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The Impact of Social Support on the Relationship between Trauma History and PTSD Symptoms in Motor Vehicle Accident Victims

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Abstract

The present study examined how different types of social support differentially moderated the relationship between trauma history characteristics and the development of posttraumatic stress disorder symptoms (PTSS) following a motor vehicle accident (MVA). Two hundred thirty-five MVA victims self-reported levels of social support and trauma history, and were evaluated for PTSS 6- and 12-months post-MVA. Results indicated that after controlling for gender, injury severity and income, number of prior trauma types and subjective responses to prior traumatization predicted subsequent PTSS (*p*s < .05). Appraisal social support was a significant moderator of the total number of types of trauma (appraisal: 6-months β = −.16, *p* < .05; 12-months β = −.17, *p* < .05) and subjective physical injury during the prior trauma (appraisal: 6-months β = −.14, *p* < .05; 12-months β = −.19, *p* < .05) in predicting PTSS. Results underscore the importance of examining both trauma history and social support as multi-dimensional constructs and suggest merit to addressing social support in trauma victims with a prior trauma history.

Keywords

posttraumatic stress disorder; trauma history; social support; appraisal; motor vehicle accident; moderation

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Studies have consistently shown that prior exposure to trauma, or trauma history, increases risk for the development of posttraumatic stress disorder symptoms (PTSS) following a subsequent trauma (for meta-analyses see Brewin, Andrews & Valentine, 2000; Ozer, Best, Lipsey & Weiss, 2003). Irish and colleagues (2008), in a prior paper from the present dataset, found that different characteristics/components of trauma history (e.g., including objective measures and victims' subjective responses) differentially predicted PTSS. Although trauma history has consistently been linked to PTSS, most studies report small-to-medium effect sizes (Ozer et al., 2003). It is possible that other variables may interact with or buffer the relationship between trauma history and PTSS; one such variable that has been repeatedly demonstrated to buffer risk for PTSS is social support.

For the current study, we defined social support as a process of providing or exchanging perceived resources to another person (Cohen, Gottleib, & Underwood, 2000). Specific support resources include appraisal support (also known as emotional support) which refers to having someone you can go to about problems, tangible support (also known as instrumental support) referring to practical help when needed (e.g., borrowing money), and belonging support (also known as companionship support) referring to spending time with friends or family (for a review see Wills & Shinar, 2000; Ibarra-Rovillard & Kuiper, 2011). Oftentimes, these studies have operationalized social support as a single construct on a continuum from low to high levels of support (Brewin et al., 2000; Ozer et al., 2003). Further, studies examining social support as a stress-buffer have used either the single construct (Neria, Besser, Kiper, & Westphal, 2010; Babcock, Roseman, Green, & Ross, 2008) or focused on one specific type of support resource (Hyman, Gold, & Cott, 2003). Earlier review articles (Cohen & Wills, 1985; Schaefer, Coyne, & Lazarus, 1981) suggested that some support resources may be better predictors of well-being than others. However, more recent studies comparing the differential efficacy of social support resources at preventing PTSS have been limited. One recent study improved upon these limitations and found that tangible, but not appraisal support buffered the relationship between trauma history and PTSS suggesting the differential effects of different types of social support (Glass, Perrin, Campbell, & Soeken, 2007). However, this study examined a sample of primarily African American women who were the victims of assault. It is still unclear how these findings would generalize to different trauma populations.

The purpose of the current study was to assess the extent to which social support buffered against the increased vulnerability to short-term and long-term PTSS afforded by trauma history. More specifically, we sought to determine if the relationship between subjective and objective trauma history and PTSS was diminished by different types of social support (i.e., appraisal, belonging, tangible, and total) in recent victims of motor vehicle accidents (MVAs).

