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**POSTTRAUMATIC STRESS DISORDER, PSYCHOPATHY,
AND IMPAIRMENTS IN EMOTION RECOGNITION**

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Abstract

Posttraumatic stress disorder (PTSD) is an anxiety disorder that develops following exposure to a traumatic event; symptoms include reexperiencing, hyperarousal, and avoidance. PTSD has been previously associated with various interpersonal difficulties, including emotional withdrawal and lack of intimacy. An important component in successful intimate relationships is the ability to communicate and understand one another in various situations. I hypothesize that individuals with high PTSD symptom severity will perform more poorly on an emotion recognition task assessing accuracy compared to individuals with low PTSD symptom severity. Moreover, psychopathic personality traits have been previously linked to impairments in emotion recognition; therefore, I predict that psychopathy will moderate the relationship between PTSD and emotion recognition difficulties. In this study, PTSD symptom severity was assessed with the Clinician-Administered PTSD Scale, psychopathic personality traits were measured dimensionally with the Psychopathic Personality Inventory--Revised, and the participants' ability to correctly identify their partner's emotions was analyzed using an emotion recognition task assessing accuracy. Contrary to my hypothesis, results indicated that PTSD was not significantly correlated with impairments in emotion recognition ($r = -.046, ns$). Moreover, psychopathy did not moderate the relationship between PTSD and emotion recognition, $B = .049, t(14) = .354, ns$. Although various methodological issues may have played a role in these findings, results indicated that individuals with PTSD are not significantly impaired in recognizing their partner's emotions. Therefore, the interpersonal difficulties evident in PTSD may not be caused by emotion recognition difficulties. Further investigation into the lack of findings in this study may identify other factors that play a role in the relationship between PTSD and interpersonal difficulties.

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Posttraumatic Stress Disorder, Psychopathy, and Impairments in Emotion Recognition

Posttraumatic stress disorder (PTSD) is an anxiety disorder that develops following exposure to a traumatic event during which an individual experiences intense fear, helplessness, or horror. Potentially traumatic events include witnessing or confronting a situation involving actual or threatened death, serious injury (e.g., combat, sexual assault, motor vehicle accidents, and natural disasters), or a threat to the physical well-being of themselves or others. Individuals with PTSD re-experience the traumatic event via stressful recollections, including nightmares, flashbacks, and intrusive thoughts. Another feature of PTSD is increased arousal; individuals are extremely vigilant, suffer from irritability, have difficulty sleeping and concentrating, and often exhibit an exaggerated startle response. Following exposure to a traumatic event, individuals also attempt to avoid thoughts, activities, places or people that may be related to the trauma in order to prevent stressful recollections of the trauma.

According to the National Comorbidity Survey, 60.7% of men and 51.2% of women reported experiencing at least one traumatic event in their lifetime (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Further, the majority of those individuals have experienced at least two potentially traumatic events. The estimated lifetime prevalence of developing PTSD is 7.8% (Kessler et al., 1995). PTSD is significantly more prevalent among women than men (Breslau, 2009). In fact, women are more than twice as likely to develop lifetime PTSD compared to men; the lifetime prevalence of PTSD for women is 10.4%, whereas for men the lifetime prevalence of PTSD is 5.0% (Kessler et al., 1995). The traumas most commonly associated with PTSD among men are combat exposure and witnessing someone being badly injured or killed (Kessler et al., 1995). Among women, the most common traumas associated with PTSD are rape and sexual molestation (Kessler et al., 1995).

After experiencing a traumatic event, there are various individual risk factors that play a role in who develops PTSD. Digrande et al. (2008) studied the PTSD risk factors for Manhattan residents following the terrorist attacks on 9/11. The risk for PTSD was greatest among adults aged 45-64 years old. Moreover, the risk for PTSD was higher among Hispanics and African Americans, compared to Whites. Residents earning less than \$25,000 per year were nearly four times more likely to develop PTSD than those who earned more than \$100,000 per year. Those who had a greater amount of direct exposure to the event and suffered injuries were more likely to develop PTSD. Brewin, Andrews, and Valentine (2000) performed a meta-analysis of 14 risk factors for PTSD and found factors operating during or after the trauma, such as trauma severity, lack of social support, and additional life stress, were associated with an increased risk for developing PTSD when compared to pretrauma factors such as psychiatric history, childhood abuse, and lack of education. Once exposed, it seems that individuals who are women, of lower socioeconomic status, or have been exposed to the trauma very early in life are the most likely to develop PTSD (Kessler & Wittchen, 2000).

Individuals with PTSD are often also diagnosed with a variety of other mental health disorders that are frequently comorbid with PTSD. In fact, 88.3% of men with lifetime PTSD, and 79% of women with lifetime PTSD have a lifetime history of at least one other disorder (Kessler et al., 1995). However, there are various PTSD symptoms, such as diminished interest in significant activities and insomnia, that overlap with symptoms of a multitude of other psychiatric disorders. It has been proposed that this could be the basis for the high comorbidity of PTSD with mental health disorders including depression, generalized anxiety disorder, social phobia, simple phobia, and panic disorder (Kessler et al., 1995).

PTSD results in significant occupational, psychiatric, medical and psychosocial disability, which leads to costly consequences for survivors, their families, and society as a whole. The diminished work productivity associated with PTSD results in an annual productivity loss of more than \$3 billion in the United States alone (Brunello et al., 2001). According to Mendlowicz and Stein (2000), those with PTSD have a significantly higher risk of diminished well-being, fair or poor physical health, current unemployment, and physical limitations. PTSD is also associated with a higher rate of general medical complaints including anemia, arthritis, asthma, back pain, diabetes, eczema, kidney disease, lung disease, and ulcers (Weisberg et al., 2002). Therefore, PTSD adversely affects various aspects of an individual's life.

In addition to affecting an individual's ability to function daily, PTSD has been found to exert significant negative impacts on social functioning and interpersonal relationships (Olatunji, Cisler, & Tolin, 2006). Specifically, it has been suggested that PTSD symptoms predict significant impairment in social and leisure activities, relationships with extended family, intimate relationships, parenting, and family functioning (Cloitre, Miranda, Stovall-McClough, & Han, 2005). Crowson, Frueh, Beidel, and Turner (1998) found that individuals with PTSD reported persistent fear in social situations that require exposure to unfamiliar people or to scrutiny by others. This anxiety in social situations further isolates individuals with PTSD, resulting in feelings of detachment from their peers. Veterans with PTSD have been found to generally endorse avoidant attachment styles, which decrease the likelihood that an individual will enter short-term uncomfortable social encounters (Renaud, 2008). After suffering through a traumatic event, individuals often appreciate a sense of recognition by society for the victim's current difficult situation. However, negative reactions from society and dissatisfaction with support serve as predictors for PTSD onset or course (Charuvastra & Cloitre, 2008). As a result,

social support and recognition play an integral role in the course of PTSD, for society may either alleviate or worsen PTSD symptoms for various individuals.

