
	Condition	.08	-.27	-1.30	.20		
	PCL X	.01	.08	.30	.77		
	Condition						
Sad						.06	.01
	PCL	38.43	-.14	-.73	.47		
	Condition	1226.34	-.36	-1.89	.06		
	PCL X	83.91	.30	1.2	.23		
	Condition						
Surprise						.07	.03
	PCL	.00	-.13	-.68	.50		
	Condition	.054	-.40	-2.13	.04		
	PCL X	.00	.36	1.49	.14		
	Condition						
Number of Errors						.07	.02
	PCL	.02	-.24	-1.28	.21		
	Condition	.71	.12	.61	.54		
	PCL X	.05	-.03	-.11	.91		
	Condition						

Table 7
Descriptive Data for Nnumber of Steps it Took for Participants to Indicate Discomfort

	Condition	
	Validation (n=31) M or n	Invalidation (n=33) M or n
Acquaintance Rape	16.23 (8.11)	15.12 (8.53)
Stranger Rape	16.19 (9.72)	17.52 (8.52)

Table 8
Summary of Regression Analyses for Main Effect of Emotional Sensitivity on Perceptions of Risk in an Acquaintance Rape Scenario

	SE (B)	β	T	Sig	R ²	ΔR^2
Latency to First Correct Response	.00	.16	1.29	.20	.02	.01
Positive Emotion	7.54	.17	1.35	.18	.03	.01
Negative Emotion	.00	.14	1.15	.26	.02	.01
Anger	.00	.16	1.29	.20	.03	.01
Disgust	.00	.04	.34	.73	.00	-.01
Fear	11.47	.04	.29	.39	.00	-.02
Happy	5.89	.22	1.17	.09	.05	.03
Sad	.000	.125	.99	.33	.02	.00
Surprise	.000	.141	1.12	.27	.02	.00

Note. DV-Number of steps to indicate discomfort in acquaintance rape scenario, $p < .05^*$

Table 9
Summary of Regression Analyses for Main Effect of Emotional Sensitivity on Perceptions of Risk in a Stranger Rape Scenario

	SE (B)	β	T	Sig	R ²	ΔR^2
Latency to First Correct Response	.00	.12	.96	.34	.02	-.00
Positive Emotion	8.32	.11	.91	.37	.01	-.00
Negative Emotion	.00	.16	.99	.33	.02	.00
Anger	.00	.16	1.24	.22	.02	.01
Disgust	.00	.10	.81	.42	.01	-.01
Fear	.00	.15	1.18	.24	.02	.01
Happy	6.53	.13	.99	.33	.02	.00
Sad	.000	.02	.14	.89	.00	-.02
Surprise	7.91	.10	.78	.43	.01	-.01

Note. DV-Number of steps to indicate discomfort in stranger rape scenario, $p < .05^*$

Table 10
Descriptive data for Eligible Participants Who Chose to Participate and Who Declined

	Participated (n=64) M (SD) or %	Declined (n=73) M (SD) or %
Age	25.44 (8.82) years	21.17 (5.9) years
PCL	42.03 (15.6)	40.11 (15.66)
DERS	94.96 (15.03)	90.67 (19.96)
Global Severity Index (BSI)	1.08 (.75)	.92 (.77)
<i>Perpetrators</i>		
Husband/Boyfriend/Romantic Partner	8.1%	7.5%
Ex-Boyfriend/Ex-Romantic Partner	3.2%	3/0%
Parent/Father	4.8%	3.0%
Sibling/Cousin	0.0%	3.0%
Foster Brother	1.6%	0.0%
Romantic Interest	6.4%	0.0%
Family Friend	0.0%	7.5%
Friend/Sister's Boyfriend	6.4%	1.5%
Stranger	1.6%	3.0%
Declined to Answer	74.3%	71.5%

Figure 1.
The Transactional Model for Emotion Dysregulation (Fruzzetti et al., 2005; Fruzzetti & Worrall, 2010)