Method

Participants

Participants consisted of 235 adult MVA victims who had experienced a prior potentially traumatic event, not including the current trauma (the MVA). Participants ranged in age from 18–86 (M = 39.6, SD = 15.7), and reported an average household income ranging from $20,000–30,000 per year. The sample was primarily Caucasian (91.9%) consistent with demographic characteristics of the Northeast Ohio area. Injury severity scores ranged from 0–29 (M = 6.9, SD = 5.1). Eighty-five percent (N = 201) of the original sample were retained at the 6-month follow-up, and at 12-months, retention was 70.6% (N = 166). Males (p = .004) and non- Caucasians (p = .02) were more likely to drop out at the 6-month time point, and younger participants were more likely to drop out between the 6- and 12-month assessments (p = .04).

Measures

This study was part of a larger investigation examining early biopsychological predictors of PTSD in MVA victims. The present analysis focused on the following measures:

Injury severity—Injury severity was assessed with the Injury Severity Score (ISS: Baker et al., 1974), obtained from patients' medical charts. After separately assessing six body regions (e.g., head/neck, face, & chest), scores for the three most severely injured body regions are squared and summed to compute the ISS. Scores range from 1 to 75 with major traumatic injury defined as a score equal to or greater than 16.

Trauma history—Participants were administered a modified version of the Traumatic Stress Schedule (TSS: Norris, 1992) to assess exposure to nine traumatic events during their lifetime (i.e., being involved in an MVA, being beaten up or attacked). For each endorsed trauma the participant was additionally asked (1) How many times has this happened to you?; and (2) On a scale from 1 to 7 (1 = *not at all*, 7 = *extremely*): (a) to what extent did you fear for your life during this event?; (b) to what extent were you physically injured during the event?; and (c) to what extent were you distressed by the event?

Total number of types of prior traumas was assessed by summing the number of different trauma types endorsed by the participant. As reported previously, number of traumas experienced was calculated by summing the total number of prior traumas experienced by each participant (Irish et al., 2008). These two variables represented the objective measures of trauma history. For the subjective measures of trauma history, the maximum score endorsed was used in analyses.

Social support—Participants completed the Interpersonal Support Evaluation List (ISEL: Cohen & Hoberman, 1983), a 12-item questionnaire that provides a composite total social support score as well as subscale scores for appraisal, tangible, and belonging social support. Participants reported on perceived social support during the prior week, and not directly in response to the MVA. Items were scored on a 4-point Likert scale ranging from 1 *(definitely false)* to 4 *(definitely true)*. Internal consistency for the present study for individual subscales and total social support was acceptable ($\alpha s > .70$).

Posttraumatic stress disorder symptoms—The Clinician Administered PTSD Scale (CAPS; Blake, et al., 1995) is a structured clinical interview designed to evaluate frequency and intensity of PTSS. In addition to allowing for diagnostic classification, the CAPS provides a continuous score for overall symptom severity. Continuous scores were calculated by summing the frequency and intensity values of each item (range of possible scores: 0–136). For the present sample, internal reliability was good at both time-points ($\alpha = .95$).

Procedures

The following procedures were approved by the human subjects review boards of Kent State University, Summa Health System, and Akron General Hospital. Briefly, eligible participants were approached by the trauma center nurse and were informed of the opportunity to participate in the study. Eighty-seven percent of approached patients agreed to participate. Informed consent and sociodemographic information were obtained in-hospital. After participants were discharged, they were interviewed at 6-weeks, and 6- and 12-months post-MVA. At 6-weeks post-MVA, participants completed the TSS (Norris, 1992) and the ISEL (Cohen & Hoberman, 1983). At both 6- and 12-months post-MVA, participants completed the CAPS (Blake, et al., 1995). Upon completion of each time point, participants were paid $25.

Statistical Analyses

To ensure that all retained participants were included in the present analyses, missing data points were imputed using an expectation-maximization (EM) imputation algorithm in EQS 6.1. Initial bivariate correlations were conducted to test for possible relationships between variables of interest and to identify covariates. Hierarchical regression models were conducted to determine whether traumatic history and social support variables interacted to predict PTSS.

