Understanding the Relationship of Perceived Social Support to Post-trauma Cognitions and Posttraumatic Stress Disorder

Donald J. Robinaugh[1,2,3], **Luana Marques**[1,2], **Lara N. Traeger**[1,2], **Elizabeth H. Marks**[1],
Sharon C. Sung[1,2], **J. Gayle Beck**[4], **Mark H. Pollack**[1,2], and **Naomi M. Simon**[1,2]
[1]Massachusetts General Hospital

[2]Harvard Medical School

[3]Harvard University Graduate School of Arts and Sciences, Department of Psychology

[4]University of Memphis, Department of Psychology

Abstract

Poor social support in the aftermath of a traumatic event is a well-established risk factor for posttraumatic stress disorder (PTSD) among adult trauma survivors. Yet, a great deal about the relationship between social support and PTSD remains poorly understood. In this study, we analyzed data from 102 survivors of a serious motor vehicle accident (MVA) at 4 weeks (Time 1) and 16 weeks (Time 2) post-MVA. We assessed the role of perceived dyadic social support, positive dyadic interaction, and negative dyadic interaction in the development and maintenance of PTSD. In addition, we examined how these social support constructs work together with negative post-trauma cognitions to affect the maintenance of PTSD. Neither perceived social support nor the quality of social interaction (i.e., positive or negative) was associated with PTSD symptom severity at Time 1. However, among those with elevated PTSD symptom severity at Time 1, greater social support and positive social interaction and lower negative social interaction were each associated with reductions in PTSD symptom severity from Time 1 to Time 2. For social support and negative social interaction, this association ceased to be significant when jointly assessed with negative post-trauma cognitions, suggesting that perceived social support and negative dyadic interaction were associated with maintenance of PTSD symptom severity because of their association with negative post-trauma cognitions. These results provide support to models and treatments of PTSD that emphasize the role of negative post-trauma cognitions in maintenance of PTSD.

1. Introduction

Poor social support following a traumatic event is among the greatest risk factors for posttraumatic stress disorder (PTSD) across types of trauma (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003), including motor vehicle accidents (Dougall, Ursano, Posluszny, Fullerton, & Baum, 2001). In early conceptualizations of social support and PTSD, theorists posited that presence of positive social support buffers against development of post-stress psychopathology (Cohen & Wills, 1985) and facilitates

the process of recovery (Burgess & Holmstrom, 1978). However, subsequent findings have painted a more nuanced picture. Researchers have found that presence of negative social interactions (e.g., expressed emotion or interpersonal friction) may be a stronger predictor of PTSD than absence of positive social support (Tarrier, Sommerfield, & Pilgrim, 1999; Ullman, 1996; Zoellner, Foa, & Brigidi, 1999). In addition, directionality of the association between social support and PTSD has been shown to vary over time. In earlier stages of coping with trauma (e.g., 6-12 months post-trauma), poor social support acts as a risk factor for greater PTSD symptom severity (Kaniasty & Norris, 2008). During later stages of coping with trauma (18-24 months post-trauma), greater PTSD severity contributes to an erosion of social support resources (Kaniasty & Norris, 2008; see also King, Taft, King, Hammond, & Stone, 2006).

Although these findings have advanced our understanding of the association between social support and PTSD, a great deal remains poorly understood. For example, a variety of method limitations in many prior studies (e.g., cross-sectional design and study time frame) has prevented researchers from clearly disentangling social support's role in the initial development of PTSD from its role in the maintenance of PTSD over the first several months or years post-trauma (for a review of social support and PTSD, see Guay, Billette, & Marchand, 2006). In studies that have utilized longitudinal designs beginning within one month after the trauma, results have been somewhat inconsistent. For example, Cook and Bickman (1990) found that social support was not associated with psychological distress (i.e., depression, anxiety, and somatization) 1 week following a natural disaster, but that this association was significant at 6, 11, and 16 weeks post-disaster. Relative to those with low levels of social support, those with high levels of support exhibited comparable levels of psychological distress at week 1 but exhibited a sharper decline in distress over time. These findings suggest that social support is associated with maintenance, but not development, of post-traumatic stress symptoms. However, due to sample size limitations, these researchers were unable to prospectively examine social support's contribution to the maintenance of elevated psychological distress.

In contrast, Zoellner et al. (1999) found that interpersonal friction, but not positive social support, was significantly associated with PTSD and depression symptoms at 2 weeks post-trauma. In addition, interpersonal friction predicted PTSD symptom severity at 3 months post-trauma beyond the effects of PTSD at 2 weeks post-trauma. Similarly, Andrews and colleagues (Andrews, Brewin, & Rose, 2003) found that social support satisfaction and negative responses from social support figures were each associated with PTSD symptom severity at 1-Month post-trauma but that only negative responses were associated with PTSD symptom severity at 6-months post-loss after controlling for 1-month PTSD symptom severity. However, in both of these studies, the course of PTSD symptoms was examined for the entire sample. Accordingly, these findings reflect the course of symptoms both for those who developed acute PTSD as well as those who did not. It is unclear whether social support (positive or negative) would have been associated with the course of PTSD symptom severity in only the subset with initially elevated PTSD symptoms.