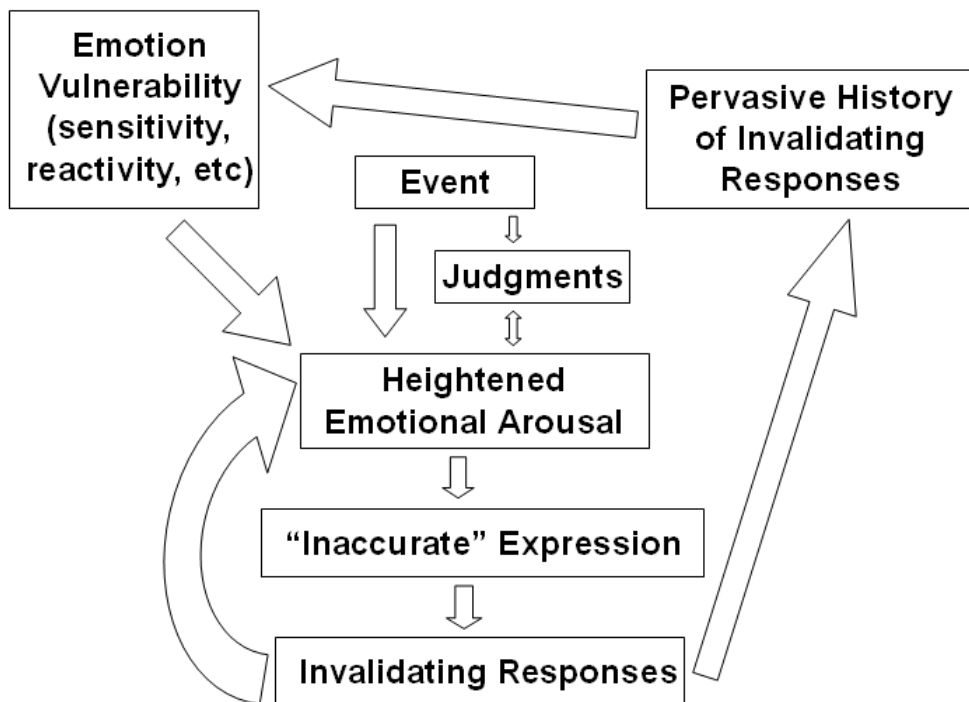


Figure 2
The Transactional Model for Trauma-Related Distress