Results

Six-months after the MVA, 14 participants (7.0%) met full diagnostic criteria for PTSD. At the 12-month follow-up, 15 participants (9.0%) met PTSD criteria. Due to low rates of diagnostic levels of PTSD, the present study focused on continuous PTSS.

Number of traumas experienced, age, and race were not related to social support or to 6- or 12-month PTSS (*p*s > .05) and thus were omitted from further analyses. The relationships between fear for life, distress, and 6- and 12-month PTSS were greater for females than males (*p*s < .01). Injury severity had a significant positive relationship with appraisal, tangible, and total social support (*p*s < .01). Income had a significant positive relationship with appraisal, tangible, and total social support, and 6-month PTSS (*p*s < .05). Therefore, all analyses controlled for gender, injury severity, and income (Table 1).

Total number of types of prior traumas ($r = .24$, $p < .001$; $r = .23$, $p = .003$), and subjective fear ($r = .35$, $p < .001$; $r = .23$, $p < .001$), distress ($r = .37$, $p < .001$; $r = .16$, $p = .05$), and physical injury ($r = .21$, $p = .009$; $r = .32$, $p < .001$) during prior trauma were related to 6- and 12-month PTSS, respectively. Appraisal ($r = .-.19$, p = .007; $r = .-.23$, p = .003), belonging ($r = .-.15$, p = .03; $r = .-.20$, p = .01) tangible ($r = .-.22$, p = .002 $r = .-.24$, p = .002), and total ($r = .-.21$, p = .002; $r = .-.26$, p = .001, respectively) social support were also related to 6- and 12- month PTSS, respectively.

In hierarchical linear regressions, covariates were entered on the first step, the main effects of trauma history and social support were entered on the second step, and the interaction was entered on the third step. The main effects for trauma history and social support variables were significant or were at the trend level of significance with PTSD at both 6- and 12-months post-MVA (see Tables 2 & 3). Appraisal and total social support were significant moderators of the total number of types of trauma (appraisal: 6-months $\beta = -.16$, $p = .02$; 12-months $\beta = -.17$, $p = .02$; total: 6-months $\beta = -.14$, $p = .03$; Table 2) and subjective physical injury during the prior trauma (appraisal: 6-months $\beta = -.14$, $p = .04$; 12-months $\beta = -.19$, $p = .02$; total: 12-months $\beta = -.17$, $p = .04$; Table 3) in predicting PTSS. All other interaction terms were nonsignificant (*p*s > .05, respectively). Simple slope analyses were conducted to determine which of the lines in the figure represented a statistically significant relationship (see Preacher, Curran, & Bauer, 2006). Analyses revealed that for both total number of trauma types and subjective physical injury, individuals who reported low and average levels of appraisal or total social support (*p*s < .05) had greater symptoms of PTSS. For those reporting high levels of appraisal or total social support the relationship was not significant ($p > .05$). Because the interactions were visually similar, only interactions between subjective and objective trauma history and appraisal social support for PTSS 12-months post-MVA are presented (Figures 1 & 2).

As current mood states can impact reporting of social support (Ibarra-Rovillard & Kuiper, 2011), the above analyses were repeated controlling for depression. Inclusion of depression did not change the significance of any results.

Discussion

Social support along with other coping mechanisms (i.e., problem- and emotion focused coping) have long been found to be related to stress and other mental and physical health outcomes (Penley, Tomaka, & Wiebe, 2002). The present study examined the extent to which different types of social support (i.e., appraisal, tangible, and belonging) moderated the relationship between trauma history and PTSS. Consistent with prior research findings, we found social support to be a very successful and needed coping resource for most individuals who have experienced a traumatic event (Brewin et al., 2000; Ozer et al., 2003).

