Understanding the interpersonal impact of trauma: Contributions of PTSD and depression

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Abstract

To build on the growing literature on interpersonal relationships among individuals with PTSD, this study examined the separate influences of PTSD symptoms and depression on functioning with friends, romantic partners, and family. To examine the influence of measurement, both interviewer-rated assessment of interpersonal functioning and self-reported assessment of perceived social support were included. The sample included 109 community members who sought help for mental health problems in the aftermath of a serious motor vehicle accident. Building on previous research, hierarchical regression models were used to examine the impact of re-experiencing, avoidance, emotional numbing, and hyperarousal on relationship functioning, followed by depression. Results suggest that assessment modality makes a difference in understanding factors contributing to interpersonal strain. When assessed by an interviewer, depression seems to play a larger role in interpersonal strain, relative to PTSD symptoms. When assessed via self-reported perceived social support, weaker associations were observed, which highlighted the role of emotional numbing. Results are discussed in light of the possible role that PTSD comorbidity with depression plays in interpersonal functioning following a traumatic event, with implications for future research.

Keywords

Posttraumatic Stress Disorder; Depression; Interpersonal functioning; Motor vehicle accidents

For several decades, it has been recognized that patients with posttraumatic stress disorder (PTSD) have a reduced quality of life (QOL; Mendlowicz & Stein, 2000). A recent meta-analysis suggests that PTSD exerts a particularly large negative impact on physical health, social functioning, and relationships with close others, relative to other anxiety disorders (Olatunji, Cisler, & Tolin, 2007). Although the association between PTSD and impaired functioning has been clearly established, little research exists to probe the specific nature of this association. As outlined by Olatunji et al., (2007), only a handful of studies have been published that examine specific domains of quality of life in individuals diagnosed with PTSD. Current models of PTSD have emphasized how different symptom clusters influence the development and course of the disorder (e.g., Brewin, Dalgleish, & Joseph, 1996; Ehlers &

Clark, 2000) and as such, it is fitting to begin to examine how specific facets of the disorder contribute to one domain of quality of life, specifically interpersonal functioning. In particular, focus on close relationships using both interview and self-report measures is an important next step in understanding the interpersonal cost of trauma and PTSD.

In this report, we focus on close interpersonal relationships in the aftermath of a trauma for three reasons. First, social support following a traumatic event has been shown in numerous studies to be negatively associated with PTSD symptoms (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Based on 11 studies (combined $n = 3,537$), Ozer et al. (2003) report the average weighted correlation between perceived social support and PTSD symptoms to be −.28. However, it is unclear if this association reflects subjective perceptions of social support and/or more objectively indexed facets of relationship functioning.

In this report, we will compare interviewer-rated and self-reported measures of interpersonal functioning, specifically functioning with close friends, within one's broader social circle, with family members, and with one's romantic partner. The use of both interviewer-rated and self-report measures of social support has the advantage of providing multiple perspectives. In particular, objective indicators of social support may reflect different dimensions of interpersonal functioning (such as mutuality, stability, and dependability), relative to self-reported measures, which capture more subjective impressions of perceived social support. In this way, we hoped to add to existing knowledge about the impact of PTSD on close relationships.

A second reason for the focus on close relationships stems from growing interest in the interpersonal features of mental health problems, including disorders such as schizophrenia, depression, and personality disorders (e.g., Coyne, 1976; Hooley, 1998; Leff & Vaughn, 1985). To date, PTSD has not received significant attention in this regard, despite recognition of the negative interpersonal impact of the disorder. In particular, related literature on depression has documented the reciprocity that exists between psychiatric symptoms, the responses that these elicit from close others, and how these interpersonal reactions influence additional symptomatology. For example, Strack and Coyne (1983) noted that individuals who interacted with depressed target subjects reported decreased mood and a greater sense of rejection of the depressed person. Contrary to the authors' hypothesis, these individuals were willing to share their negative perceptions with the target subject, who correctly anticipated rejection and reciprocated. One could easily hypothesize that specific PTSD symptoms such as emotional numbing, irritability/anger, and detachment from others could evoke negative responses from close others. In this report, we sought to examine the first step in this process, specifically the impact of PTSD symptoms on relationships with close others. Third, preliminary studies suggest particular disruption in relationships with close others among individuals with PTSD (e.g., Verbosky & Ryan, 1988). Although there is on-going discussion of whether this disruption is the consequence of post-trauma symptomatology or whether lack of support from close others increases the likelihood of developing PTSD symptoms (e.g., King, Taft, King, Hammond, & Stone, 2006), sharper focus on the interpersonal functioning of individuals with PTSD could be helpful for advancing our understanding of the costs of trauma exposure.