PTSD has a significant negative impact on various interpersonal relationships. In general, there is a substantial level of marital discord, intimacy problems, and detachment issues among couples where a partner suffers from PTSD (Beck, Grant, Clapp & Palyo, 2009; Solomon, Dekel, & Zerach, 2008). PTSD may also cause guilt, emotional withdrawal, and aggression, which prevents individuals from fully resuming their role in the family (Solomon, 1988). Individuals with PTSD tend to be withdrawn and reluctant to discuss the past, which inevitably strengthens feelings of uncertainty and loneliness in the marital relationship (Solomon et al, 2008). A recent literature review conducted by Galovski and Lyons (2004) found that that the severity of relationship distress was positively correlated with the severity of PTSD symptoms. Additionally, wives of veterans with PTSD often experience battering, feelings of emotional detachment from their husband, have full responsibility taking care of their children, their husband's psychological issues, and the family's financial needs, as well as a reduction in sexual intimacy (Galovski & Lyons, 2004). This data suggests that an individual's PTSD symptoms contribute to their partner's distress and poor psychological well-being in a multitude of areas.

In summary, previous research indicates that the interpersonal difficulties experienced by individuals with PTSD impair their ability to establish and maintain close relationships. In order to have a successful relationship, with either a friend or romantic partner, it is often necessary to be able to communicate and understand one other. Communication in relationships can be separated into either verbal or nonverbal behaviors. Nonverbal communication is more subtle and difficult to understand; however, certain nonverbal communication skills, such as recognizing facial expressions, emotions, and body language are crucial to successful

communication in relationships. Accurate recognition of emotional facial expressions is needed to ensure good interpersonal communication in relationships (Kornreich & Philippot, 2006). In fact, deficits in nonverbal decoding skills, including decoding emotional meanings in facial expressions and tones of voice, have been associated with poor relationship wellbeing (Carton, Kessler, & Pape, 1999). It is possible that deficits in emotion recognition may factor into the difficulties in interpersonal relationships seen in individuals with PTSD.

The recognition of facial expressions and emotions is a multi-component system distributed throughout the brain (Kornreich & Philippot, 2006). However, the amygdala, located in the temporal lobe of the brain, has been repeatedly linked to emotion processing and the processing of faces. Bilateral damage to the amygdala impairs one's ability to recognize basic emotional facial expressions, particularly fear (Adolphs, Tranel, Damasio, & Damasio, 1994). As a result, the amygdala is indirectly related to interpersonal difficulties that arise from impaired emotion recognition ability.

Research indicates that the amygdala plays a fundamental role in the pathophysiology of PTSD. Rauch and colleagues (2000) tested this theory by presenting veterans with PTSD and veterans without PTSD with photographic stimuli of fearful, happy, and neutral facial expressions, then measured their areas of brain activation via functional Magnetic Resonance Imaging. Results indicated that individuals with PTSD exhibited significantly greater amygdala responses to masked-fearful stimuli, where fearful facial expressions were masked with neutral expressions, compared to combat-exposed subjects without PTSD (Rauch et al., 2000). Since the amygdala has been linked to emotional processing, it is probable that individuals with PTSD may have impairments in processing others' emotions. In particular, fear expressions represent threatening stimuli that may trigger traumatic memories for individuals suffering from PTSD. As

a result, individuals with PTSD may have a greater sensitivity to fear and threat compared to those without PTSD, evident by their increased amygdala activation to threatening stimuli. In addition, Felmingham, Bryant, and Gordon (2003) found that angry facial expressions were processed more rapidly and provoke greater general brain activation among PTSD patients. This suggests a rapid, adaptive survival response to environmental threat for those who have survived a traumatic event. The functional abnormalities thus associated with PTSD may be related to various symptoms that individuals with PTSD suffer from, such as increased arousal and an exaggerated startle response. Given support that the amygdala plays a role in facial emotion processing and that the amygdala is also overactive in individuals with PTSD, it becomes evident that interpersonal difficulties associated with PTSD may be related to a deficiency in processing facial expressions of emotions. Findings can be interpreted to suggest that individuals with PTSD may display hypersensitivity to certain negative emotions, such as fear and anger.

Freeman and colleagues (2009) found that veterans with chronic PTSD were impaired in recognizing verbal displays of emotions, compared to healthy individuals. That is, individuals with PTSD were unable to correctly deduce the affective element of verbal communication. Impairments in emotion processing in PTSD may be associated with the PTSD symptoms representing emotional dysregulation (e.g., hypervigilance, hyperarousal, and emotional numbing) characteristic of the disorder (Etkin & Wager, 2007). Moreover, individuals with PTSD suffer from emotion anesthesia, in which they tend to show markedly diminished interest in activities, feelings of detachment, and a restricted range of affect (Brunello et al., 2001). These deficits in emotion processing are seen in a variety of other mental health disorders, which also have negative effects on interpersonal relationships and emotion recognition. In particular, PTSD is associated with significantly increased odds of antisocial personality disorder (ASPD)

(Goodwin & Hamilton, 2003). There is significant overlap between common features of the disorders, including impaired emotion processing, lack of affect and emotional depth, and interpersonal difficulties, which may explain the high comorbidity found between PTSD and ASPD. In fact, psychopathic personality traits are on a continuum with antisocial personality disorder; individuals with psychopathy seem to suffer from even more severe symptoms than those with antisocial personality disorder (Coid & Ullrich, 2010). As a result, the high comorbidity seen between ASPD and PTSD also implies a likelihood of comorbidity between PTSD and psychopathic personality traits.

Psychopathic personality traits are often divided into two branches that both equally contribute to the psychopathic personality. One branch includes a remorseless use of others, demonstrating lack of guilt, lack of affect and emotional depth, and pathological lying (Harpur, Hare, & Hakstian, 1989). The other branch includes social deviance with a chronically unsteady and anti-social life-style, entailing impulsivity, frequent marital relationships, a short-temper, and irresponsible behavior as a parent (Harpur et al., 1989). A variety of these symptoms, particularly a lack of emotional depth and social deviance, are also associated with PTSD. As a result, there are high rates of comorbidity among PTSD and psychopathy in the general population; for example, Bauer and Kosson (2000) found that 19% of detained adolescent girls with psychopathy were also diagnosed with PTSD.