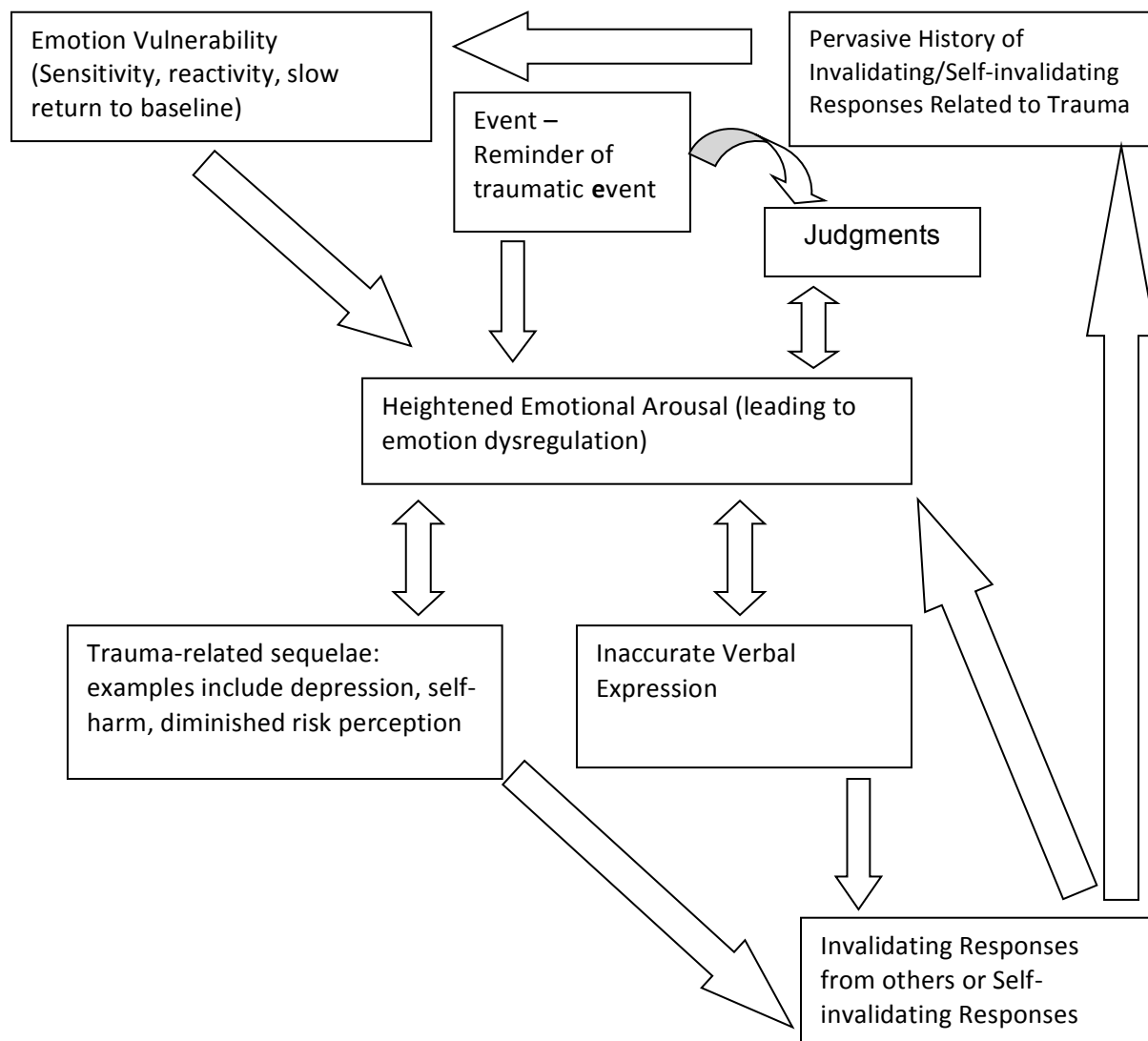
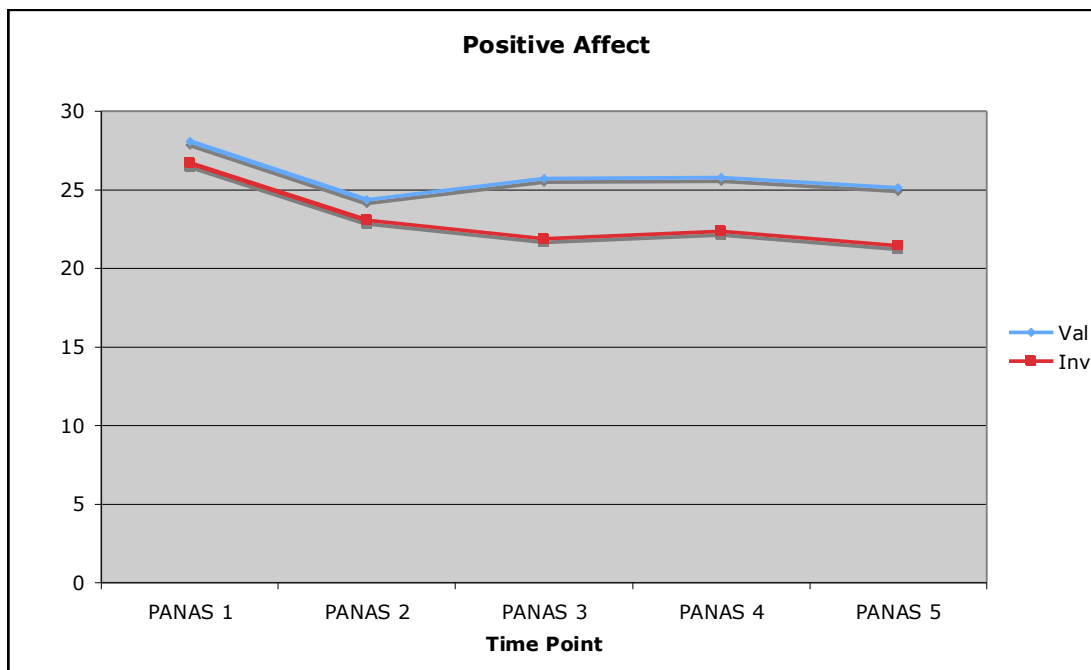