Historically, most studies in this area have examined combat veterans to explore the effect of PTSD on romantic relationships and family functioning, with findings suggesting increased stress, more marital dysfunction, and greater difficulties with parenting among families of veterans with PTSD relative to those without (e.g., Jordan, et al., 1992; MacDonald, Chamberlain, Long, & Flett, 1999; Verbosky & Ryan, 1988). In an effort to explore this issue more closely, Riggs, Byrne, Weathers, and Litz (1998) considered the association between PTSD symptom clusters (re-experiencing, avoidance/numbing, and physiological

hyperarousal) and self-reported marital quality in 50 Vietnam veterans and their romantic partners. Results suggested that avoidance and numbing symptoms showed the strongest negative correlation with marital quality in this sample, relative to the other two symptoms clusters. Although these reports have provided valuable insight into the nature of interpersonal problems experienced by combat-exposed veterans and their spouses, several limitations are present in this literature. To begin, these studies overwhelmingly focus on males with PTSD, which limits our understanding of interpersonal functioning among both sexes. As well, in many of these reports, a significant amount of time had elapsed between trauma exposure and assessment, which could influence the data in a number of ways (e.g., development of more severe interpersonal problems as the chronicity of PTSD symptoms increased, memory bias). Third and perhaps most important to the current study, these reports have not considered the impact of co-morbid depression. As noted in epidemiological surveys (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kessler, et al., 2005), depression frequently co-occurs with PTSD. Importantly, depression has been associated with significant interpersonal dysfunction, particularly within close relationships (e.g., Coyne, 1976, Davila, Hammen, Burge, Paley, & Daley, 1995). It is possible that comorbid depressive symptoms could influence the interpersonal effects of PTSD symptoms. In particular, given concern about overlap between PTSD symptoms and dysphoria (Simms, Watson, & Doebbeling, 2002), it is possible that extant studies which document interpersonal problems in PTSD are in essence, capturing the negative interpersonal cost of depression. To date, no study has included both PTSD symptoms and depression in the examination of functioning with friends, family, and romantic partners. Thus, consideration of the influence of depression alongside PTSD symptoms is important at this stage of the literature.

The current study was designed to build on the growing literature on interpersonal functioning among individuals with PTSD. Individuals who had experienced serious motor vehicle accidents (MVAs) served as the sample, recruited from the community. In the one previously published study examining psychosocial functioning with this population, Kuhn, Blanchard, and Hickling (2003) noted that individuals who had experienced serious MVAs reported the same types of impairments as combat veterans, based on the LIFE Base interview (Keller et al., 1987). Kuhn and colleagues (2003) used two separate samples of MVA survivors. In both samples, numbing symptoms emerged as the most consistent predictor of psychosocial impairment in recreation, family, and friend domains, although re-experiencing, avoidance, and hyperarousal symptoms did show significant associations as well. These findings were used as the starting point for the current study. In particular, we were interested in the influences of PTSD symptoms and depression on interpersonal functioning, specifically close friends, overall social functioning, romantic partners, and family. In order to examine the influence of assessment modality, we included both interview-coded and self-reported measures of relationship functioning/social support. Following Kuhn et al., (2003), four symptom clusters of PTSD (re-experiencing, avoidance, emotional numbing, and hyperarousal symptoms) were examined. We hypothesized that numbing symptoms and depression would exert negative effects on functioning with friends, family, and romantic partners, given that both types of symptoms include reduced affect and diminished connection with others. Additionally, based on Kuhn et al.'s (2003) findings, we speculated that re-experiencing and hyperarousal symptoms would show effects in the prediction of interpersonal functioning, separate from the effects of depression. Because no previous report has included both interview-coded and self-report measures of social support, this feature of the current study was regarded as exploratory.