The psychopathic personality traits of superficial charm, manipulateness, externalization of blame, and diminished experience of emotions such as guilt, empathy, and anxiety may factor into the emotion recognition deficits seen in psychopathy. Blair, Colledge, Murray, and Mitchel (2001) observed that children with psychopathic tendencies displayed selective impairments in recognizing emotions, particularly sadness and fear. In addition,

Kosson, Suchy, Mayer, and Libby (2002) found that psychopaths exhibited specific deficits in nonverbal emotional processing, specifically in classifying disgust. The neurobiology of psychopathy reaffirms the emotion recognition deficits seen throughout the disorder. Individuals with psychopathy have been found to possess amygdala abnormalities that are linked to the affective and interpersonal facets of psychopathy (Yang, DPhil, Narr, Colletti, & Toga, 2009). Individuals with psychopathy seem to exhibit emotion recognition impairments; the high comorbidity between psychopathy and PTSD suggest that psychopathy may play a role in emotion recognition deficits observed in PTSD.

As noted, psychopathy includes a vast range of traits such as lack of emotional depth, social deviance, and selfish behavior. Due to the wide variability in traits associated with psychopathy, I wanted to explore whether particular aspects of psychopathy may be associated with PTSD and emotion recognition deficits. In particular, I believe those traits associated with emotional functioning, such as lack of empathy, may have an effect on participants' ability to accurately identify partners' emotions. I expect to find relationships between PTSD, which is often characterized by symptoms of arousal and outbursts of anger, and psychopathy traits that include irrational and risky behavior. Specifically, I believe fearlessness (i.e., risk taking), may be significantly correlated with PTSD due to the irrationality of the behavior in psychopathy, which may be associated with arousal symptoms in PTSD. Moreover, it is possible that coldheartedness (i.e., lack of social intimacy), may be significantly correlated with PTSD; participants high in PTSD often experience avoidance symptoms and detachment from society, similar to those seen in coldheartedness.

In summary, individuals with PTSD suffer from a variety of symptoms including re-experiencing, increased arousal, and avoidance and numbing, which have significant negative

implications for the individual's social functioning. Individuals with PTSD tend to exhibit increased arousal to fearful stimuli, suggesting that PTSD may lead to deficits in emotion processing. These impairments in emotion recognition may play a role in the interpersonal difficulties apparent amongst individuals with PTSD. Moreover, psychopathic traits overlap with a multitude of PTSD symptoms such as emotional numbing and avoidance. Individuals who suffer from psychopathy have been found to be significantly impaired in recognizing emotions such as fear, sadness, and disgust. As a result, psychopathy may interact with PTSD to predict emotion recognition deficits, as the two disorders are often associated with one another. In this study, I hypothesize a moderate positive correlation between PTSD symptom severity and degree of inaccuracy in identifying partners' emotions. Interpersonal relationship functioning is essential to strong and healthy relationships, ergo the focus on partner's emotions and its impact on interpersonal relationships. This relation will be moderated by the level of psychopathy, such that the positive relation between PTSD severity and emotion recognition deficits will be stronger for individuals with a higher degree of psychopathic personality traits.

Method

Participants

A total of 128 individuals from 64 couples participated in this study. Recruited participants were between the ages of 18 and 65, heterosexual, and able to read and write in English. In order for couples to qualify for the study, couples must have been married or living together, and one partner must have met the criteria for probable PTSD via phone screening. Participants with a significantly higher educational level or income than the average were excluded from the study. Participants were 37 years old on average ($SD = 13$), had an average of 14 years of education ($SD = 2$), and earned a monthly average income of \$1,887 ($SD = \$2,231$).

Participants were 86% White, 2% White Hispanic or Latino, 2% non-White Hispanic or Latino, 6% African American, and 4% biracial/multiracial.

Procedure

The current study was part of a larger study. Participants were recruited via online and newspaper advertisements, as well as flyers posted in community centers, libraries, and medical offices in local communities. Participants were screened for PTSD over the telephone and were invited to participate in the study if one partner met criteria for probable PTSD (i.e., PTSD Checklist Civilian Version cut score greater than 44; Blanchard et al., 1996).

Couples came to the lab for either two four-hour sessions or one eight-hour session. Each partner completed a variety of computer questionnaires individually. A graduate student assessed each participant individually for PTSD using the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995). The individuals were asked to list five negative topics and five positive topics in their relationship that they were willing to discuss while being recorded. Based on the highest matching topic from both partners, the graduate student chose the discussion topic for the couple's positive and negative interactions. The couples participated in two ten-minute videotaped interactions (one based on the positive topic, the other based on the negative topic), and were later asked to report their own emotions as well as identify their partner's emotions during the interaction. That is, participants watched videotapes of their recorded interactions and were permitted to select a maximum of seven time intervals at which they felt a strong emotion and/or experienced a thought and recorded their emotions on the emotion recognition task form. These particular time intervals were then given to their partners, who were asked to identify their partner's emotion at the specific time interval in order to assess for emotion recognition accuracy. Participants were also asked to complete take-home questionnaires.

Measures

PTSD Checklist, Civilian Version (PCL-C; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). The PCL-C is a brief self-report measure of PTSD. At the beginning of the telephone screening interview, the participant identified their most stressful life event. Participants were then asked to rate the 17 DSM-IV PTSD symptoms for the previous month by the degree to which the participant was bothered by the symptom on a Likert scale of 1 (not at all) to 5 (extremely). A sample PCL item is “In the past month, how much have you been bothered by repeated, disturbing memories, thoughts, or images of a stressful experience from the past?” The participant then rated the severity of the symptom on a 1-5 scale (i.e., 1 = not at all, 2 = a little bit, 3 = moderately, 4 = quite a bit, 5 = extremely). A score of 44 or higher leads to a probable diagnosis of PTSD (Blanchard et al., 1996). The PCL-C demonstrates high internal consistency ($\alpha = .94$; Blanchard et al., 1996). In this study, the PCL-C demonstrated good internal consistency ($\alpha = .91$).

Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000). The TLEQ is a 23-item self-report measure of potentially traumatic events, such as natural disasters, motor vehicle accidents, and family violence. Sample items include “Have you ever been hit or beaten up and badly hurt by a stranger or by someone you didn’t know very well?” and “Were you involved in a motor vehicle accident for which you received medical attention or that badly injured or killed someone?” For each item, the participant is asked to provide the number of times they have experienced the event and whether or not they felt intense fear, helplessness, or horror. The TLEQ is used as a guide to select the index event that has caused the person the most distress currently; this event was then used to assess the severity of PTSD using the Clinician-

Administered PTSD Scale. Kubany and colleagues (2000) found the TLEQ to exhibit a high test retest reliability and convergent validity.

Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995). The CAPS is a 30-item semi-structured interview measure assessing Criterion A status (i.e., exposure to a traumatic stressor), PTSD symptom severity, and PTSD diagnosis. The CAPS measures a variety of PTSD symptoms including reexperiencing, avoidance, and hyperarousal, in addition to associated features such as guilt and dissociation. The frequency and severity of symptoms is determined on a five point Likert scale, where the participant is asked to reflect on their symptoms in the previous month. A sample item assessing frequency is “Have you ever had unwanted memories of the traumatic event?” The interviewer indicates the frequency on a 0-5 scale where 0 = never, 1 = once or twice, 2 = once or twice a week, 3 = several times a week, or 4 = daily or almost every day. A sample item to assess intensity is “How much distress or discomfort did those memories cause you?” The interviewer indicates the severity on a 0-5 scale where 0 = none, 1 = mild, 2 = moderate, 3 = severe, and 4 = extreme. The CAPS is scored by the addition of frequency and intensity scores to obtain a total symptom severity. Participants must score a minimum of one on frequency and two on intensity for one of the five re-experiencing symptoms, three of the seven avoidance symptoms, and two of the five hyperarousal symptoms. Participants must also fulfill criterion A status and possess symptoms for more than a month, which cause significant distress in social or occupational functioning. The CAPS has repeatedly been used to assess PTSD using DSM-IV diagnostic criteria and has been found to yield high convergent validity and test retest reliability ($\alpha = .95$; Black et al., 1995). In the current study, the CAPS demonstrated good internal consistency ($\alpha = .88$).

Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Andrews, 1996). The PPI-R is a 154-item self-report measure that assesses the major personality traits of psychopathy, particularly among noncriminal populations. The PPI measures an individual's perception of how true or false various descriptions about them are. An example of an item on the PPI is "If I really want to, I can persuade most people of almost anything." The individual then rates whether this is false (1), mostly false (2), mostly true (3), or true (4) for him or herself. The higher the total PPI score, the higher the individual is in psychopathy. Multiple subscales are included in the PPI, including Machiavellian egocentricity, rebellious nonconformity, blame externalization, carefree nonplanfulness, social influence, fearlessness, stress immunity, coldheartedness, virtuous responding, deviant responding, self-centered impulsivity, and fearless dominance. The PPI-R has high test-retest reliability ($r = .95$; Lilienfeld & Andrews, 1996). In the current study, the PPI total score demonstrated good internal consistency ($\alpha = .95$). The 12 PPI subscales also demonstrated high internal consistency, with coefficient alphas ranging from .74 to .92.

Emotion Recognition. In order to assess the participant's ability to recognize their partner's emotions, each participant was asked to watch the videorecordings of their previous interactions with their partners and to describe their emotions at intervals in the video at which they strongly experienced a thought or emotion. They rated their own emotions as happy, sad, fear, anger, disgust, or surprise. The participants then watched the video again, at the time intervals that their partners indicated, and were asked to rate their partner's emotions as one of the six emotions noted above. Participants were also permitted to record a free-response of their emotions. The combination of this data allowed research assistants, who entered the data, to accurately assess the emotion an individual was feeling (or identified their partner as feeling).

This is, if a participant did not choose one of the six listed emotions, but provided a free response of an emotion, the free response was categorized as one of the six emotions (e.g., “irritated” would be categorized as “anger”). Because some participants provided a free response indicative of no emotion, “neutral” was added as a possible emotion.

Data Analysis

I examined the relationship between PTSD symptom severity and emotion recognition accuracy, and whether this relationship may be moderated by psychopathy. This study only included data for participants who completed the emotion recognition task. To ensure the integrity of the data, two independent research assistants checked the accuracy of all data. Descriptive statistics and bivariate correlations were calculated for CAPS scores, emotion recognition accuracies, and PPI-R scores.

Emotion recognition accuracy was assessed at a maximum of seven time intervals for the positive and negative partner interactions. During each time interval, if a participant accurately identified at least one of his or her partner’s reported emotions, the participant received a score of 1.00 for that particular time interval. If the participant did not accurately identify any of their partner’s reported emotions, the participant received a score of 0.00 for that time interval. The mean for emotion recognition accuracy was calculated across all time intervals reported by each partner.

Descriptive statistics and bivariate correlations were also calculated for emotion recognition false alarms (i.e., when a participated inaccurately identified his or her partner’s emotion as a different emotion) for each of the seven emotions measured (i.e., anger, disgust, fear, happiness, neutral, sadness, surprise). For example, if a participant identified his or her partner’s emotion as anger when the partner did not report feeling that emotion, the participant

was assigned a false alarm score of 1.00 for anger. The sum of the false alarm scores for each emotion was calculated across all time intervals. The mean for emotion recognition false alarms was then calculated by dividing the summary false alarm score by the total number of intervals reported by the partner.

Hierarchical multiple regression was used to test whether psychopathy moderated the relationship between PTSD and emotion recognition. After centering the CAPS and PPI-R scores, an interaction term was computed for the two scores by multiplying them. One multiple regression equation was calculated; the PPI-R and CAPS scores were entered as the independent variables in the first step, then the interaction term was entered in the second step. Emotion recognition accuracy was entered as the dependent variable.

Results

Descriptive Statistics

Descriptive statistics for the CAPS scores, emotion recognition accuracies, PPI scores, and emotion recognition false alarms are displayed in Table 1. Participants varied greatly in their degree of PTSD symptom severity according to the CAPS scores; the mean score for participants was 35.23 ($SD = 24.09$), indicating that, on average, participants had sub-syndromal levels of PTSD symptoms. A CAPS score of 45 suggests that the individual may meet diagnostic criteria for PTSD. In this study, thirty-two of the 90 total participants who completed the emotion recognition task (36%) met full DSM-IV criteria for PTSD. Fifty-six of the 90 total participants completed the PPI-R; 23 of these participants (41%) met diagnostic criteria for PTSD. Participants had an average emotion recognition accuracy score of .50 ($SD = .26$), indicating that, on average, participants identified 50% of their partner's emotions accurately. The overall score on the PPI indicates the degree of psychopathic personality traits. The mean score for

participants on the PPI-R was 266.57 ($SD = 37.88$), suggesting relatively low levels of psychopathy in this sample (i.e., the mean score in an undergraduate sample was 269.9 and the mean score in a prison sample was 368.71; Anderson, Stanford, Wan, & Young, 2011; Chapman, Gremore, & Farmer, 2003). The means for the seven emotion recognition false alarms ranged from .17-.23, indicating that many emotions were, at some point, incorrectly identified during the emotion recognition task.