In addition to issues regarding the development and maintenance of PTSD, little is known about the mechanisms through which social support exerts its influence on either the development or maintenance of PTSD (Vogt, King, & King, 2007). Indeed, it is unclear whether various aspects of social support (e.g., positive vs. negative) operate through the same or different mechanisms. This gap in the literature is of concern as clarifying the etiological processes by which social support and other risk factors lead to PTSD is critical to the optimal development and delivery of treatments for those suffering from the disorder (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). Several theorists have posited that greater social support may impact PTSD by impeding the development and persistence of

negative post-trauma cognitions (Ehlers & Clark, 2000; Guay et al., 2006; Joseph, Williams, & Yule, 1997). Negative post-trauma cognitions of the self (i.e., a sense of the self as incompetent or self-blame regarding the traumatic event) and the world (i.e., belief that the world is entirely dangerous) are thought to contribute to both the development and maintenance of PTSD by producing an ongoing sense of threat (Brewin & Holmes, 2003; Ehlers & Clark, 2000; Foa & Rothbaum, 1998; Resick & Schnicke, 1992). Negative cognitions about the self and the world discriminate between traumatized individuals with and without PTSD (Beck et al., 2004; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) and prospectively predict PTSD symptom severity (Dunmore, Clark, & Ehlers, 2001; Ehlers, Mayou, & Bryant, 1998; Ehring, Ehlers, & Glucksman, 2008). Accordingly, there is a strong impetus for examining the association of social support to post-trauma cognitions and their joint association with the development and maintenance of PTSD symptom severity.

1.1. Current Study

In this study, we had three aims: to examine the association of social support to the 1) development and maintenance of PTSD symptoms, 2) the development and maintenance of negative post-trauma cognitions, and 3) to examine how social support and negative post-trauma cognitions work together to affect the development and maintenance of PTSD symptoms. To our knowledge, this study is the first to jointly assess post-trauma cognitions and social support as predictors of PTSD symptom severity in a longitudinal study of adult trauma survivors. To assess these aims, we examined data from 102 survivors of a serious motor vehicle accident (MVA) at 4 weeks (Time 1), and 16 weeks (Time 2) post-MVA. For each aim, we examined three social support constructs: the level of perceived dyadic social support (DSS), negative dyadic interaction (dyadic conflict; DC), and positive dyadic interaction (dyadic depth; DD). Based on previous theoretical and empirical work (Guay et al., 2006), we hypothesized that each social support construct would be associated with both the development and maintenance of PTSD symptoms. We further hypothesized that individuals with greater perceived dyadic social support, greater perceived positive dyadic interaction, and less perceived negative dyadic interaction would report less severe initial negative post-trauma cognitions as well as a reduction in negative post-trauma cognitions over time. Finally, we hypothesized that when jointly assessed with post-trauma cognitions these social support constructs would no longer be associated with PTSD symptom development or maintenance.

2. Method

2.1. Participants

We analyzed data collected as part of a larger study on relationship quality, social support, and PTSD symptoms following a serious MVA. All participants were in a serious MVA within the past month (i.e. a car accident in which the individual sought medical attention within 48 hours of the accident; Blanchard et al., 2004) and responded to the MVA with intense fear, helplessness, or horror (i.e. PTSD Criterion A; American Psychiatric Association, 2000). Due to the emphasis in the broader study on dyadic functioning, participants were also required to be in an exclusive heterosexual romantic relationship beginning at least four months prior to the time of the accident.

Potentially eligible participants were identified from publicly available police MVA records in the greater Buffalo, New York area ($n = 2373$) and were mailed a letter within 2 weeks of the accident detailing the study inclusion criteria and inviting their participation. Based on census data, we estimate that approximately 59.9% of these individuals ($n = 1421$) were married and, thus, potentially eligible for the study. A total of 199 individuals responded to the recruitment letter. This response rate is consistent with previous research involving

public records (e.g., Davila, Bradbury, Cohan, & Tochluk, 1997). Among those who responded to the recruitment letter, 152 met inclusion criteria and were enrolled in the study. Of these, 116 participants completed the first wave of data collection and 102 participants (87.9%) completed all measures at each wave of data collection. Only those who completed both waves were included in the final sample. The majority of participants were Caucasian (n = 77, 75%) and female (n = 77, 75%). All participants were between the ages of 18 and 65 (M = 38.2 years, SD = 12.9).