The moderating effect of social support was found for those who reported high PTSS, which is in line with the stress-buffering hypothesis (Cohen and Wills, 1985). Being exposed to a greater number of trauma types and experiencing more physical injury were positively related to PTSS and this relationship was significantly intensified in the presence of low to average levels of appraisal social support. Although an interaction was found between total social support and trauma history variables, this finding appeared to be due primarily to the strength of the relationship with appraisal social support. Our findings are consistent with other research that suggests that certain types of social support (e.g., appraisal support) would be more beneficial than other forms of support (e.g., tangible and belonging support) in determining psychological functioning (Andrews, Brewin, & Rose, 2003; Hyman et al., 2003; Glass et al., 2007). However, certain types of social support may be needed for specific traumas. For instance, Glass and colleagues (2007) found tangible social support was more appropriate for their victims of violence.

Several shortcomings of the present study should be mentioned. The findings of this study may be limited to the sample examined. The vast majority of the participants in the present study were middle aged and Caucasian. It would be interesting to examine these relationships in different age groups and/or a more diverse sample. Another limitation of this study is that we used self-reports of prior stressful life events, and therefore some caution must be used in their interpretation. Additionally, it is not possible in one prospective study to assess all aspects of social support. Future research will hopefully incorporate these measures to give a more in-depth investigation of the effects of social support across all domains.

The present results underscore the need to assess the benefits of different types of social support and not social support as a single construct. Prior research findings of social support buffering stress following a trauma only provide broad conclusions about the benefits of social support. Findings regarding the importance of specific types of social support can be overshadowed by this global significant finding. There is still much to learn about the various functions of social support and how they work to lower levels of stress when the victim has a trauma history. Future researchers might want to consider the efficacy of earlier interventions involving social support as this may mitigate future PTSS. Future research should also further examine the role that social support plays in mental health and mental health treatment. For instance, having higher levels of social support has been found to moderate the efficacy of exposure therapy and cognitive restructuring in individuals with PTSD (Thrasher, Power, Morant, Marks, & Dalgleish, 2010). Attention to levels of social support in trauma victims (and the possible manipulation of social support) may increase the efficacy of PTSD interventions.

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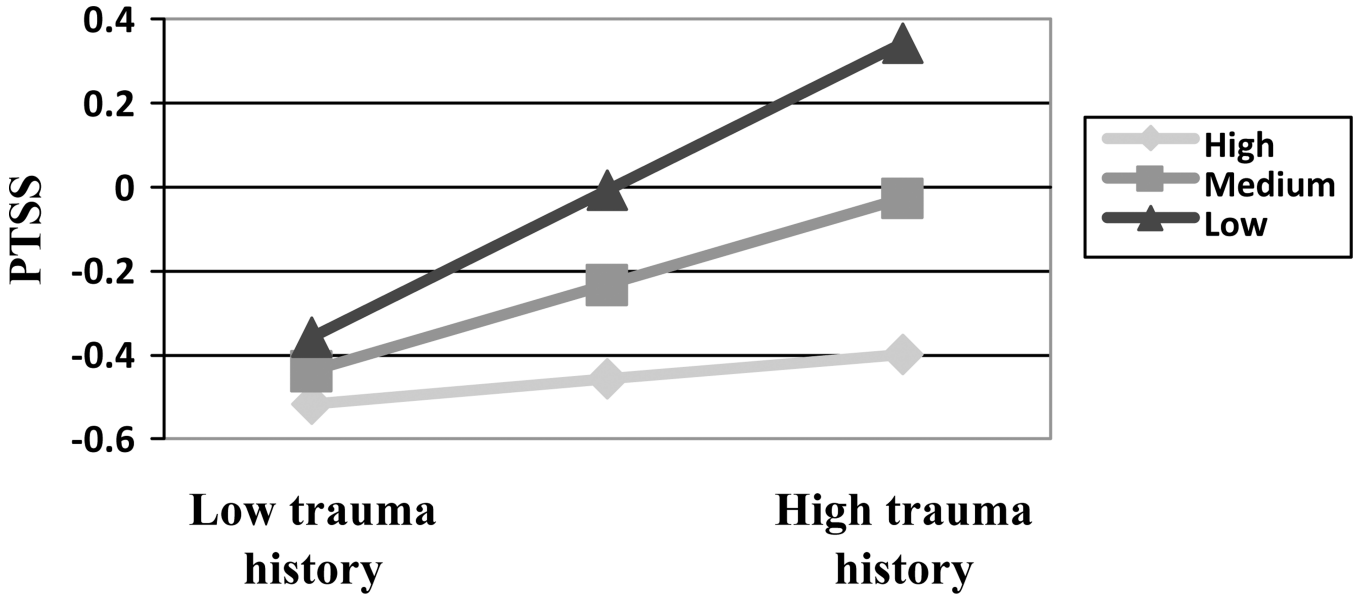