Bivariate Correlations

Bivariate correlations between CAPS scores, emotion recognition accuracies, PPI-R scores, and emotion recognition false alarms are displayed in Table 1. Contrary to the previously stated hypothesis, PTSD symptom severity was not significantly negatively correlated with emotion recognition accuracy ($r = -.05, ns$). Although I expected to find a relationship between both anger and fear false alarms and CAPS scores, results indicate that a significant correlation does not exist. Moreover, PTSD was not significantly correlated with any of the seven emotion recognition false alarms analyzed in this study. The fear, surprise, and happy false alarms were significantly correlated with emotion recognition accuracy ($r = -.28, p < .01$; $r = -.22, p < .05$; $r = -.32, p < .01$, respectively).

Moderation Analysis

In order to test whether the relationship between PTSD symptom severity and emotion recognition accuracy differs as a function of psychopathic personality traits, a moderation analysis was performed. The regression coefficients for the moderation analysis variables are displayed in Table 2. Results for the moderation analysis are also displayed in Figure 1. Contrary to the previously stated hypothesis, the inclusion of PPI scores did not significantly alter the

relationship between overall emotion recognition accuracy and CAPS scores, $B = .05$, $t(14) = .35$, *ns*.

Exploratory Analyses

The means, standard deviations, and correlations for the 12 PPI-R subscales are displayed in Table 3. Coldheartedness and blame externalization were significantly correlated with PTSD ($r = -.38$, $p < .01$ and $r = .36$, $p < .01$, respectively). Carefree nonplanfulness, deviant responding, fearlessness, fearless dominance, machiavellian egocentricity, rebellious nonconformity, self-centered impulsivity, social influence, stress immunity, and virtuous responding were not significantly correlated with PTSD. When examined separately, none of the PPI-R subscales served as moderators of the relationship between PTSD and emotion recognition accuracy.

Table 1

Descriptive Statistics and Correlations for PTSD, Emotion Recognition Accuracy, Psychopathy, and Emotion Recognition False Alarms

Variable	1.	2.	3.	<i>M</i>	<i>SD</i>
1. PTSD	--			35.23	24.09
2. Emotion recognition accuracy	-.05	--		0.50	0.26
3. Psychopathy	.00	-.05	--	266.57	37.88
Neutral false alarm	.03	-.05	.04	0.01	0.05
Happy false alarm	-.09	-.32*	.11	0.09	0.13
Sadness false alarm	-.11	-.17	.14	0.14	0.15
Disgust false alarm	-.03	-.10	.09	0.07	0.13
Anger false alarm	.13	.01	-.02	0.13	0.14
Fear false alarm	-.04	-.28**	-.13	0.07	0.13
Surprise false alarm	.02	-.22*	-.24	0.07	0.14

Notes. *N* = 90. **p* < .05 ***p* < .01

Table 2

Prediction of Emotion Recognition Accuracy by PTSD, Psychopathy, and the Interaction of PTSD and Psychopathy

Variable	B	SE B	β	<i>t</i>	<i>P</i>
PTSD	-0.001	.002	-.120	-0.872	.387
Psychopathy	0.000	.001	-.042	-.302	.764
PTSD x Psychopathy	1.71e-005	.000	.049	.354	.725

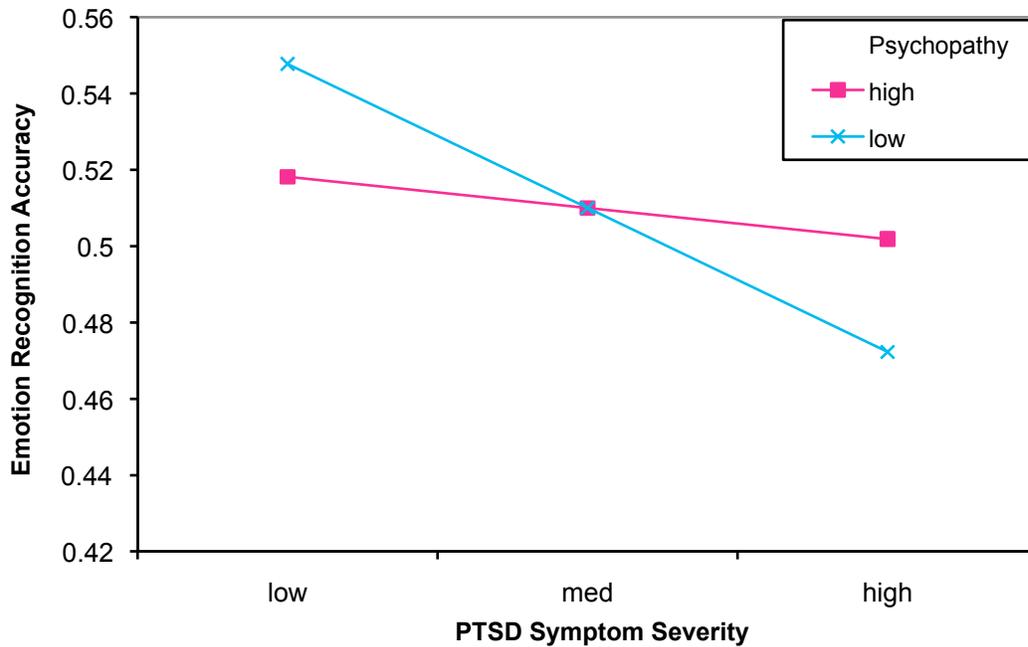
Notes. *N* = 56.

Table 3

Descriptive Statistics for PPI-R Subscales and Correlations With Study Variables

Variable	PTSD	Emotion Recognition	<i>M</i>	<i>SD</i>
Blame Externalization	.37**	-.06	22.95	9.06
Carefree Nonplanfulness	.11	.05	43.28	5.62
Coldheartedness	-.37**	-.06	39.85	5.73
Deviant Responding	-.03	.08	12.14	2.27
Fearlessness	-.18	-.09	18.22	7.42
Fearless Dominance	-.14	.01	85.02	13.22
Machiavellian Egocentricity	-.13	.04	22.90	8.34
Rebellious Nonconformity	.13	-.16	13.93	8.15
Self-Centered Impulsivity	.17	-.05	102.55	21.81
Social Influence	.08	.12	38.11	7.71
Stress Immunity	-.21	.02	28.94	5.41
Virtuous Responding	.03	.15	24.17	4.26

Notes. *N* = 56. **p* < .05 ***p* < .01

Figure 1

Moderation analysis examining the effect of psychopathy on the relationship between PTSD and emotion recognition accuracy.

Discussion

I did not find a significant relationship between PTSD and emotion recognition accuracy, nor was the relationship between the two variables moderated by psychopathy. Moreover, contrary to predictions, emotion recognition false alarms were not significantly associated with PTSD. However, results indicate that PTSD was significantly correlated with two aspects of psychopathy: coldheartedness and blame externalization. These findings will be further examined in the following sections.