2.2. Procedure

For individuals who expressed interest in the study, research staff assessed eligibility and obtained informed consent via telephone prior to participation. Participants then completed packets of questionnaires delivered by mail at 4 and 16 weeks post-MVA (Time 1 and Time 2, respectively). These assessments included measures of dyadic functioning, social support, and symptoms of psychological distress and psychopathology. Participants received a total of $60 compensation. The mean elapsed time since the MVA was 27 days (SD = 7.0) at Time 1 and 112 days (SD = 7.0) at Time 2.

2.3. Measures

2.3.1. PTSD symptom severity—The PTSD Checklist, specific version (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item self-report measure of PTSD-symptom severity. Participants rate the extent to which PTSD symptoms have bothered them over the last month on a five-point scale ranging from 'Not at all' to 'Extremely'. Participants in this study were instructed to respond to items with respect to the MVA. The PCL produces a total score of PTSD symptom severity ranging from 17 to 85. The PCL exhibited good internal consistency at Time 1 (α = .94) and Time 2 (α =.95).

2.3.2. PTSD symptom severity trajectories—Participants' scores on the PCL at Time 1 and Time 2 were used to group participants into four trajectories of PTSD symptom severity: chronic, recovered, delayed, and resilient (for a discussion of post-trauma trajectories of distress, see Bonanno, 2004; Bonanno, 2005; Layne, Warren, Watson, & Shalev, 2007). Participants were classified as *chronic* if they exhibited elevated PTSD symptom severity (as measured by the PCL) at both Time 1 and Time 2 *recovered* if they exhibited elevated severity at Time 1 but not at Time 2, *delayed* if they did not exhibit elevated severity at Time 1 but did at Time 2, and *resilient* if they did not exhibit elevated severity at either Time 1 or Time 2. Elevated PTSD symptom severity was defined as a PCL score greater than 44 (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). Although some theorists (Layne et al., 2007) have emphasized the importance of distinguishing between resistant (i.e., high adaptive functioning before, during, and after the traumatic event) and resilient (i.e., significant but transient decrement in functioning) trajectories of distress, the time frame of the current study prevents us from making any distinction between these groups.

2.3.3. Posttraumatic cognitions—The Posttraumatic Cognitions Inventory (Foa et al., 1999) is a 33-item scale assessing the extent to which the participant agrees with statements reflecting negative posttraumatic cognitions on a 7-point scale ranging from '1:Totally Disagree' to '7:Totally Agree'. The PTCI assesses negative cognitions about the self, negative cognitions about the world, and self-blame regarding the traumatic event. Higher scores indicate more negative cognitions. The PTCI exhibited excellent internal consistency at Time 1 (α = .94) and Time 2 (α = .96).

2.3.4. Social support and quality of social interaction—The Quality of Relationship Inventory (QRI; Pierce, Sarason, & Sarason, 1991) is a 25-item measure assessing

relationship-specific perceptions of social support (i.e., perceived availability of social support; DSS), conflict (i.e., negative dyadic interactions and ambivalence; DC), and depth (i.e., positive interactions and feelings of closeness and security within the relationship; DD). In this study, participants completed the QRI with respect to their romantic partner. Prior research has confirmed the three factor structure of the QRI in romantic relationships (Verhofstadt, Buysse, Rosseel, & Peene, 2006). Each scale exhibited good internal consistency (α = .83, 92, and .91 for Time 1 DSS, DC, and DD, respectively).

3. Results

The majority of study participants exhibited a resilient trajectory of distress (n =56, 54.9 %). Twenty-two participants exhibited a recovered trajectory (21.5%), nineteen exhibited a chronic trajectory of distress (18.6%), and five exhibited a delayed trajectory of distress (4.9%). These proportions are consistent with previous research (Bonanno, 2005). Due to the low number of participants in the delayed trajectory of distress, these participants were excluded from analyses examining differences between trajectories. The mean PTSD symptom severity and PTCI scores for the overall sample as well as the resilient, recovered, and chronic subgroups appear in Table 1.

3.1. Social Support and the development and maintenance of post-traumatic stress disorder

To examine the association of social support to the development and maintenance of PTSD symptoms, we first used linear regression to determine whether Time 1 DSS, DC, and DD were associated with Time 1 PTSD symptom severity (i.e., the development of initial PTSD symptom severity). Neither DSS (β = -.17, p = .089, sr^2 = .03), DC (β = .18, p =.077, sr^2 = .03), nor DD (β = -.10 p = .318, sr^2 = .01) at Time 1 were significantly associated Time 1 PTSD symptom severity. We then used linear regression to determine whether Time 1 DSS, DC, and DD predicted the residualized change in PTSD symptom severity among those who exhibited either recovered or chronic trajectories of distress (i.e., the maintenance of PTSD symptoms). Assessing residualized change in this group allows us to examine the change in PTSD symptom severity from T1 and T2 among those with initially elevated PTSD symptom severity (i.e., the maintenance of elevated PTSD symptom severity). Time 1 DSS (β = -.45, p = .001, sr^2 = .20), DC (β = .35, p =.013, sr^2 = .12), and DD (β = -.40 p = .004, sr^2 = .16) were each associated with the residualized change in PTSD symptom severity from Time 1 to Time 2. Furthermore, DSS (β = -.40, p = .004, sr^2 = .14), DC (β = .31, p =.030, sr^2 = .09), and DD (β = -.35 p = .016, sr^2 = .11) each remained associated with residualized change in PTSD symptom severity after controlling statistically for depression severity.