Figure 1.
Interaction of appraisal social support on total number of types of prior traumas 1-year post-MVA (*N*=166). This figure is visually similar for both 6-months post-MVA and total social support. Low and medium levels of social support were significant slopes.

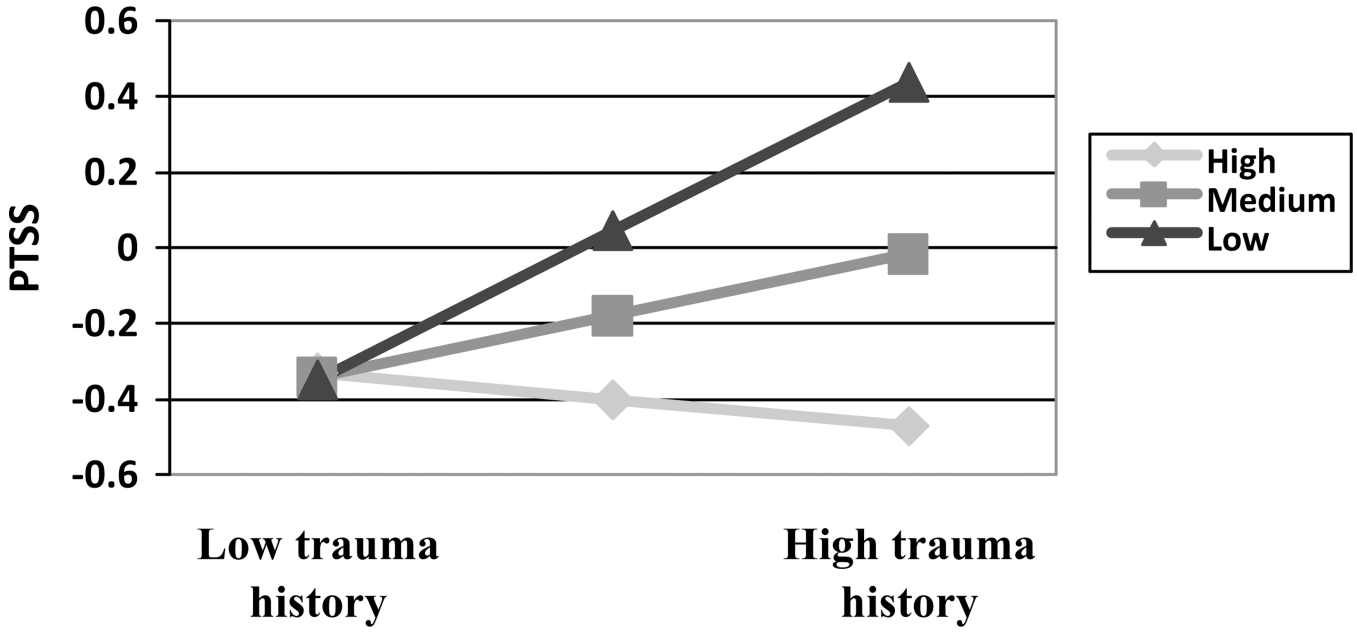

Figure 2.
Interaction of appraisal social support on subjective physical injury 1-year post-MVA (*N*=150). This figure is visually similar for both 6-months post-MVA and total social support. Low and medium levels of social support were significant slopes.

Table 1

Means, Standard Deviations, and Bivariate Correlations Among Variables of Interest and PTSS at 6- and 12-months post-MVA.