Figure 3.
Overview of Study Procedures

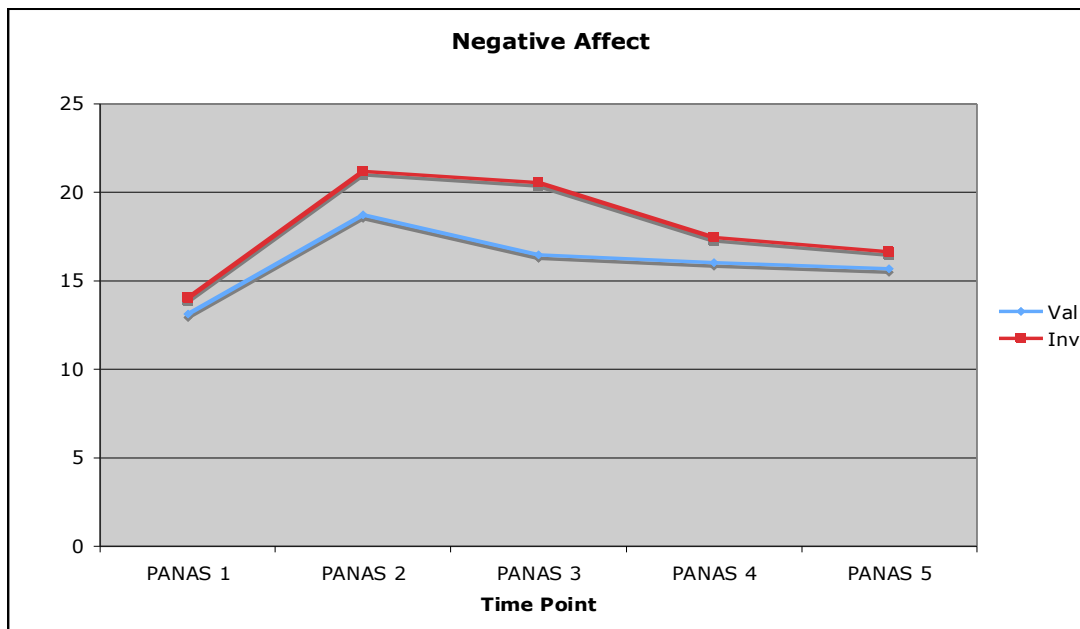
OVERVIEW OF STUDY PROCEDURES	
Step 1:	Participants completed screening measures online (DERS, BSI, SLESQ, Demographic Information, PCLC). In order to control for order effects, these measures will be presented to participants in a random order.
Step 2:	Participants are invited to participate in laboratory experiment. Participants who indicated interest were scheduled for an appointment.
Step 3:	Participants were randomly assigned to validating/invalidating condition.
Step 4:	Participants completed the first set of Multimorph Facial Affect Recognition Task.
Step 5:	PANAS 1
Step 6:	Completion of the first, second, and third mental arithmetic task.
Step 7:	Participant described current emotional experience.
Step 8:	Validating or invalidating feedback (Based on condition)
Step 9:	PANAS 2
Step 10:	Completion of fourth, fifth, and sixth mental arithmetic task.
Step 11:	Participant described their current emotional state.
Step 12:	Validating/invalidating feedback (Based on condition)
Step 13:	PANAS 3.
Step 14:	Completion of the second set of the Multimorph Facial Affect Recognition Task.
Step 15:	Completion of the seventh, eighth, and ninth mental arithmetic tasks
Step 16:	Participant is asked to describe their current emotional state.
Step 17:	Validating/invalidating feedback (Based on condition)
Step 18:	PANAS 4
Step 19:	Completion of tenth, eleventh, and twelfth mental arithmetic task.
Step 20:	Participant described current emotional state
Step 21:	Validating/invalidating feedback (Based on condition)
Step 22:	PANAS 5.
Step 23:	Participants completed risk perception vignettes
Step 24:	Participant is fully debriefed and “believability” of experimental condition is assessed.

Figure 4
PANAS scores

Positive Affect:



Negative Affect:



Appendices

Posttraumatic Stress Disorder Checklist – Civilian (PCL-C)	Appendix A
Positive and Negative Affect Schedule (PANAS)	Appendix B
Stressful Life Events Questionnaire (SLEQ)	Appendix C
Difficulties in Emotion Regulation Scale (DERS)	Appendix D
Vignette Task	Appendix E

Appendix A
PCL-C

Instructions: Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	<i>Not at all</i>	<i>A little bit</i>	<i>Moderately</i>	<i>Quite a bit</i>	<i>Extremely</i>
1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?	1	2	3	4	5
2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?	1	2	3	4	5
3. Suddenly <i>acting or feeling</i> as if a stressful experience from the past <i>were happening again</i> (as if you were reliving it)?	1	2	3	4	5
4. Feeling <i>very upset</i> when <i>something reminded you</i> of a stressful experience from the past?	1	2	3	4	5
5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when <i>something reminded you</i> of a stressful experience from the past?	1	2	3	4	5
6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?	1	2	3	4	5
7. Avoiding <i>activities or situations</i> because <i>they reminded you</i> of a stressful experience from the past?	1	2	3	4	5
8. Trouble <i>remembering important parts</i> of a stressful experience from the past?	1	2	3	4	5
9. <i>Loss of interest</i> in activities that you used to enjoy?	1	2	3	4	5
10. Feeling <i>distant or cut off</i> from other people?	1	2	3	4	5
11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?	1	2	3	4	5