To further explore these relationships, we assessed whether level of DSS, DC, and DD at Time 1 differed between individuals exhibiting a resilient trajectory of distress (i.e., those who did not develop elevated PTSD symptom severity), a recovered trajectory of distress (i.e., those who developed but did not maintain elevated PTSD symptom severity), and a chronic trajectory of distress (i.e., those who developed and maintained elevated PTSD symptom severity). If social support is a risk factor for the maintenance of PTSD, the chronic group should exhibit poorer social support relative to both the recovered and resilient group. If it is a risk factor for the development of PTSD, the resilient group should exhibit greater social support relative to those who develop acute PTSD symptoms (those in either the recovered and chronic group). The mean DSS, DC, and DD standardized scores for each trajectory appear in Figure 1. One-way analysis of variance (ANOVA) revealed significant differences in Time 1 DSS ($F(2,94)$ = 6.48, p = .002), DD ($F(2,94)$ = 3.82, p = .025), and DC ($F(2,94)$ = 6.44, p = .002) as a function of trajectory. We next performed pair-wise comparisons with Bonferonni corrected p-values to further explore the differences

between these groups. Individuals exhibiting a chronic trajectory reported significantly lower Time 1 DSS and greater DC relative to individuals in both the resilient group ($p = .002$ and $p = .002$, respectively) and the recovered group ($p = .014$ and $p = .024$). In addition, individuals in the chronic trajectory reported significantly lower Time 1 DD than the resilient trajectory ($p = .033$) and trended towards significantly lower DD than the recovered group ($p = .057$). There were no differences between the resilient group and the recovered group. Furthermore, there were no differences between the resilient group and a combined "acute PTSD" group (i.e., those in either the chronic or recovered trajectories) using independent samples t-test with Bonferonni-corrected p-values ($p = .123, .072,$ and $.339$ for DSS, DC, and DD, respectively).

3.2. Social support and the development and maintenance of post-trauma cognitions

The second aim of this study was to examine association of social support with the development and maintenance of negative post-trauma cognitions. To assess this aim, we first used linear regression to determine whether each social support variable was associated with Time 1 PTCI (i.e., the development of post-trauma cognitions). Time 1 DSS ($\beta = -.33$, $p = .001$), DC ($\beta = .30$, $p = .002$), and DD ($\beta = -.23$ $p = .020$) were each associated with Time 1 PTCI. We then assessed whether Time 1 DSS, DC, and DD predicted the residualized change in PTCI from Time 1 to Time 2 (i.e., the persistence of negative post-trauma cognitions) in those with initially elevated PTSD symptom severity. Neither DSS ($\beta = -.09$, $p = .481$, $sr^2 < .01$), DC ($\beta = .18$, $p = .130$, $sr^2 = .03$), nor DD ($\beta = .003$, $p = .980$, $sr^2 < .01$) were significant predictors.

3.3. Social support, post-trauma cognitions and the maintenance of PTSD symptoms

Finally, for the third aim of this study, we assessed whether each social support variable remained a significant predictor of PTSD symptom severity maintenance when jointly assessed with post-trauma cognitions. The regression analyses conducted for this analysis appear in Table 2. As seen in this table, DSS and DC ceased to be significant predictors when Time 1 PTCI was included in the model. Although we were also interested in how social support and negative post-trauma cognitions work together to predict development of PTSD symptom severity at Time 1, the non-significant association of Time 1 DSS, DC, and DD to Time 1 PTSD symptom severity precluded this analysis.

4. Discussion

4.1. The association of perceived social support to post-trauma cognitions and PTSD symptoms

In this study, we were interested in the relationship of perceived dyadic social support to negative post-trauma cognitions and PTSD symptom severity following a serious MVA. As hypothesized, low perceived dyadic social support, low perceived positive dyadic interaction, and high perceived negative dyadic interaction were each associated with greater severity of negative post-trauma cognitions at 4 weeks post-trauma. However, contrary to our hypotheses, these social support constructs were not associated with maintenance of negative post-trauma cognitions over time. Conversely, low dyadic social support, low positive dyadic interaction, and high negative dyadic interaction were each associated with maintenance of elevated PTSD symptom severity from 4 to 16 weeks post-MVA but not development of PTSD symptom severity at 4-weeks post-MVA. For the former, this finding is consistent with our hypothesis. For the latter, it is not.