Method

Participants

The sample included 109 individuals who sought assessment and possible treatment for mental health problems following their MVA. Participants were recruited from the community, using flyers distributed at pain clinics, a local trauma center, physical therapists, specialists in rehabilitation and internal medicine, gyms, and libraries, as well as public service announcements. Individuals qualified for assessment if they had experienced a MVA involving actual or threatened death or serious injury and their emotional response included intense fear, helplessness, horror, or the perception that they would die (American Psychiatric Association, 2000). These features were evaluated using the MVA Interview (see below). Individuals involved in accidents that did not satisfy Criterion A of the diagnostic criteria for PTSD were not evaluated. The sample included 83 women (76.1 %) and 26 men (23.9%) and ranged in age from 18 to 69 (mean 44.2, SD 12.92). The majority of participants (85%, $n = 93$) were Caucasian, 11 (10%) were African American, 3 (3%) were Hispanic, 1 (1%) was Native American, and 1 (1%) listed ethnic membership as "other". The majority of patients ($n = 88$, 82%) reported on-going pain complaints from injuries sustained during the MVA. In these cases, pain caused significant lifestyle limitations (e.g., inability to work), impairment (e.g., use of prescription pain medications at least 3 days/week), or significant distress (e.g., continued health care utilization for pain). Approximately half of the sample was married or co-habitating (47%, $n = 51$), with 30% being single ($n = 33$), 6% separated ($n = 7$), 15% divorced ($n = 16$), and 2% widowed ($n = 2$). Average elapsed time after the MVA was 38.5 months (SD 77.76) with a median of 12 months. The majority of the sample ($n = 78$, 72%) was engaged in MVA-related litigation. Individuals presenting with neurological impairment, substance dependence and abuse in the six months preceding the assessment, psychotic symptoms, or acute suicidality were excluded. All participants provided informed consent prior to participation.

Measures

PTSD-related measures—The MVA Interview was administered (Blanchard & Hickling, 1997), which includes questions about the individual's emotional response to the accident (feelings of fear, helplessness, danger, and perceptions that they might die) to determine whether the MVA qualified as a traumatic event. Each of these responses to the MVA was rated on a 0–100 Likert scale, where 0 = "not at all" and 100 = "extreme," with a score of 50 or higher on ratings of fear, helplessness, or horror indicating that the MVA was experienced as traumatic.

PTSD symptomatology was assessed using the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990), a structured interview that assesses PTSD symptoms identified in the current DSM-IV. The CAPS includes standardized questions to determine frequency and intensity of each symptom. Symptoms were assessed in the preceding month, using a 5-point Likert scale (e.g., 0 indicates "the symptom does not occur or does not cause distress" and 4 indicates "the symptom occurs nearly every day or causes extreme distress and discomfort"). In this report, four scores were computed, each based on summation of the frequency and intensity ratings for each symptom: Reexperiencing, Avoidance, Numbing, and Hyperarousal[1]. In particular, the Reexperiencing cluster included intrusive recollections of the MVA, distressing dreams, flashbacks, psychological distress and physiological reactivity as a result of exposure to cues that symbolize the MVA. The Avoidance cluster included efforts to avoid thoughts, feelings,

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[1]Although there has been some discussion in the literature concerning how best to form a cluster of symptoms pertaining to numbing (e.g., Foa, Riggs, & Gershuny, 1995; King, Leskin, King, & Weathers, 1998; Taylor, Kuch, Koch, Crockett, & Passey, 1998), we elected to include all possible DSM-based numbing symptoms so that our results could be compared with those of Kuhn et al. (2003).

or conversations associated with the MVA and efforts to avoid activities, places, and people associated with the MVA. The Numbing cluster included inability to recall important aspects of the MVA, diminished interest in significant activities, feelings of detachment from others, restricted range of affect, and a sense of foreshortened future. Hyperarousal symptoms included sleep difficulties, irritability or anger, difficulty concentrating, hypervigilance, and exaggerated startle response. Probes were added to the interview to determine whether each PTSD symptom was attributable to pain (e.g., if a patient reported difficulty sleeping, the clinician assessed whether this symptom was due to pain. If so, the symptom was not scored on the CAPS). Sixty-six members of the sample (61%) met diagnostic criteria for PTSD, based on the CAPS.

The CAPS was administered by trained clinicians who were advanced psychology doctoral students. As noted in previous reports involving larger samples (e.g., J. G. Beck et al., 2008), inter-rater agreement for PTSD is good ($k = 0.81$) based upon independent viewing of randomly selected videotaped interviews. As reviewed by Weathers, Keane, and Davidson (2001) the CAPS has excellent support for its reliability, with alpha coefficients generally ranging from .64 to .88. Two to three day test-retest reliability was found to range from .78 to .87 (Weathers et al., 2001). Of particular importance in this study, the CAPS has been shown to be sensitive to the detection of PTSD in individuals following a MVA (Blanchard & Hickling, 1997).