12. Feeling as if your <i>future</i> somehow will be <i>cut short</i>?	1	2	3	4	5
13. Trouble <i>falling or staying asleep</i>?	1	2	3	4	5
14. Feeling <i>irritable</i> or having <i>angry outbursts</i>?	1	2	3	4	5
15. Having <i>difficulty concentrating</i>?	1	2	3	4	5
16. Being "<i>superalert</i>" or watchful or on guard?	1	2	3	4	5
17. Feeling <i>jumpy</i> or easily startled?	1	2	3	4	5

Appendix C SLEQ

The items listed below refer to events that may have taken place at *any point in your entire life*, including early childhood. **If an event or ongoing situation occurred more than once, please record all pertinent information about additional events on the last page of this questionnaire.** *Please print or write neatly.*

1. Have you ever had a life-threatening illness?

- a. No
- b. Yes

If yes, at what age? _____

Duration of Illness (in months)_____

Describe specific illness _____

2. Were you ever in a life-threatening accident?

- a. No
- b. Yes

If yes, at what age? _____

Describe accident _____

Did anyone die? Who? (relationship to you) _____

What physical injuries did you receive? _____

Were you hospitalized overnight?

- a. No
- b. Yes

3. Was physical force or a weapon ever used against you in a robbery or mugging?

- a. No
- b. Yes

If yes, at what age? _____

How many perpetrators? _____

Describe physical force (e.g., restrained, shoved) or weapon used against you.____

Did anyone die? Who?_____

What injuries did you receive?_____

Was your life in danger? _____

4. Has an immediate family member, romantic partner or *very close* friend died as a result of accident, homicide, or suicide?

- a. No
- b. Yes

If yes, how old were you?_____

How did this person die?_____

Relationship to person lost_____

In the year before this person died, how often did you see/have contact with him/her?

5. When you were a child or more recently, did anyone (parent, other family member, romantic partner, stranger or someone else) ever succeed in *physically forcing* you to have intercourse, or oral or anal sex against your wishes *or* when you were in some way helpless?

- a. No
- b. Yes

If yes, at what age?_____

If yes, how many times?

- a. 1
- b. 2-4
- c. 5-10
- d. more than 10

If repeated, over what period?

- a. 6 months or less
- b. 7 months - 2 years
- c. more than 2 years but less than 5 years
- d. 5 years or more.

Who did this? (Specify stranger, parent, etc.)_____

Has anyone **else** ever done this to you?

- a. No
- b. Yes

6. Other than experiences described in item 5, has anyone ever used *physical force or threat* to *TRY* to make you have intercourse, oral or anal sex, against your wishes *or* when you were in some way helpless?

- a. No
- b. Yes

If yes, at what age? _____

If yes, how many times?

- a. 1
- b. 2-4
- c. 5-10
- d. more than 10

If repeated, over what period?

- a. 6 months or less
- b. 7 months -2 years
- c. more than 2 years but less than 5 years
- d. 5 years or more

Who did this? (Specify stranger, parent, etc.) _____

Has anyone **else** ever done this to you?

- a. No
- b. Yes

7. Other than experiences mentioned in items 5-6, has anyone ever *actually touched* private parts of your body or made you touch theirs against your wishes, *or* when you were in some way helpless?

- a. No
- b. Yes

If yes, at what age? _____

If yes, how many times?

- a. 1
- b. 2-4
- c. 5-10
- d. more than 10

If repeated, over what period?

- a. 6 months or less

- b. 7 months -2 years
- c. more than 2 years but less than 5 years
- d. 5 years or more

Who did this? (Specify sibling, date, etc.) _____

What age was this person? _____

Has anyone else ever done this to you?

- a. No
- b. Yes

8. Do you feel you were ever sexually abused?

- a. No
- b. Yes

9. When you were a child, did a parent, caregiver or other person ever slap you repeatedly, beat or otherwise attack or harm you?

- a. No
- b. Yes

If yes, at what age _____

If yes, how many times?