When we grouped participants into post-trauma trajectories of distress, individuals in the recovered group exhibited less severe Time 1 negative post-trauma cognitions and better Time 1 perceptions of social support and social interaction relative to individuals in the

chronic trajectory despite comparable levels of Time 1 PTSD symptom severity. One interpretation of this finding is that symptoms of PTSD may arise, but are less likely to persist, in the absence of negative post-trauma cognitions and negative appraisals of social support and social interaction. In other words, poor perceptions of social support and negative post-trauma cognitions may inhibit the natural recovery from post-trauma psychological distress.

4.2. Perceived social support, post-trauma cognitions, and the maintenance of PTSD symptoms

In addition, we examined how social support and post-trauma cognitions work together to affect the maintenance of elevated PTSD symptom severity. As hypothesized, when jointly assessed with post-trauma cognitions, both negative dyadic interaction and dyadic social support ceased to be associated with the maintenance of PTSD symptom severity (although it should be noted that dyadic social support was only narrowly non-significant). These results suggest that perceived social support and perceived negative social interaction may be proxy risk factors for maintenance of PTSD symptom severity (Kraemer et al., 2001). That is, they may be associated with the maintenance of elevated PTSD symptom severity due to their correlation with negative post-trauma cognitions. Indeed, negative perceptions of the support and interaction received from a dyadic relationship may be seen as one part of a broader domain of negative cognitions about the world. In contrast, positive dyadic interaction continued to significantly predict change in PTSD symptom severity when jointly assessed with negative post-trauma cognitions. This finding is contrary to our hypothesis and suggests that perceived positive social interaction and negative post-trauma cognitions are independent risk factors for the maintenance of PTSD symptom severity.

4.3. Implications

As previously noted, theorists have posited that negative post-trauma cognitions may mediate the association of social support to PTSD (Ehlers & Clark, 2000; Guay et al., 2006; Joseph et al., 1997). Our findings do not disqualify this possibility. Indeed, for negative dyadic interaction and dyadic social support, our findings are consistent with a possible mediating role of post-trauma cognitions. However, mediation requires that the purported mediator temporally follow the variable whose effect is being mediated (Kraemer et al., 2001). In this study, social support constructs and negative post-trauma cognitions were assessed concurrently at 4 weeks post-MVA. Accordingly, our data cannot establish the temporal precedence of social support. To clarify this relationship, future studies should obtain pre-trauma assessments of social support and examine their association with the development of negative post-trauma cognitions. In addition, future studies should utilize objective measures of social support rather than perceptions of support, which may conceptually overlap with a more global domain of negative cognitions and appraisals.

Although we did not examine treatment, our findings support a need for treatments that emphasize the role of dysfunctional cognitions in the maintenance of PTSD (e.g. Foa & Rothbaum, 1998; Resick & Schnicke, 1992), and suggest that such therapies may be particularly relevant for symptomatic individuals with low social support in the initial months following a traumatic event. The negative association between social support and PTSD has been cited as evidence that clinicians should augment clinical treatments with efforts to bolster social support (King et al., 2006). In this study, perceptions of social support and the quality of social interactions (i.e., positive or negative) were each associated with change in PTSD symptom severity. Accordingly, addressing perceptions of social support and social interactions in therapy may indeed contribute to a reduction in PTSD symptom severity (Monson, Fredman, & Adair, 2008). Importantly, however, our findings suggest that therapies aimed at reducing negative post-trauma cognitions may already be

directly targeting one mechanism through which perceptions of social support and perceived negative dyadic interaction are associated with the maintenance of PTSD symptoms. In this study, only perceptions of positive dyadic interaction were associated with PTSD symptoms independently of negative post-trauma cognitions. Accordingly, efforts to promote positive social interaction may be a useful clinical strategy to augment cognitive treatments for PTSD. Whether attempts to address perceptions of social support would have incremental value above and beyond treatments targeting negative post-trauma cognitions, however, remains unclear.

4.4. Limitations

Results of this study must be interpreted in light of several limitations. All study participants were in a committed romantic relationship at the time of the event and our focus was restricted to support and interactions occurring within the context of that relationship. These considerations limit generalizability of our findings to broader concepts of social support and individuals not currently in a romantic relationship. The majority of participants were women, further limiting generalizability given prior data suggesting that the association between social support and PTSD symptoms varies by gender (Andrews et al., 2003). The lack of clinician-based assessment in this study prevented the formal diagnosis of PTSD. However, it should be noted that we used a well-established PCL cut-off score to define elevated PTSD symptom severity. Finally, our sample size for analyses regarding the maintenance of elevated PTSD symptom severity and negative post-trauma cognitions was relatively small ($n = 41$). Accordingly, we may have been underpowered to detect changes in post-trauma cognitions from Time 1 to Time 2. Sample size restrictions also prevented any assessment of individuals exhibiting a "delayed onset" trajectory of PTSD symptom severity, a group that constitute approximately 5-10% of individuals experiencing a traumatic event (Bonanno, 2005; Buckley, Blanchard, & Hickling, 1996). There is some evidence that these individuals have poorer social support relative to individuals who do not develop PTSD as well as those who develop acute PTSD (i.e. those exhibiting a chronic or recovered trajectory; Buckley et al., 1996), underscoring the importance of examining social support and PTSD in these individuals.

