ISSN: 1541-745X www.idrjourna/.com

The Relationship Between Gender and Trauma Symptoms: A Proposed Mediational Model

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ABSTRACT - A relationship between gender and trauma symptoms has been documented in the literature. In this study, it was proposed that perceived benefit beliefs, just world beliefs, and coping style might serve as mediators in the gender-trauma association. This prediction was examined by assessing the responses of 136 individuals to the terrorist attacks in the United States on September 11, 2001. Using correlational and path analytic techniques, results indicated that females reported greater trauma symptoms than males and that, collectively, perceived benefit beliefs, just world beliefs, and coping style mediated the relationship between gender and trauma symptoms. These findings provide an explanation as to why gender has been associated with trauma symptomatology and might prove helpful to clinicians working with trauma victims.

Past research suggests that one need not experience a traumatic event directly to be affected by it; merely witnessing a trauma also poses a risk for posttraumatic reactions (Lerias & Byrne, 2003; Nader, 2002; Silva et al., 2000). This finding leads to the prediction that thousands, indeed, perhaps millions, were adversely affected by the terrorist activities of September 11, 2001. In fact, following the events of September 11th, phone calls to the National Mental Health Association increased by one-third and the American Red Cross recorded over 15,000 contacts for mental-health reasons (Galloro, 2001). A nation-wide survey, conducted within days following September 11th, confirmed that up to 90% of individuals sampled displayed at least one stress symptom in response to indirect exposure to this event (Schuster, Stein, Jaycox, Collins, Marshall, Elliot et al., 2001).

In investigating the ramifications of indirect exposure to the events of September 11th a study utilizing a national probability sample examined the relationship between various demographic factors and posttraumatic symptoms. One factor that proved to be relevant was gender. Specifically, females reported higher levels of posttraumatic symptoms than males did in response to the attack on September 11th (Silver, Homan, McIntosh, Poulin, & Gil-Rivas, 2002). This finding has been replicated with college students as well (Harvey, DeRoma, Saylor, Politano, & Swickert, 2002). The gender difference documented in these studies is consistent with a host of other work that has reported a

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relationship between gender and trauma symptomatology (Breslau, Chilcoat, Kessler, & Davis, 1999; North, Smith, Spitznagel, 1994; Stretch, Knudson, & Durand, 1998). In fact, gender is often listed as a risk factor in predicting the occurrence of PTSD in response to a traumatic event (Brewin, Andrews, & Valentine, 2000; Bromet, Sonnega, & Kessler, 1998). Yet, it is still unclear as to why women, compared to men, are at a greater risk for the development of traumatic symptoms. The goal of this study is to empirically examine factors that might account for the relationship between gender and trauma symptoms. This question was addressed by examining individuals' responses to the terrorist attacks in the United States on September 11, 2001.

In exploring the association between gender and traumatic symptoms, we examined several factors that might serve to mediate the relationship between these two constructs. This approach is based on the premise that gender is a distal factor that influences reactions to trauma through other, more proximal, variables. It is well know that gender roles develop very early on (Albert & Porter, 1988; Wood, Desmarais, & Gugula, 2002), and are believed to influence a whole host of psychological processes (e.g., attitude formation, cognitive processes, personality development) (Carter & Levy, 1988; Eagly, 1987; Robinson & Morris, 1986). In regards to traumatic reactions, it is proposed that gender directly influences both cognitive and behavioral factors, which, in turn, affect trauma symptomatology. The factors examined in this study include perceived benefit beliefs, just world beliefs, and coping style.