- a. 1
- b. 2-4
- c. 5-10
- d. more than 10

If repeated, over what period?

- a. 6 months or less
- b. 7 months -2 years
- c. more than 2 years but less than 5 years
- d. 5 years or more.

Describe force used against you (e.g., fist, belt) _____

Were you ever injured? If yes, describe _____

Who did this? (relationship to you) _____

Has anyone **else** ever done this to you?

- a. No
- b. Yes

10. Other than the experiences mentioned in item 9, have you ever been kicked, beaten, slapped around or otherwise physically harmed by a romantic partner, date, sibling, family member, stranger or someone else?

a. No

b. Yes

If yes, at what age? _____

If yes, how many times?

a. 1

b. 2-4

c. 5-10

d. more than 10

If repeated, over what period?

a. 6 months or less

b. 7 months -2 years

c. more than 2 years but less than 5 years

d. 5 years or more.

Describe force used against you (e.g., fist, belt) _____

Were you ever injured? If yes, describe _____

Who did this? (relationship to you) _____

If sibling, what age was he/she _____

Has anyone else ever done this to you?

a. No

b. Yes

11. Do you feel you were ever physically abused?

a. No

b. Yes

12. Other than the experiences already covered, has anyone ever *threatened* you with a weapon like a knife or gun?

a. No

b. Yes

If yes, at what age? _____

If yes, how many times?

a. 1

b. 2-4

- c. 5-10
- d. more than 10

If repeated, over what period?

- a. 6 months or less
- b. 7 months -2 years
- c. more than 2 years but less than 5 years
- d. 5 years or more.

Describe nature of threat _____

Who did this? (relationship to you) _____

Has anyone else ever done this to you?

- a. No
- b. Yes

13. Have you ever been present when another person was killed, seriously injured, or sexually or physically assaulted?

- a. No
- b. Yes

If yes, at what age? _____

Please describe what you witnessed _____

Was your own life in danger? _____

14. Have you ever been in any other situation where you were seriously injured or your life was in danger (e.g., involved in military combat or living in a war zone)?

- a. No
- b. Yes

If yes, at what age? _____

Please describe. _____

15. Have you ever been in any other situation that was extremely frightening or horrifying that has not been covered above?

- a. No

b. Yes

If yes, at what age? _____

Please describe. _____

16. If any of the events (or ongoing situations) already described happened to you more than once, (e.g. two robberies, two different people committing the same act), please use the space below to describe each additional event or ongoing situation. Please provide all information requested under the original item.

Item number _____

Description. _____

Item number _____

Description. _____

Item number _____

Description. _____

17. As you filled out this questionnaire, did you report the same incident, or ongoing situation, under more than one item?

a. No

b. Yes

If yes, please indicate which items refer to the same incident:

Appendix D DERS

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

1-----	2-----	3-----	4-----	5
almost never	sometimes	about half the time	most of the time	
(0-10%)	(11-35%)	almost always (36-65%) 100%)	(66-90%)	(91-

- _____ 1) I am clear about my feelings.
- _____ 2) I pay attention to how I feel.
- _____ 3) I experience my emotions as overwhelming and out of control.
- _____ 4) I have no idea how I am feeling.
- _____ 5) I have difficulty making sense out of my feelings.
- _____ 6) I am attentive to my feelings.
- _____ 7) I know exactly how I am feeling.
- _____ 8) I care about what I am feeling.
- _____ 9) I am confused about how I feel.
- _____ 10) When I'm upset, I acknowledge my emotions.
- _____ 11) When I'm upset, I become angry with myself for feeling that way.
- _____ 12) When I'm upset, I become embarrassed for feeling that way.
- _____ 13) When I'm upset, I have difficulty getting work done.
- _____ 14) When I'm upset, I become out of control.
- _____ 15) When I'm upset, I believe that I will remain that way for a long time.
- _____ 16) When I'm upset, I believe that I will end up feeling very depressed.