4.5. Future Research

Future research would benefit from earlier assessment, longer follow-up, and more frequent assessment than was possible in this study. Ideally, this research would include both objective and subjective assessment of social support, pre-trauma assessments of psychological distress and social support, diagnostic interviews to assess PTSD, and assessment of additional cognitive variables that may be associated with social support and negative post-trauma cognitions (e.g., repetitive negative thought; Ehring & Wahl, 2008). In doing so, researchers will be better able to determine if greater perceived social support and less negative social interaction lead to the development of negative post-trauma cognitions or if negative perceptions of social support and social interaction are merely one component of a broader domain of negative post-trauma appraisals. In addition, these studies would determine whether the associations reported in the current study shift over time. For example, PTSD symptoms may reinforce and exacerbate negative cognitions (Foa & Rothbaum, 1998), and may serve as one mechanism through which PTSD symptoms contribute to an erosion of social support resources in those with chronic PTSD. Consistent with this possibility, Brewin, MacCarthy, and Furnham (1989) found that greater post-trauma self-blame was associated with greater social withdrawal.

4.6. Conclusion

Despite limitations, this study constitutes an important step toward clarifying the path through which social support influences PTSD symptom severity. Two important

conclusions can be drawn from this study. First, negative post-trauma cognitions warrant further investigation as a potential mechanism by which social support influences PTSD. This potential mediating role may be more relevant for the presence of negative social interaction than the absence of positive social interaction. Second, our results suggest that social support and the quality of social interaction play a larger role in the amelioration, rather than the prevention, of PTSD symptoms.

Acknowledgments

References

American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-IV-TR. 4th. Washington, DC: American Psychiatric Association; 2000.

Andrews B, Brewin CR, Rose S. Gender, social support, and PTSD in victims of violent crime. Journal of Traumatic Stress. 2003; 16:421–427. [PubMed: 12895025]

Beck JG, Coffey SF, Palyo SA, Gudmundsdottir B, Miller LM, Colder CR. Psychometric Properties of the Posttraumatic Cognitions Inventory (PTCI): a replication with motor vehicle accident survivors. Psychological Assessment. 2004; 16:289–298. [PubMed: 15456384]

Blanchard EB, Hickling EJ, Freidenberg BM, Malta LS, Kuhn E, Sykes MA. Two studies of psychiatric morbidity among motor vehicle accident survivors 1 year after the crash. Behaviour Research and Therapy. 2004; 42:569–583. [PubMed: 15033502]

Blanchard EB, Jones-Alexander J, Buckley TC, Forneris CA. Psychometric properties of the PTSD checklist (PCL). Behavioural Research and Therapy. 1996; 34:669–673.

Bonanno GA. Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? American Psychologist. 2004; 59:20–28. [PubMed: 14736317]

Bonanno GA. Resilience in the face of potential trauma. Current Directions in Psychological Science. 2005; 14:135–138.

Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. Journal of Consulting and Clinical Psychology. 2000; 68:748–766. [PubMed: 11068961]

Brewin CR, Holmes EA. Psychological theories of posttraumatic stress disorder. Clinical Psychology Review. 2003; 23:339–376. [PubMed: 12729677]

Brewin CR, MacCarthy B, Furnham A. Social support in the face of adversity: The role of cognitive appraisal. Journal of Research in Personality. 1989; 23:354–372.

Buckley TC, Blanchard EB, Hickling EJ. A prospective examination of delayed onset PTSD secondary to motor vehicle accidents. Journal of Abnormal Psychology. 1996; 105:617–625. [PubMed: 8952195]

Burgess AW, Holmstrom LL. Recovery from rape and prior life stress. Research in Nursing and Health. 1978; 1:165–174.

Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. Psychological Bulletin. 1985; 98:310–357. [PubMed: 3901065]

Cook JD, Bickman L. Social support and psychological symptomatology following a natural disaster. Journal of Traumatic Stress. 1990; 3:541–556.

Davila J, Bradbury TN, Cohan CL, Tochluk S. Marital functioning and depressive symptoms: Evidence for a stress generation model. Journal of Personality and Social Psychology. 1997; 73:849–861. [PubMed: 9325596]

Dougall AL, Ursano RJ, Posluszny DM, Fullerton CS, Baum A. Predictors of posttraumatic stress among victims of motor vehicle accidents. Psychosomatic Medicine. 2001; 63:402–411. [PubMed: 11382267]

Dunmore E, Clark DM, Ehlers A. A prospective investigation of the role of cognitive factors in persistent posttraumatic stress disorder (PTSD) after physical or sexual assault. Behaviour Research and Therapy. 2001; 39:1063–1084. [PubMed: 11520012]

Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. Behaviour Research and Therapy. 2000; 38:319–345. [PubMed: 10761279]

Ehlers A, Mayou RA, Bryant B. Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. Journal of Abnormal Psychology. 1998; 107:508–519. [PubMed: 9715585]

Ehring T, Ehlers A, Glucksman E. Do cognitive models help in predicting the severity of posttraumatic stress disorder, phobia, and depression after motor vehicle accidents? A prospective longitudinal study. Journal of Consulting and Clinical Psychology. 2008; 76:219–230. [PubMed: 18377119]

Ehring T, Wahl K. Repetitive negative thinking across emotional disorders. International Journal of Psychology. 2008; 43:751–751.