Depression measure—The Beck Depression Inventory –II (BDI-II; A. T. Beck, Steer, & Brown, 1996) was administered to assess level of depressive symptoms in the previous week. The 21-items of this measure are rated on a 0–3 scale, with higher scores indicating greater depression. One-week test-retest reliability was demonstrated to be 0.93 among outpatients (A. Beck et al., 1996) and the scale appears to be highly reliable with an alpha coefficient of .93 for college samples and .92 for psychiatric samples. The BDI-II has been shown to correlate highly with other measures of depression (Steer & Clark, 1997), supporting its construct validity. In considering the use of the BDI-II with this sample where chronic pain is often present (e.g., Blanchard et al., 1995), one choice is to remove somatic items when scoring the instrument. However, this procedure did not improve accuracy of an earlier version of the scale (e.g., Geisser, Roth, & Robinson, 1997). To facilitate comparison of the current data with previously published studies, the original scoring method was used. Guidelines provided by A.T. Beck et al., (1996) suggest that scores of 17 or less can be considered as minimal to mild levels of depression, while scores of 18 to 29 indicate moderate depression and scores of 30 to 63 suggest severe depression. Following these guidelines, 39.3% ($n = 42$) and 20.6% (n = 22) of the sample reported moderate and severe levels of depression, respectively.

Interpersonal functioning—To assess interpersonal functioning and social support, both interviewer and self-report measures were used. The interviewer measure was an adapted version of the Chronic Stress Interview (CSI) developed by Hammen, et al. (1987, see also Davila, et al., 1995). This interview probes four domains of interpersonal functioning: close friendships, social life, romantic relationships, and family relationships. Participants were asked to describe the state of each domain in the previous 6 months. For individuals whose MVAs occurred during this interval, interpersonal functioning was assessed from the point of the accident onward. Within each domain, participants were asked about the extent to which relationships were close, confiding, supportive, dependable, mutual, stable, and appropriate in conflict resolution. Based on these descriptions, the interviewer rated each relationship domain on a 5-point scale, with behaviorally specific anchors (on each scale, a rating of 1 indicated very poor relationship functioning, whereas a rating of 5 indicated exceptional relationship functioning that was mutually satisfying, reciprocal, trustworthy, stable, and included mutual disclosure in many areas). Ratings focused on reports of actual behaviors and interactions, not on participants' emotional reactions to their circumstances. The CSI was administered by an advanced doctoral student who had considerable training with this interview. All interviews

were videotaped and 35% (*n*= 39) were randomly selected and reviewed by an independent rater to establish reliability. Inter-rater agreement, determined via interclass correlations, was as follows: Friendship *r* = .96, Social Life *r* = .90, Romantic relationship *r* = .85, and Family *r* = .65. Previous studies have established the validity of this interview as a measure of interpersonal stress (Davila et al., 1995; Hammen et al., 1987). At present, no norms exist for adult community samples for the CSI.

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) was used as a self-report measure of interpersonal functioning/social support. The MSPSS is a 12-item scale designed to assess three domains of perceived social support – support from friends, from family, and from one's significant other. Each item is rated on a 1 to 7 Likert scale, with higher scores indicating greater support. The scale may be scored to yield three subscores (Friends, Family, Significant Others) which can be summed to yield a Global support score. Support has been provided for good internal consistency for each of the subscales (Friends, α = .93–.94, Family, α = .92, and Significant Others, α = .93–.94) in student and psychiatric samples (Clara, Cox, Enns, Murray, & Torgrudc, 2003). A number of reports support the three-factor structure (e.g., Clara et al., 2003, Zimet, Powell, Farley, Werkman, & Berkoff, 1990) and support for the convergent validity of the MSPSS appears good (e.g., Clara et al., 2003, Cecil, Stanley, Carrion, & Swann, 1995). Norms drawn from a diverse community sample suggest an average family subscale score of 5.31 (SD 1.46), an average friend subscale score of 5.50 (SD 1.25), and an average significant other subscale score of 5.94 (SD 1.34; Dahlem, Zimet, & Walker, 1991). As noted in Table 1, the current sample reported scores on the family and friend subscales that were similar to these obtained norms but reported somewhat lower perceived support from significant others.