1-----2-----3-----4-----5
 almost never sometimes about half the time most of the time almost always
 (0-10%) (11-35%) (36-65%) (66-90%) (91-100%)

- _____ 17) When I'm upset, I believe that my feelings are valid and important.
- _____ 18) When I'm upset, I have difficulty focusing on other things.
- _____ 19) When I'm upset, I feel out of control.
- _____ 20) When I'm upset, I can still get things done.
- _____ 21) When I'm upset, I feel ashamed at myself for feeling that way.
- _____ 22) When I'm upset, I know that I can find a way to eventually feel better.
- _____ 23) When I'm upset, I feel like I am weak.
- _____ 24) When I'm upset, I feel like I can remain in control of my behaviors.
- _____ 25) When I'm upset, I feel guilty for feeling that way.
- _____ 26) When I'm upset, I have difficulty concentrating.
- _____ 27) When I'm upset, I have difficulty controlling my behaviors.
- _____ 28) When I'm upset, I believe there is nothing I can do to make myself feel better.
- _____ 29) When I'm upset, I become irritated at myself for feeling that way.
- _____ 30) When I'm upset, I start to feel very bad about myself.
- _____ 31) When I'm upset, I believe that wallowing in it is all I can do.
- _____ 32) When I'm upset, I lose control over my behavior.
- _____ 33) When I'm upset, I have difficulty thinking about anything else.
- _____ 34) When I'm upset I take time to figure out what I'm really feeling.
- _____ 35) When I'm upset, it takes me a long time to feel better.
- _____ 36) When I'm upset, my emotions feel overwhelming.

Appendix E Vignettes

VIGNETTE TASK

Instructions for the vignette: You will be presented with three different scenarios. Pretend that you are participating in each activity as it is described. Indicate if at any point over the course of this activity you would feel uncomfortable enough to leave.

Vignette #1: RP-GEN

The following is a chronological description of a social experience that is not uncommon for college-aged women. Please pretend that you are participating in each activity as it is described.

Indicate if at any point you would feel UNCOMFORTABLE by pressing the designated button on the computer when you feel that way.

1. This is your first time away from home, and you have been a little homesick. One of the other girls on your floor invites you to a party in another dorm.
2. You and four of your friends attend a party. One of your friends agrees to be the designated driver and drives the five of you there in her car.
3. After you get to the party, you and your friends begin to get acquainted with other people at the party. Everyone is having a good time, and people begin to dance as the music gets louder. You begin dancing with your girlfriends.
4. Andy, someone you are in a class with greets you and hands you a drink.
5. You decline the drink saying, "I'd better not. I'm not 21 yet. I've heard that campus police are cracking down on underage drinking".
6. Andy's friend, Traci, overhears and they tell you not to worry. "People just say that and no one really gets in trouble. Besides, there is nothing else to do around here," Carol says.
7. At this point you decide it is better to have a few drinks than worry about not making any friends.
8. Andy, Traci and your other friends begin to play beer pong.
9. You would like to leave, but your friends seem to be having so much fun you don't want to ask them to go.
10. You find a few people to chat with, but it seems as if most people in the room are drunk.
11. You talk to your friend who is driving, and she has also been drinking.
12. She says, "Don't worry about it, we'll find someone to drive us back to our dorm".

13. You begin to worry about how you will get everyone home.
14. More people arrive and the party gets louder. The new group of people arrive and they are bringing a new keg.
15. One of your friends, Melissa, starts to say that she does not feel well.
16. You notice that she does not look okay. She is pale and shaky.
17. You ask another friend, Lindy, what you should do.
18. Lindy says not to worry about it, everyone will be fine.
19. Melissa says she really does not feel well, and falls asleep on the couch. You are not able to get her to wake up.
20. Campus police arrive because they have had reports about a party. They call an ambulance for Melissa.

VIGNETTE #2: RPS-ACQ

The following is a chronological description of a social experience that is not uncommon for college-aged women. Please pretend that you are participating in each activity as it is described.

Indicate if at any point you would feel UNCOMFORTABLE by pressing the designated button on the computer when you feel that way.

1. You and four of your friends attend a party. One of your friends agrees to be the designated driver and drives the five of you there in her car.
2. You and your friends get acquainted with other people at the party. Everyone is having a good time and people begin to dance as the music gets louder. You begin dancing with your girlfriends.
3. You notice a guy you know, Ted, approaching you. You and Ted are both in the same algebra class, and you've studied together on several occasions.
4. Ted comes up to you and your friends, and begins dancing with you. You are flattered by Ted's attention, as he is really good looking and popular.
5. In a joking voice, Ted says, "You look great tonight!"
6. Ted puts his hand on your shoulders, and then starts to lean in towards you as he dances.
7. You jokingly tell him to "Back off!" and Ted calls you a "Flirt".
8. As he puts his arms around you Ted says, "Man you look sexy tonight in that outfit".