With respect to the first proposed mediating variable, the construct of perceived benefits is defined as holding the belief that one benefits in some manner by a negative event that is experienced (McMillen & Fisher, 1998). Females appear more likely than males to find benefit in aversive experiences (Harvey et al., 2002; McMillen & Fisher, 1998; Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1996), perhaps because women are socialized to be more open and receptive to examining internal emotional experiences. It is this internalized focus that facilitates the identification of positive benefits following adversity (Park et al., 1996). In the short-term, having a perception of benefit has been associated with greater distress following a traumatic event. This may be because the individual is emotionally and cognitively processing the aversive experience (McMillen & Fisher, 1998; McMillen, Zuravin, & Rideout, 1995), or because experiencing trauma might motivate one to try to perceive some benefit from the experience (Park et al., 1996; Tedeschi & Calhoun, 1996). Disentangling these two competing explanations has proven difficult in the literature however, in the current study, initial trauma symptoms following September 11th (1-2 weeks post 9-11) was entered as a covariate. In doing so, the proposed directional relationship that was postulated among the variables in this study (i.e., gender influences perceived benefits which, in turn, go onto affect trauma symptoms) could more effectively be assessed during a second phase of testing. That is, it was predicted that females would report greater perceived benefits than would males and that increases in perceived benefits would be positively associated with trauma symptoms. Due to the reciprocal nature of the relationship that might exist between trauma symptoms and all of our proposed mediators, this same strategy (covarying initial trauma symptoms) was employed with all of the mediators in the study.

Regarding the just world construct, individuals who report a greater belief in a just world typically endorse the premise that the world is "just" and that people generally get what they deserve (Lerner & Miller, 1978). Stronger just world beliefs have been associated with greater acceptance and less dissatisfaction with unfair negative outcomes, even when they are personally experienced (Hafer & Olson, 1998). Cognitive dissonance theory (Festinger, 1957) provides an explanation for this finding. It seems that, although personal misfortune serves as disconfirming evidence for a belief in a just world,

individuals who endorse strong just world beliefs are much less likely to change these beliefs when they encounter negative experiences. Instead, they modify their perception of the event from unfair to fair. In doing so, they reduce the dissonance associated with these two inconsistent cognitions and, at the same time, preserve their strong sense of a just world. As such, when individuals witness random, unfair events, such as a terrorist attack, those who have higher just world beliefs might view the events as less unfair, which serves to diminish the negative impact of the trauma. Because females have been noted to have lower just world beliefs than males (O'Connor, Morrison, McLeod, & Anderson, 1996; Whatley, 1993), it seems reasonable to conclude that the gender-trauma effect that has been documented in the literature might be at least partially explained by this variable. That is, gender influences the expression of just world beliefs and it is these beliefs that go onto to influence the evaluation of the traumatic event. Therefore, it was predicted that just world beliefs would serve as a mediator between gender and traumatic symptoms. Specifically, females would report lower just world beliefs when compared with males, and lower just world beliefs would be positively associated with trauma symptoms (after covarying initial trauma symptoms).

The final mediator considered in this study is coping style. Coping is generally regarded as an effort on the part of the individual to meet a demand that is created by a stressful transaction (Folkman, 1984). Regarding gender differences in coping, females tend to report using emotion-focused coping strategies more often than males and males tend to utilize problem-focused coping more so than females (Endler & Parker, 1990; Folkman & Lazarus, 1980; Zuckerman, 1989). Generally, emotional-based coping strategies are viewed as less effective in reducing stress than a more active, problem-solving approach (Carver, Scheier, & Weintraub, 1989). Therefore, it is predicted that females would evidence more emotionally-based coping than males and higher scores on this form of coping style would be positively associated with trauma symptoms (after controlling for initial trauma symptoms).

In summary, it was predicted that gender would be associated with trauma symptoms in response to the events of September 11th. However, it was also hypothesized that just world beliefs, perceived benefits beliefs, and coping strategies would mediate the association between gender and trauma symptomatology (after covarying initial trauma symptoms).

Method

Participants

Seventy-seven participants were recruited from a small military college and 59 participants were recruited from a medium-sized liberal arts college (total $N = 136$). Both institutions are located in the southeastern region of the United States. The mean age for all subjects was 20.75 (18-41). Males constituted 66% of the sample. Regarding the ethnic representation, 77% were Caucasian, 8% African American, 6% Asian American, 4% Hispanic, and 5% classified themselves as "other." All participants were recruited from undergraduate courses in psychology or political science and their participation was entirely voluntary. Extra-credit was offered to participants in classes where this point opportunity was available.