Procedure

All procedures were reviewed by the Institutional Review Board at The University at Buffalo – SUNY. Each participant was interviewed individually, first with the MVA interview, the CAPS, and an additional interview that was not included in the present report. The participant completed a self-report battery that included the MSPSS and returned for a second session, during which the CSI was administered by an independent evaluator who was unaware of any information that had been provided during the first appointment.

Data Analytic Approach

Because previous work has highlighted the unique role of PTSD symptom clusters, our analytic approach incorporated PTSD clusters and depression in each analysis. Given prior research suggesting that PTSD is best represented dimensionally rather than categorically (Ruscio, Ruscio, & Keane, 2002), we did not limit these analyses to individuals with diagnosable PTSD. To begin, we examined zero-order correlations to document the bivariate associations among the PTSD cluster scores, depression, and each measure of interpersonal functioning. Second, in order to examine the separate effects of PTSD and depression when considered together, hierarchical regression models were conducted. For the CSI, four models were run, predicting functioning with close friends, broader social functioning, with family members, and with one's romantic partner, respectively. For the MSPSS, three models were run, predicting functioning with friends, family, and one's significant other. For each model, the four PTSD clusters were entered in the first step. Depression was entered in the second step, in order to examine if specific PTSD clusters would continue to predict variance in the interpersonal functioning variables once depression was considered.

Results

The data were evaluated for the presence of univariate and multivariate outliers and none were detected. Additionally, skew and kurtosis values were examined. All were in the normal range (i.e., skew values less than 2, kurtosis values less than 4, Tabachnick & Fidell, 2001), suggesting that the data exhibited normality.

Table 1 presents the zero-order correlations and the means and standard deviations of the variables. As can be seen, depression showed significant negative correlations with CSI scores reflecting functioning with close friends, overall social life, and with one's romantic partner, as well as MSPSS scores reflecting perceived support from one's significant other. Of the PTSD symptom clusters, only hyperarousal showed significant negative correlations with CSI scores reflecting functioning with close friends and with overall social life. Contrary to hypothesis, emotional numbing and re-experiencing symptom clusters did not show significant bivariate correlations with interpersonal functioning in any of the four domains on the CSI. On the MSPSS, significant negative associations were noted between the friends and significant other subscales and emotional numbing. A significant negative correlation also was noted between the friend subscale and hyperarousal. No significant associations were noted between any of the three MSPSS scales and the re-experiencing and avoidance symptom clusters.

What are the separate effects of PTSD symptom clusters and depression on interviewer-rated relationship functioning?

A series of hierarchical regression models was run using the four CSI scales, to address this question. The four PTSD symptom clusters were entered in the first step, with BDI scores entered in the second step. Results from these four models are shown in Table 2. Within the model predicting functioning with best friends, hyperarousal symptoms emerged as the only significant negative predictor in step one, indicating that increased hyperarousal symptoms were associated with greater strain within relationships with best friends. When depression was added in step two, it emerged as a significant negative predictor as well. In step two, re-experiencing emerged as a significant positive predictor, suggesting a suppressor effect (Tzelgov & Henik, 1991). In particular, once accounting for the variance explained by depressive symptoms, re-experiencing symptoms were associated with improved functioning with best friends. Considering the model predicting overall social functioning, the first step did not yield any significant predictors. When depression was added in step two, it was significantly negatively associated with social functioning. Within the model predicting functioning with romantic partners, no significant effects emerged in the first step. When depression was added in step two, it again emerged as a significant negative predictor of relationship functioning. As well, numbing emerged as a significant positive predictor at this step, indicating a suppressor effect. No significant effects were found within the model predicting functioning with family members, although a marginal association ($p = .08$) was noted in step two, indicating a negative association between depression and functioning with family.

What are the separate effects of PTSD symptom clusters and depression on self-rated social support?

A series of hierarchical regression models was run using the three MSPSS scales, to address this question. As with the previous analyses, the four PTSD symptom clusters were entered in the first step, with BDI scores entered in the second step. Results from these three models are shown in Table 3. Within the model predicting functioning with friends, emotional numbing symptoms emerged as the only significant negative predictor in step one, indicating that increased numbing symptoms were associated with less perceived social support within relationships with friends. When depression was added in step two, it emerged as a significant

negative predictor as well. Within the model predicting perceived social support with romantic partners, a marginal effect was noted in the first step. Examination of individual PTSD symptoms indicated that emotional numbing showed a significant negative association with perceived support from romantic partners while hyperarousal showed a marginal positive association ($p = .07$). When depression was added in the second step, both of these associations were marginal (emotional numbing, p = .08 and hyperarousal, $p = .06$). As with the CSI, no significant effects were found within the model predicting perceived social support with family members.[2]