9. As you continue dancing, one of your friends gets sick and the other decide to take her home.
10. You are having a good time and don't want to leave yet. They agree to come back for you later.
11. As the party begins to die down, Ted invites you to go get something to eat. He offers to drive in his car.
12. You walk with Ted to his car and get in. You drive to Taco Bell.
13. While you are eating, he suggests that you go with him to his apartment. He wants to show you his new saltwater fish tank and wants to listen to some music.
14. You aren't ready for the night to end. You agree to go to his place.
15. You notice as you are driving that you don't recognize this part of town. He pulls into the driveway of the apartment complex and you walk to his apartment.
16. You walk into the living room and he shows you the tank. He puts on some slow music.
17. Ted says again, "I'm so attracted to you. You are so smart and beautiful. Would you ever be interested in a guy like me?"
18. He turns to you and begins kissing you on the lips, and puts his tongue in your mouth.
19. Even though you push him away Ted kisses you again, this time more passionately, and reaches for your breast. He says, "I know you have a secret crush on me. Otherwise you wouldn't have come here".
20. Ted begins to un-tuck your shirt and reach for your bra.
21. You try to block his hands, but he grabs both of your hands and holds them down.
22. He pushes you down on your back, continuing to kiss you passionately and somewhat forcefully.
23. As he continues to pin your arms down, he begins to unbutton your pants.
24. He yanks down your pants and panties. He unzips his jeans.
25. You try to push him off, but he has sexual intercourse

VIGNETTE #3: RPS-STR

The following is a chronological description of a social experience that is not uncommon for college-aged women. Please pretend that you are participating in each activity as it is described.

Indicate if at any point you would feel UNCOMFORTABLE by pressing the designated button on the computer when you feel that way.

1. You are flying home to Boston from Denver, where you had just spent the week with a good friend. You are waiting for your connecting flight at your gate in Chicago.
2. A man you recognize from your Boston-Denver flight smiles as he approaches you. He says, "I saw you on the Denver flight. Are you heading to Boston too? My name is John".
3. You acknowledge that you are going to Boston.
4. John asks, "Well do you mind if I wait with you?" You nod, but continue to read your book.
5. A muffled woman's voice comes over the loudspeaker, but you can't understand what she said. John asks, "What did she just say?" You shrug, "I don't know".
6. "Do you mind watching my stuff while I go check it out?" he asks.
7. John goes to the service counter. He comes back with a scowl on his face. "She just said that our flight to Boston is delayed. We aren't supposed to take off now for another 2 hours. What a way to end the weekend, huh?" You agree.
8. Fortunately the airline furnished meal vouchers. John asks, "Are you hungry? Let's put these to use."
9. You agree, and accompany John to a restaurant and bar. A while later you have a finished a beer and are enjoying his company. John is handsome and just finishing his first year as a medical resident.
10. You are getting ready to return to the gate to board, when you hear another announcement. The flight is delayed again for about 1 hour. You are annoyed, because your friend has probably left for the airport to pick you up, and it will be difficult to reach her.
11. You mention your worries about your friend. John offers his cell phone to try and reach her. You get the machine and hang up and hope she learns of your delay.
12. John asks, "Where do you live? I'm up in Back Bay".
13. When you tell John that you live near Copley Place, he smiles, "Wow! We're practically neighbors!"

14. The flight is finally called to board. The plane is not too full, so you and John decide to sit together to continue your conversation. As the flight descends into Boston, he asks about your friend. You haven't yet reached her, but hope she's waited for you.
15. As the passengers deplane, you look for your friend in the gate area. She's not there.
16. John says, "Maybe she's at baggage claim. Come on, I'll walk with you." He offers to carry your bag.
17. At the baggage claim you see no sign of your friend. You resign to take the subway home.
18. John says, "No. Don't take the train. At this time of night, that could be dangerous. Why don't you let me give you a ride? It's got to be near my apartment."
19. It's cold outside, and you accept John's offer. He drives you to the front of your apartment building.
20. John offers to help you with your bags. Because you have three suitcases, you decide to let him.
21. As you open the door to your apartment, John brushes past you with the suitcases.
22. He puts them on the floor near the door and quickly closes it, turning the dead-bolt.
23. He grabs your wrists and pulls you towards him. He begins to kiss you.
24. He forces you to the couch and begins to take off your clothes.
25. You try to push him off, but he has sexual intercourse with you.