	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender		–												
2. Injury severity	6.94 (5.10)	−.014	–											
3. Income		−.24**	.15†	–										
4. Total number of trauma types	3.17 (1.99)	−.02	−.09	−.01	–									
5. Fear for life	4.38 (2.40)	.24**	.03	−.12	.34***	–								
6. Physical injury	4.58 (1.86)	.08	.12	.05	.34***	.49***	–							
7. Distress	5.49 (1.74)	.33***	.06	−.04	.31***	.47***	.37***	–						
8. Appraisal social support	13.49 (2.60)	−.01	.21**	.16*	−.06	.00	−.05	−.04	–					
9. Belonging social support	13.04 (2.57)	.02	.05	.09	−.09	−.08	−.09	.05	.54***	–				
10. Tangible social support	13.84 (2.31)	−.09	.27***	.20**	−.11	−.17*	−.08	−.05	.64***	.65***	–			
11. Total social support	40.37 (6.41)	−.03	.21**	.18**	−.10	−.10	−.09	−.01	.85***	.85***	.88***	–		
12. 6-month PTSS	26.18 (20.57)	.30***	−.04	−.23**	.24**	.35***	.21**	.37***	−.19**	−.15*	−.22**	−.21**	–	
13. 12-month PTSS	19.58 (19.81)	.24**	.03	−.13	.23**	.23**	.16*	.32***	−.23**	−.20*	−.24**	−.26***	.74***	–

Note. PTSS = Posttraumatic Stress Disorder Symptoms

† $p<.10$.

* $p<.05$.

** $p<.01$.

*** $p<.001$.

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Table 2

Hierarchical Linear Regression Models Predicting Appraisal and Total Social Support as Moderators Between Total Number of Trauma Types and PTSS 6-months (N=201) and 12-months (N= 166) Post-MVA.

	Appraisal social support								Total social support			
	6-months				*12-months*				*6-months*			
	B	***SE B***	**β**	R^2	***B***	***SE B***	**β**	R^2	***B***	***SE B***	**β**	R^2
Gender	.56	.13	.28***		.47	.15	.23**		.55	.13	.28***	
Injury severity	.04	.06	.04		.13	.09	.11		.03	.06	.03	
Income	−.12	.06	−.13†	.11	−.04	.07	−.04	.05	−.12	.06	−.13†	.11
Total number of trauma types	.19	.06	.20**		.21	.07	.21**		.19	.06	.19**	.19
Social support	−.18	.06	−.19**	.18	−.23	.07	−.23**	.14	−.18	.06	−.19**	
Trauma types × Social support	−.13	.05	−.16*	.20	−.15	.06	−.17*	.17	−.12	.05	−.14*	.20

† $p<.10$.

* $p<.05$.

** $p<.01$.

*** $p<.001$

Table 3

Hierarchical Linear Regression Models Predicting Appraisal and Total Social Support as Moderators Between Subjective Physical Injury and PTSS 6-months (N=181) and 12-months (N= 150) Post-MVA.

	Appraisal social support								Total social support			
	6-months				*12-months*				*12-months*			
	B	***SE B***	**β**	R^2	***B***	***SE B***	**β**	R^2	***B***	***SE B***	**β**	R^2
Gender	.54	.15	.26***		.45	.17	.21**		.47	.17	.22**	
Injury severity	−.04	.07	−.04		.05	.09	.05		.06	.09	.05	
Income	−.14	.07	−.14*	.11	−.08	.08	−.08	.06	−.08	.08	−.08	.06
Subjective physical injury	.19	.07	.19**		.16	.08	.15*		.14	.08	.13†	
Social support	−.17	.07	−.16*	.17	−.22	.09	−.21**	.12	−.25	.09	−.22**	.14
Injury×Social support	−.16	.08	−.14*	.18	−.23	.10	−.19*	.15	−.20	.10	−.17*	.16

* $p<.05$.

** $p<.01$.

*** $p<.001$