Discussion

This study examined the separate influences of PTSD symptoms and depression on interpersonal functioning with friends, romantic partners, and family. Building on previous research, hierarchical models were tested in which the four PTSD symptoms clusters were entered in the first step, followed by depression in the second step. To examine the influence of assessment modality, interpersonal functioning was evaluated with both an interviewer-administered scale, which quantified relationship functioning based on behavioral indicators, and a self-report measure, which quantified relationship functioning based on perceived social support. Based on the interview-administered measure, the current findings suggest that hyperarousal symptoms are the most salient among the PTSD symptom clusters in their negative effect on interpersonal functioning. However, depression appears to be a more robust factor in interviewer-assessed interpersonal strain, relative to PTSD symptoms. Across the four models that were examined using the interview measure, depression was consistently associated with negative interpersonal functioning. Thus, using interviewer-assessed interpersonal functioning, depression appears to account for a larger share of the variance in distress, relative to PTSD symptoms. Based on the self-report measure, the current findings suggest that emotional numbing, depression, and to a lesser extent, hyperarousal symptoms are the more salient symptoms in their negative effect on perceived social support. Although the model examining functioning with friends reached statistical significance, it is notable that the model examining functioning with one's romantic partner only reached marginal significance, using the self-reported measure. Thus, it appears that assessment modality is relevant in considering the impact of PTSD symptoms and depression on interpersonal functioning in the aftermath of a traumatic event.

In considering these findings, several issues are salient. First, it is notable that somewhat different results were found with interviewer versus self-report measures. In particular, the Chronic Stress Interview is designed to disentangle general distress from specific facets of relationship functioning within each interpersonal domain. As such, it represents an objective assessment of interpersonal functioning, which captures dimensions such as supportiveness, closeness, mutuality, and conflict resolution. In contrast, the MSPSS is intended to reflect perceived social support and as such, is a more subjective assessment. In this report, we did not conceptualize these measures as tapping the same construct, recognizing that the construct of social support is multi-dimensional (Charuvastra & Cloitre, 2008). Importantly, the models involving interviewer-assessed interpersonal functioning suggested that depression is a more salient influence in relationship difficulties, relative to PTSD symptoms. In contrast, the models involving self-reported perceived social support illustrated weaker effects overall, with only the model predicting perceived support from friends reaching conventional standards of statistical significance. Within these analyses, emotional numbing appeared salient in its negative effect on perceived social support. The current report may help to augment previous

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[2]Following the suggestion of a reviewer, we conducted these analyses using only the subsample with diagnosable PTSD ($n = 61$). Recognizing that these analyses are under-powered, it is notable that the effects which had the largest effect sizes with the entire sample remained significant with only diagnosable patients.

findings, in that when a deliberate effort is made to disentangle general distress from specific facets of relationship functioning, the negative impact of PTSD symptoms appears substantially smaller, relative to depression. When relying on self-report assessment, emotional numbing appears salient in the prediction of perceived lack of social support, much as noted in previous reports (e.g. Kuhn et al., 2003, Riggs et al., 1998).

Second, contrary to previous results reported by Olatunji et al. (2007), no significant effects were noted for family functioning with the MSPSS and a marginal trend was observed with the CSI, suggesting again the importance of methodology in this literature. Despite clinical reports of disrupted functioning among families of individuals diagnosed with PTSD (e.g., Nachshoni & Singer, 2006), the present report failed to note significant effects of symptoms in this domain. Although many possibilities exist for this null finding, it is notable that Olatunji et al. (2007) grouped romantic relationship and family functioning together which conceivably could explain differences with the present report. Third, several unexpected suppressor effects were noted within the current results. Because no previous report has included PTSD symptoms and depression within the same analysis, these results indicate that once variance which is attributable to depression is accounted for, PTSD symptoms may have an unexpected beneficial impact on functioning with best friends and with romantic partners. Clearly, these findings deserve replication, particularly given the many possibilities that one must consider when addressing suppression effects in hierarchical regression (Tzelgov & Henik, 1991). Fourth, it is crucial to recognize that these data are cross-sectional in nature. In particular, it is possible that if one followed recent trauma survivors longitudinally, a different pattern of associations between PTSD symptoms, depression, and interpersonal functioning would emerge. In many respects, use of a longitudinal design represents the next step in research of this nature.