Foa EB, Ehlers A, Clark DM, Tolin DF, Orsillo SM. The Posttraumatic Cognitions Inventory (PTCI): Development and validation. Psychological Assessment. 1999; 11:303–314.

Foa, EB.; Rothbaum, BO. Treating the trauma of rape: Cognitive behavioral therapy for PTSD. New York: Guilford Press; 1998.

Guay S, Billette V, Marchand A. Exploring the links between posttraumatic stress disorder and social support: processes and potential research avenues. Journal of Traumatic Stress. 2006; 19:327–338. [PubMed: 16788995]

Joseph, S.; Williams, R.; Yule, W. Understanding post-traumatic stress: A psychosocial perspective on PTSD and treatment. Chichester, England: Wiley; 1997.

Kaniasty K, Norris FH. Longitudinal linkages between perceived social support and posttraumatic stress symptoms: sequential roles of social causation and social selection. Journal of Traumatic Stress. 2008; 21:274–281. [PubMed: 18553415]

King D, Taft C, King L, Hammond C, Stone E. Directionality of the association between social support and posttraumatic stress disorder: A longitudinal investigation. Journal of Applied Social Psychology. 2006; 36:2980–2992.

Kraemer HC, Stice E, Kazdin A, Offord D, Kupfer D. How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. American Journal of Psychiatry. 2001; 158:848–856. [PubMed: 11384888]

Layne, LM.; Warren, JS.; Watson, PJ.; Shalev, AY. Risk, Vulnerability, Resistance, and Resilience. In: Friedman, MJ.; Keane, TM.; Resick, PA., editors. Handbook of PTSD: Science and practice. New York, NY: Guilford Press; 2007.

Monson CM, Fredman SJ, Adair KC. Cognitive-behavioral conjoint therapy for posttraumatic stress disorder: Application to Operation Enduring and Iraqi Freedom veterans. Journal of Clinical Psychology. 2008; 64:958–971. [PubMed: 18613094]

Ozer EJ, Best SR, Lipsey TL, Weiss DS. Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. Psychological Bulletin. 2003; 129:52–73. [PubMed: 12555794]

Pierce GR, Sarason IG, Sarason BR. General and relationship-based perceptions of social support: are two constructs better than one? Journal of Personality and Social Psychology. 1991; 61:1028–1039. [PubMed: 1774625]

Resick PA, Schnicke MK. Cognitive processing therapy for sexual assault victims. Journal of Consulting and Clinical Psychology. 1992; 60:748–756. [PubMed: 1401390]

Tarrier N, Sommerfield C, Pilgrim H. Relatives' expressed emotion (EE) and PTSD treatment outcome. Psychological Medicine. 1999; 29:801–811. [PubMed: 10473307]

Ullman SE. Social reactions, coping strategies, and self-blame attribution in adjustment to sexual assault. Psychology of Women Quarterly. 1996; 20:505–526.

Verhofstadt LL, Buysse A, Rosseel Y, Peene OJ. Confirming the three-factor structure of the quality of relationships inventory within couples. Psychological Assessment. 2006; 18:15–21. [PubMed: 16594808]

Vogt, DS.; King, DW.; King, LA. Risk pathways for PTSD: Making sense of the literature. In: Friedman, MJ.; Keane, TM.; Resick, PA., editors. Handbook of PTSD: Science and practice. New York, NY: Guilford Press; 2007. p. 99-115.

Weathers, FW.; Litz, B.; Herman, D.; Huska, J.; Keane, T. Annual Convention of the International Society for Traumatic Stress Studies. San Antonio, TX: 1993. The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility.