PTSD and Emotion Recognition

I analyzed the relationship between PTSD and emotion recognition accuracy, which may play a role in the interpersonal difficulties often seen with PTSD. Participants with high PTSD

symptom severity were hypothesized to perform more poorly on the emotion recognition task assessing accuracy compared to those with low PTSD symptom severity, however, results indicate that there is no significant relationship between PTSD severity and emotion recognition accuracy. Moreover, I hypothesized that PTSD symptom severity would be positively correlated with negative emotion false alarms (e.g., fear, anger) rather than neutral or positive emotion false alarms (e.g., surprise, happy). Contrary to the hypothesis, the emotion recognition false alarms were not significantly correlated with PTSD symptom severity.

The emotion recognition task in this study has not been used previously, and therefore may be problematic in assessing emotion recognition accuracy for a variety of reasons. Freeman and colleagues (2009) tested emotion recognition accuracy using the Aprosodia Battery, which was developed to analyze the affective aspects of speech and communication, and found that participants with chronic PTSD performed more poorly compared to healthy subjects. During the Aprosodia Battery task, participants were asked to match acoustic recordings of six emotions (angry, disinterested, happy, sad, and surprised) with line drawings of faces expressing the different emotions. The emotion recognition task in this study included the use of participants' partners, whereas Freeman's emotion identification task asked participants to correctly match general faces expressing various emotions to emotional utterances with different tones. Therefore, in this study, the participant's intimate relationship with their partner may have played a role in the lack of relationship found between PTSD symptom severity and emotion recognition accuracy.

In addition, the emotion recognition task may not be valid due to the mechanisms used for data analysis; participants may have increased their probability of receiving an emotion recognition accuracy score of 1.00 for various reasons. When entering the data, research

assistants selected either one, two, three, or four emotions, based on the participant's responses to the variety of questions asked at each time interval. A participant who identified only one of their partner's emotions at one time interval would receive the same score of 1.00 as a participant who correctly identified up to four of their partner's emotions at one time interval. As a result, participants who reported more emotions for their partners had a greater chance of scoring a 1.00 for their emotion recognition accuracy based on probability. In fact, a participant who reported four emotions for their partner had a 57% chance of accurately identifying their partner's emotions, as there are only seven possible emotions in this study. Moreover, participants were permitted to select a minimum of one time interval and a maximum of seven time intervals for which they would need to report an emotion and/or thought. Therefore, a participant who identified his/her partner's emotions accurately at only one time interval received the same emotion recognition accuracy score of 1.00 as a participant who accurately identified their partner's emotions at up to seven time intervals. In summary, calculation of emotion recognition accuracy in this study may have inflated the overall accuracy of participants who reported more emotions and participants who selected fewer time intervals.

Although various methodological issues may exist in the current study, the findings seem to indicate there is no relationship between PTSD symptom severity and emotion recognition accuracy, at least in response to one's partner's emotional expressions. That is, participants with high PTSD symptom severity were able to recognize their partner's emotions as accurately as participants with low PTSD symptom severity. If participants in this study were engaged in relationships their partners before the participants developed PTSD, it is likely that their ability to recognize their partners' emotions before the beginning of their disorder remained, even after they were diagnosed with PTSD. In addition, as discussed earlier, individuals with PTSD often

exhibit difficulty in their interpersonal relationships due to emotional withdrawal and lack of intimacy. The current findings suggest that individuals with PTSD are not significantly impaired in recognizing their partner's emotions. As a result, individuals suffering from PTSD may recognize that their partners feel negative emotions due to relationship distress, but still remain emotionally detached for a variety of reasons. Partners of individuals with PTSD often feel lonely due to the lack of intimacy in the relationship, and these findings suggest that the individuals with PTSD may recognize these emotions in their partners, but still decide not to support them or not have the ability to support them. Moreover, individuals with PTSD are also likely to recognize when their partners feel positive emotions such as happy or surprise, throughout their relationship. Emotion recognition is an important component in strong interpersonal relationships, and it seems as though individuals with PTSD are able to recognize their partner's emotions, therefore, other factors may play a role in the interpersonal difficulties seen in individuals with PTSD.

The Role of Psychopathy in PTSD and Emotion Recognition

Psychopathy was hypothesized to moderate the relationship between PTSD and emotion recognition accuracy, such that participants with higher CAPS and PPI scores would score lower on emotion recognition accuracy. However, I found that psychopathy does not alter the relationship between PTSD and emotion recognition. As discussed earlier, previous studies indicate that individuals high in psychopathy exhibit impairments in emotion recognition. However, findings in this study suggest that participants high in psychopathy and high in PTSD symptom severity were not significantly impaired in recognizing their partner's emotions. According to the findings in this study, individuals with PTSD are not significantly impaired in recognizing their partner's emotions.

For my exploratory analyses, I examined the relationship between the various PPI subscales, PTSD severity, and emotion recognition accuracy. Blame externalization was significantly positively correlated with PTSD, meaning that participants with high CAPS scores were more likely to blame others for their misfortunes. This appears to be inconsistent with previous findings by Ullman, Filipas, Townsend, and Starzynski (2007), which suggested that PTSD symptoms are significantly correlated with victim self-blame, partially due to negative reactions from society. It may be that individuals with PTSD are prone to blame someone for negative events, whether that person is oneself or others. In addition, coldheartedness was significantly negatively correlated with PTSD, indicating that participants with higher CAPS scores displayed greater sympathy and sensitivity towards others. This seems inconsistent with previous research findings that implicate PTSD symptom severity as strongly correlated with social detachment (Holowka, Marx, Kaloupek, & Keane, 2011). Psychopathy was assessed using the PPI, which covers a vast range of personality traits, some of which overlap with symptoms of PTSD, and others that are quite contrary. Both PTSD and psychopathy result in poor attachment capabilities and difficulty creating and maintaining close relationships with others (MacDonald, Chamberlain, Long, & Flett, 1999; Taylor, 1998). On the other hand, PTSD symptoms and psychopathic personality traits also differ in a variety of ways. For example, individuals with PTSD often exhibit symptoms of avoidance, whereas individuals high in psychopathy are often grandiose and tend to manipulate others. Moreover, individuals with PTSD tend to score high on self-blame measures, whereas individuals high in psychopathy are likely to exhibit a strong lack of remorse (Holowka et al., 2011; Maibom, 2005). As a result, the PPI scores, which rate the degree of psychopathy based on all the known psychopathic personality traits, may not be significantly correlated with PTSD due to the differing symptoms. Nonetheless, certain aspects

of psychopathy that are similar to features of PTSD, such as emotional detachment and anger outbursts, may contribute to a relationship between PPI subscales and PTSD symptom severity.