Like most empirical studies, the current report has a number of limitations. Relative to related studies in the literature, the sample of this report is somewhat restricted with respect to ethnicity, which may limit the extent to which results can be generalized. Moreover, the small number of male participants limits these results as well. Future studies would be well-advised to recruit more diverse samples, particularly in order to expand our understanding of the influence of PTSD and depression among minority populations and to pursue possible sex differences. Additionally, although the BDI-II is a well-respected measure of depression, it may be preferable to use a semi-structured interview in future studies, in order to assess clinical levels of depression. Moreover, determination of family functioning with the CSI can be difficult with middle-aged adults, owing to age-related changes in independence and autonomy as well as changing roles (e.g., becoming the caretaker for one's elderly parents). This difficulty was reflected in lower interrater reliability, relative to other domains assessed by the CSI. Future reports may wish to consider alternate interview measures of interpersonal functioning that are better suited to a range of adult populations.

PTSD is but one possible mental health outcome following a trauma, with depression being another common problem (e.g., Kessler et al., 1995, 2005). As research extends further into this area, consideration of comorbid conditions is an important step, particularly given efforts to understand the psychopathology of post-trauma mental health problems. As a preliminary step in this direction, this report examined the separate influences of PTSD symptom clusters and depression on interpersonal functioning with friends, romantic partners, and family, using both interviewer-rated and self-reported assessment. Results suggest that assessment modality makes a difference in understanding the contributing factors to interpersonal strain. When assessed by an interviewer, depression seems to play a larger role in interpersonal strain, relative to PTSD symptoms. When assessed via self-reported perceived social support, weaker associations were observed, which highlighted the role of emotional numbing. These findings add to the growing collection of studies documenting the negative interpersonal cost of traumatic events.

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Table 1

Correlation Between the Variables with Means and Standard Deviations.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Reexperiencing – CAPS												
2. Avoidance – CAPS	.65**											
3. Numbing – CAPS	.46**	.38**										
4. Hyperarousal – CAPS	.56**	.47**	.53**									
5. BDI-II	.35**	.26**	.47**	.33**								
6. Friends – CSI	.08	.10	−.13	−.19*	−.36**							
7. Social Life – CSI	−.14	−.09	−.16	−.22*	−.39**	.57**						
8. Romantic – CSI	.04	.09	.15	.11	−.20*	.15	.28**					
9. Family – CSI	.00	.02	.04	−.03	−.15	.37**	.24*	.18†				
10. Friends – MSPSS	−.14	−.05	−.33**	−.20*	−.17	.14	.10	.27*	.19*			
11. Significant Other – MSPSS	−.08	−.03	−.20*	.02	−.26*	.22*	.17	.36**	.11			
12. Family - MSPSS	.02	.06	−.05	.06	−.17	.14	.10	.26*	.40**			
Mean	15.44	8.69	7.90	14.05	21.73	3.42	2.21	2.68	2.82	5.31	5.51	4.00
Standard Deviation	8.1	4.0	7.0	6.8	11.3	1.3	1.1	1.1	0.8	1.3	1.6	1.3

*
Note. $p < .05$,

**
$p < .005$,

†
$p = .06$; CAPS = Clinician Administered PTSD Scale; BDI-II = Beck Depression Inventory-II; CSI = Chronic Stress Interview, MSPSS = Multidimensional Scale of Perceived Social Support.

Table 2

Hierarchical regression models, predicting interpersonal functioning (CSI) from PTSD symptom clusters (step 1) and depression (step 2).

Prediction of functioning with best friends

	Beta	t	Partial r	R² change	F^a change	Adj. R²
Step 1				.10	2.79* (4,96)	.07
Re-experiencing	.19	1.37	.14			
Avoidance	.18	1.32	.13			
Numbing	−.11	−0.92	−.09			
Hyperarousal	−.31	−2.48**	−.25			
Step 2				.13	16.12*** (1,95)	.19
Re-experiencing	.29	2.18*	.22			
Avoidance	.14	1.15	.12			
Numbing	.05	0.39	.04			
Hyperarousal	−.29	−2.49**	−.25			
Depression	−.42	−4.02***	−.38			