Zoellner LA, Foa EB, Brigidi BD. Interpersonal friction and PTSD in female victims of sexual and nonsexual assault. Journal of Traumatic Stress. 1999; 12:689–700. [PubMed: 10646187]

*Research Highlights

- Social support predicted Post-traumatic Stress Disorder (PTSD) symptom maintenance

- Social support was associated with negative post-trauma cognitions (PTC)

- Social support did not predict PTSD maintenance when jointly assessed with PTC

- Negative social interaction did not predict PTSD maintenance when assessed with PTC

- Positive social interaction did predict PTSD maintenance when assessed with PTC
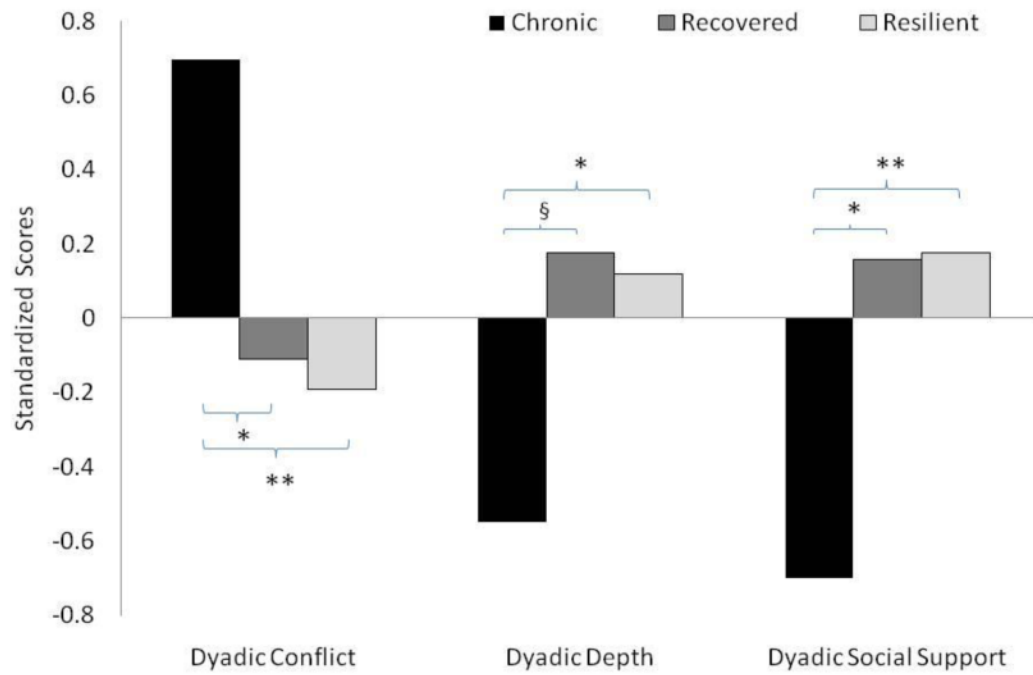
Figure 1.
Standardized scores for perceived dyadic social support (DSS), conflict (DC), and depth (DD) at 4-weeks post-MVA for individuals exhibiting resilient, recovered, and chronic trajectories of posttraumatic stress disorder symptom severity.
$\S$ $p = < .06$, * $p < .05$, ** $p < .01$

Table 1

Mean levels of PTSD symptom severity and post-trauma cognitions at Time 1 and Time 2 as a function of PTSD symptom severity trajectory

		Overall		Resilient		Recovered		Chronic	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
PTSD Symptom Severity	Time 1	38.83	15.48	27.16	7.26	51.86	5.94	58.26	10.48
	Time 2	32.21	14.75	23.64	6.41	28.91	5.75	55.16	8.15
Post-trauma Cognitions	Time 1	85.61	33.87	69.89	22.15	87.27	24.40	129.53	33.00
	Time 2	79.14	35.66	65.98	22.39	72.05	30.54	121.75	39.22

Note. PTSD Symptom Severity= Posttraumatic Stress Disorder symptoms as measured by the PTSD Checklist (PCL) Time 1 = 4 weeks post-MVA Time 2 = 16 weeks post-MVA

Table 2

Linear Regression Models Jointly Assessing Negative Post-trauma Cognitions and Social Support Constructs as Predictors of Residualized Change in PTSD Symptom Severity in Those with Initially Elevated PTSD Symptom Severity (n = 41)

	Dyadic Social Support					Dyadic Depth					Dyadic Conflict				
	B	SE	β	sr²	R²	B	SE	β	sr²	R²	B	SE	β	sr²	R²
DV = Time 2 PTSD					.51					.52					.49
Time 1 PTSD	.35	.22	.21	.04		.38	.22	.22	.04		.33	.22	.20	.03	
Time 1 PTCI	.19**	.06	.44	.13		.20***	.06	.49	.17		.21***	.06	.50	.18	
QRI: DSS, DD, or DC	-5.50§	2.75	-.26	.05		-6.33*	2.97	-.26	.06		4.20	2.94	.18	.03	

Note. DV = Dependent Variable B = Unstandardized Regression Coefficient SE = Standard Error sr^2 = Standardized Regression Coefficient β = Standardized Regression Coefficient SE = Standard Error DSS = Dyadic Social Support DD = Dyadic Depth DC = Dyadic Conflict PTCI=Post-trauma Cognitions Inventory PTSD = Posttraumatic Stress Disorder symptom severity QRI = Quality of Relationship Index

§ $p < .06$,

* $p < .05$,

** $p < .01$

*** $p < .001$