Strengths and Limitations

This study had multiple strengths. Several measures were used that have been previously found to demonstrate high test-retest reliability and convergent validity (i.e., the CAPS and PPI). Therefore, the measures were fairly precise in measuring PTSD symptomatology and psychopathy, giving the results high credibility and allowing others to replicate the findings. Ninety individuals from the community participated in this study from a range of age groups, educational levels, and socioeconomic statuses, increasing the generalizability of the sample. Additionally, only a small amount of research has been previously published regarding the relationship between PTSD symptom severity and emotion recognition. Given the lack of previous research, this current study serves as a preliminary assessment of the association between PTSD and emotion recognition accuracy. Due to the interpersonal difficulties often associated with PTSD, it is important to consider the function of other factors related to PTSD, since individuals high in PTSD symptom severity are able to accurately recognize their partner's emotions, therefore, emotion recognition does not seem to play a role in this relationship.

Nonetheless, this study also had various weaknesses that have negative implications for the findings. The emotion recognition task in this study was a novel mechanism of assessing emotion recognition accuracy. Due to the ambiguities in the accuracy calculations previously stated, this assessment might contain methodological dysfunctions that alter the accuracy for emotion recognition. Contrary to the hypotheses, there was no significant relationship between PTSD and emotion recognition, and psychopathy did not moderate the relationship. Therefore, an alternative method of assessing emotion recognition accuracy may play a key role in finding

significant results that have been previously found when analyzing PTSD and emotion recognition. Additionally, although a fairly large sample was used in this study, most participants displayed mild PTSD symptoms. Participants with more severe PTSD may have given better insight into the relationship between PTSD symptom severity and emotion recognition accuracy. Therefore, these results are not necessarily generalizable to clinical populations with moderate to severe PTSD.

Directions for Future Research

I found that there is no significant relationship between PTSD and emotion recognition. It was hypothesized that the interpersonal difficulties often associated with PTSD would be related to deficits in emotion recognition. Although this relationship was not apparent in the current study, it is still important to assess the relationship between PTSD symptom severity and emotion recognition accuracy in future research due to the limitations of this study and the potential importance of emotion recognition accuracy in strengthening interpersonal relationships for individuals with PTSD. In future studies researchers should also investigate other factors that play a role in interpersonal relationships such as communication and intimacy factors. Results indicate that a significant relationship exists between PTSD, blame externalization, and cold-heartedness. Future research should test this relationship using various measures of blame externalization and cold-heartedness.

References

- Adolphs, R., Tranel, D., Damasio, H., & Damasio, A. (1994). Impaired recognition of emotion facial expressions following bilateral damage to the human amygdala. *Nature*, *372*, 669-672.
- Anderson, N. E., Stanford, M. S., Wan, L., & Young, K. A. (2011). High psychopathic trait females exhibit reduced startle potentiation and increased P3 amplitude. *Behavioral Sciences and the Law*, *29*, 649-666.
- Bauer, D., & Kosson, D. S. (2000). Psychopathy in incarcerated females: Prevalence rates and individual differences in personality and behavior. *Paper presented at the conference of the American Psychology–Law Society*, New Orleans, LA.
- Beck, J.G., Grant, D.M., Clapp, J.D., & Palyo, S.A. (2009). Understanding the interpersonal impact of trauma: Contributions of PTSD and depression. *Journal of Anxiety Disorders*, *23*, 443-450.
- Blair, R. J. R., Colledge, E., Murray, L., & Mitchell, D. G. (2001). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology*, *29*(6), 491–498.
- Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D. Charney, D. S., & Keane, T. M. (1995). The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress*, *8*, 75-90.
- Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD checklist. *Behaviour Research and Therapy*, *34*, 669-673.

- Breslau, N. (2009). The epidemiology of trauma, PTSD, and other posttrauma disorders. *Trauma, Violence, & Abuse, 10*(3), 198-210.
- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*, 748-766.
- Brunello, N., Davidson, J. R., Deahl, M., Kessler, R. C., Mendlewicz, J., Racagni, G., . . . Zohar, J. (2001). Posttraumatic stress disorder: diagnosis and epidemiology, comorbidity and social consequences, biology and treatment. *Neuropsychobiology, 43*, 150-162.
- Carton, J.S., Kessler, E.A., & Pape, C.L. (1999). Nonverbal decoding skills and relationship well-being in adults. *Journal of Nonverbal Behavior, 23*(1), 91-100.
- Chapman, A. L., Gremore, T. M., & Farmer, R. F. (2003). Psychometric analysis of the psychopathic personality inventory (PPI) with female inmates. *Journal of Personality Assessment, 80*(2), 164-172.
- Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annual Review of Psychology, 59*, 301-328.
- Cloitre, M., Miranda, R., Stovall-McClough, K.C., & Han, H. (2005). Beyond PTSD: Emotion regulation and interpersonal problems as predictors of functional impairment in survivors of childhood abuse. *Behavior Therapy, 36*, 119-124.
- Coid, J., & Ullrich, S. (2010). Antisocial personality disorder is on a continuum with psychopathy. *Comprehensive Psychiatry, 51*, 426-433.
- Crowson, J. J., Frueh, B. C., Beidel, D. C., & Turner, S. M. (1998). Self-reported symptoms of social anxiety in a sample of combat veterans with posttraumatic stress disorder. *Journal of Anxiety Disorders, 12*, 605-612.

- Digrande, L., Perrin, M. A., Thorpe, L. E., Thalji, L., Murphy, J., Wu, D., . . . Brackbill, R. M. (2008). Posttraumatic stress symptoms, PTSD, and risk factors among lower manhattan residents 2-3 years after the September 11, 2001 terrorist attacks. *Journal of Traumatic Stress, 21*(3), 264-273.
- Etkin, A., & Wager, T. D. (2007). Functional neuroimaging of anxiety: A meta-analysis of emotional processing in PTSD, social anxiety disorder, and specific phobia. *American Journal of Psychiatry, 164*, 1476-1488.
- Felmington, K.L., Bryant, R.A., & Gordon, E. (2003). Processing angry and neutral faces in post-traumatic stress disorder: an event-related potentials study. *NeuroReport, 14*(5), 777-780.
- Freeman, T. W., Hart, J., Kimbrell, T. & Ross, E. D. (2009). Comprehension of affective prosody in veterans with chronic posttraumatic stress disorder. *The Journal of Neuropsychiatry and Clinical Neuroscience, 21*, 52-58.
- Galovski, T., & Lyons, J. A. (2004). Psychological sequelae of combat violence: A review of the impact of PTSD on the veteran's family and possible interventions. *Aggression and Violence Behavior, 9*, 477-501.
- Goodwin, R. D., & Hamilton, S. P. (2003). Lifetime comorbidity of antisocial personality disorder and anxiety disorders among adults in the community. *Psychiatry Research, 117*, 159-166.
- Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1*, 6-17.
- Holowka, D. W., Marx, B. P., Kaloupek, D. G., & Keane, T. M. (2011). PTSD Symptoms