Prediction of overall social functioning

	Beta	t	Partial r	R² change	F change	Adj. R²
Step 1				.04	1.05 (4,96)	.00
Re-experiencing	−.03	−0.18	−.02			
Avoidance	.05	−1.22	−.12			
Numbing	−.08	−.63	−.06			
Hyperarousal	−.16	−1.22	−.12			
Step 2				.14	15.94*** (1,95)	.14
Re-experiencing	.07	0.53	.05			
Avoidance	.01	0.09	.01			
Numbing	.08	0.68	.07			
Hyperarousal	−.14	−1.14	−.12			
Depression	−.43	−3.99***	−.38			

Prediction of functioning with romantic partner

	Beta	t	Partial r	R² change	F change	Adj. R²

Prediction of functioning with best friends

	Beta	t	Partial r	R² change	F^a change	Adj. R²
Step 1				.03	0.84 (4,96)	−.01
Re-experiencing	−.15	−1.02	−.10			
Avoidance	.12	0.86	.09			
Numbing	.16	1.28	.13			
Hyperarousal	.03	.22	.02			
Step 2				.10	10.93 *** (1,95)	.09
Re-experiencing	−.06	−0.45	−.05			
Avoidance	.09	0.69	.07			
Numbing	.29	2.36 *	.24			
Hyperarousal	.05	0.37	.04			
Depression	−.37	−3.31 ***	−.32			

Prediction of functioning with family

	Beta	t	Partial r	R² change	F change	Adj. R²
Step 1				.00	0.09 (4,96)	−.04
Re-experiencing	−.01	−0.07	−.01			
Avoidance	.04	0.28	.03			
Numbing	.06	0.46	.05			
Hyperarousal	.04	0.28	.03			
Step 2				.03	3.15 + (1,95)	−.02
Re-experiencing	.04	0.25	.03			
Avoidance	.02	0.17	.02			
Numbing	.13	1.03	.12			
Hyperarousal	−.04	−0.29	−.03			
Depression	−.21	−1.78 +	−.18			

[a]*Note.* = degrees of freedom in parentheses,

+
p = .08,

*
p < .05,

**
$p < .01$,

***
$p < .005$

Table 3

Hierarchical regression models, predicting perceived social support (MSPSS) from PTSD symptom clusters (step 1) and depression (step 2).

Prediction of perceived social support from friends

	Beta	T	Partial r	R^2 change	F^a change	Adj. R^2
Step 1				.13	3.68***(4,96)	.10
Re-experiencing	−.12	−0.84	−.09			
Avoidance	.21	1.61	.16			
Numbing	−.33	−2.88**	−.28			
Hyperarousal	−.05	−0.39	−.04			
Step 2				.06	6.38**(1,95)	.10
Re-experiencing	−.05	−0.39	−.04			
Avoidance	.1	1.49	.15			
Numbing	−.23	−1.96*	−.20			
Hyperarousal	−.04	−0.30	−.03			
Depression	−.27	−2.53**	−.25			

Prediction of perceived social support from romantic partner

	Beta	T	Partial r	R^2 change	F change	Adj. R^2
Step 1				.08	2.06+(4,96)	.04
Re-experiencing	−.14	−0.98	−.10			
Avoidance	.08	0.61	.06			
Numbing	−.29	−2.41**	−.24			
Hyperarousal	.24	1.83+	.18			
Step 2				.03	2.62+(1,95)	.06
Re-experiencing	−.10	−0.69	−.07			
Avoidance	.07	0.51	.05			
Numbing	−.22	−1.76+	−.18			
Hyperarousal	.24	1.92+	.19			
Depression	−.18	−1.62	−.16			

Prediction of perceived social support from family

Prediction of perceived social support from friends

	Beta	T	Partial r	R² change	F[a] change	Adj. R²
	Beta	T	Partial r	R² change	F change	Adj. R²
Step 1				.03	0.70 (4,96)	−.01
Re-experiencing	−.04	−0.25	−.03			
Avoidance	.05	0.37	.04			
Numbing	−.15	−1.20	−.12			
Hyperarousal	.18	1.35	.14			
Step 2				.03	2.71 (1,95)	.01
Re-experiencing	.01	0.05	.01			
Avoidance	.04	0.27	.03			
Numbing	−.08	−.59	−.06			
Hyperarousal	.19	1.43	.15			
Depression	−.19	−1.65	−.17			

[a]$Note.$ = degrees of freedom in parentheses,

[+]
$p = .06 − 09,$

[*]
$p < .05,$

[**]
$p < .01,$

[***]
$p < .005$