- Among Male Vietnam Veterans: Prevalence and Associations With Diagnostic Status. *Psychological Trauma: Theory, Research, Practice, and Policy*. Advance online publication.
- Kessler, P.A., & Wittchen, S.S. (2000). Traumatic events and posttraumatic stress disorder in the community: prevalence, risk factors and comorbidity. *Acta Psychiatrica Scandinavica, 101*, 46-59.
- Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C.B. (1995). Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry, 52*, 1048-1060.
- Kornreich, C., & Philippot, P. (2006). Dysfunctions of facial emotion recognition in adult neuropsychiatric disorders: Influence on interpersonal difficulties. *Psychologica Belgica, 46*, 79-98.
- Kosson, D. S., Suchy, Y., Mayer, A. R., & Libby, J. (2002). Facial affect recognition in criminal psychopaths. *Emotion, 2*(4), 398-411.
- Kubany, E. S., Haynes, S. N., Leisen, M. B., Owens, J. A., Kaplan, A. S. . . Burns, K. (2000). Development and preliminary validation of a brief broad-spectrum measure of trauma exposure: the Traumatic Life Events Questionnaire. *Psychological Assessment, 12*, 210-224.
- Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. *Journal of Personality Assessment, 66*(3), 488-524.

- MacDonald, C., Chamberlain, K., Long, N., & Flett, R. (1999). Posttraumatic stress disorder and interpersonal functioning in Vietnam War veterans: A mediational model. *Journal of Traumatic Stress, 12*(4), 701-707.
- Maibom, H. L. (2005). Moral unreason: The case of psychopathy. *Mind & Language, 20*(2), 237-257.
- Mendlowicz, M.V., & Stein, M.B. (2000). Quality of life in individuals with anxiety disorders. *American Journal of Psychiatry, 157*, 669-682.
- Nietlisbach, G., & Maercker, A. (2009). Social cognition and interpersonal impairments in trauma survivors with PTSD. *Journal of Aggression, Maltreatment & Trauma, 18*, 382-402.
- Olatunji, B.O., Cisler, J.M., & Tolin, D.F. (2006). Quality of life in the anxiety disorders: A meta-analytic review. *Clinical Psychology Review, 27*, 572-581.
- Rauch, S. L., Whalen, P. J., Shin, L. M., McNerney, S. C., Macklin, M. L., Lasko, N. B., . . . Pitman, R. K. (2000). Exaggerated amygdala response to masked facial stimuli in posttraumatic stress disorder: A functional MRI study. *Biological Psychiatry, 47*, 769-776.
- Renaud, E. F. (2008). The attachment characteristics of combat veterans with PTSD. *Traumatology, 14*(3), 1-12.
- Shin, L. M., Wright, C. I., Cannistraro, P. A., Wedig, M. M., McMullin, K., Martis, B., . . . Rauch, S. L. (2005). A functional magnetic resonance imaging study of amygdala and medial prefrontal cortex responses to overtly presented fearful faces in posttraumatic stress disorder. *Archives of General Psychiatry, 62*, 273-281.

Solomon, Z. (1988). The effect of combat-related posttraumatic stress disorder on the family.

Psychiatry: Interpersonal and Biological Processes, 51, 323-329.

Solomon, Z., Dekel, R., & Zerach, G. (2008). The relationships between posttraumatic stress symptom clusters and marital intimacy among war veterans. *Journal of Family*

Psychology, 22, 659-666.

Tarsh, M. J., & Royston, C. (1985). A follow-up study of accident neurosis. *British Journal of*

Psychiatry, 146, 18-25.

Taylor, M. C. (1998). Psychopathy and attachment in a group of incarcerated females.

Ullman, S. E., Filipas, H. H., Townsend, S. M., & Starzynski, L. L. (2007). Psychosocial

correlates of PTSD symptom severity in sexual assault survivors. *Journal of Traumatic Stress*, 20(5), 821-831.

Weisberg, R.B., Bruce, S.E., Machan, J.T., Kessler, R.C., Culpepper, L., & Keller, M.B. (2002).

Nonpsychiatric illness among primary care patients with trauma histories and posttraumatic stress disorder. *Psychiatric Services*, 53, 848-854.

Yang, Y., DPhil, A. R., Narr, K. L., Colletti, P., Toga, A. W. (2009). Localization of

deformations within the amygdala in individuals with psychopathy. *Arch Gen Psychiatry*, 66(9), 986-994.

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Summary

Highly diligent and reliable young professional with great interpersonal communication skills and many team player qualities. I am also a hardworking and goal-oriented person with a proven track record of successfully completing every task I have been assigned.

Objective

To submit an honors thesis in the Psychology Department for Schreyer Honors College

Education

Pennsylvania State University Schreyer's Honors College, State College, PA *Expected B.S. in 2012*
Major in Neuropsychology, Minor in Biology **Dean's List 2008, 2009 & 2011**

Relevant Courses:

- Calculus I
- Biochemistry & Physiology
- General Chemistry I & II
- Organic Chemistry I & II
- Neuropsychology
- Abnormal Psychology
- Developmental Psychology
- Human Sexuality

Vice President of Premedical Society

Member of AED, National Health Pre-Professional Honors Society

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East Brunswick High School, New Jersey, HS Diploma

Jun. 2008

Research Experience

Evolutionary Biology Research Lab, State College, PA

Jan. 2010 - Present

Research Assistant

- ✓ Analyzed scientific journal articles for species divergence times and tabulated the dates and species names in Excel to be used for the time-tree coding database now recognized as www.timetree.org, a website used for determining the time (in millions of years) when two species diverged from each other

Relationships and Stress Research Lab, State College, PA

Feb. 2009 - Present

Research Assistant

- ✓ Assisted in running an 8-hour protocol with participants exhibiting Posttraumatic Stress Disorder (PTSD) symptoms in order to research factors, such as cognitive reasoning, that might influence violent behavior in relationships
- ✓ Computed syntax in SPSS for various study variables and entered data for the Couples Study
- ✓ Presented journal articles pertaining to various aspects of the study, particularly PTSD

Languages and Skills

- ✓ Fluent in both English and Russian
- ✓ Skilled with Microsoft Office: Word, Excel, and PPT
- ✓ Skilled with Adobe software including PDF and Photoshop
- ✓ Had experience with database input and design, e.g. SPSS