Measures

With permission from the publisher, an abbreviated version of the Davidson Trauma Scale (DTS; Davidson, Book, Colket, Tupler, Roth, David, et al., 1997) was used to assess trauma symptoms. In the abbreviated version of the scale five items that were deemed less relevant to an indirect traumatic stressor or a very recent event were deleted. In the final

abbreviated version of the DTS subjects are asked to indicate whether they experienced any of twelve different trauma symptoms. Higher scores on the DTS are indicative of greater trauma symptom severity. Test-retest reliability for the DTS is good (r = .86) (Davidson et al., 1997). In the current study internal consistency was alpha = .85. Information about the validity of this instrument may be found in Davidson et al., 1997.

The Perceived Benefit Scale (PBS; McMillen & Fisher, 1998) assesses the perception of positive life changes that occur following exposure to a traumatic stressor. Participants use a 5-point Likert response scale (0 = not at all like my experience; 4 = very much like my experience) in responding to items addressing positive benefits of a traumatic event. Higher scores are indicative of greater perceived benefits. Internal reliability of the scale in this study was high (alpha = .96). Information about criterion and convergent validity of this instrument can be found in McMillen and Fisher (1998).

The Charleston Coping Questionnaire (CCQ) is a 38-item measure designed specifically for this study to assess coping efforts that were utilized in response to the events of September 11th. Using a yes/no response option, participants are asked to indicated whether they utilized specific coping techniques (e.g., I dealt with the incident by expressing emotion; I spent considerable time trying to understand how this happened) in the past week. Higher scores reflect greater use of the coping technique. A principal component factor analysis using a varimax rotation was used to inspect the factor structure of the CCQ. A factor loading of .35 was set as the criterion for item retention. Two factors emerged from the analysis. The first factor was a type of social- and emotion-focused coping that we labeled Social Connectedness. This factor was comprised of eight items and sample items include, "I had a strong urge to do something directly to help victims" and "I talked about feelings I was experiencing with others." The second factor was more cognitive-behaviorally oriented and was labeled Ruminative/Avoidance. This factor was made up of six items (e.g., I tried not to talk about the event because it was upsetting; I thought about how things could have been different "if only. . ."). Internal consistency analyses for each of the factors yielded an alpha of .75 for the Social Connectedness factor and an alpha of .48 for the Ruminative/Avoidance factor. Given the low alpha of the second factor, this variable was not included in any additional analyses.

The Just World Scale (JWS; Rubin & Peplau, 1975) was used to assess just world beliefs. Using a 6-point Likert scale format ranging from strongly disagree to strongly agree, subjects respond to 20 items that address whether the world is viewed as a just or unjust place. Higher scores indicate greater just world beliefs. Internal consistency for this scale has been reported to range between .53 and .81 (Furnham, 1998). In the current study alpha was .65 after deleting four items. Information on scale validity can be found in Rubin and Peplau (1975) and Furnham (1998).

Procedure

Participants were first solicited for participation in the first and second weeks (7-15 days) following the events of September 11th (Phase 1). A second assessment occurred between 9 and 10 weeks after September 11th (Phase 2). Only subjects participating in Phase 1 of the study were eligible for participation in Phase 2. This study is based on this second phase of testing. However, an assessment of trauma symptoms during Phase 1 of the study (via the DTS) was included as a covariate in Phase 2 of the study to control for the effect of previous trauma symptoms on the relationships among the variables examined in the path analysis. Regarding the procedure for Phase 2, once informed consent was obtained, participants were administered a packet of materials which included a demographic questionnaire, the DTS, the PBS, the CCQ, and the JWS.

Results

Prior to addressing the hypotheses of the study the distribution of each of the variables was examined for skewness. Due to the significant positive skewness of trauma symptoms and perceived benefits, the distributions for both variables were logarithmically transformed to increase normality.

Because so little is known about factors that contribute to the relationship between gender and trauma symptoms, we felt it was important to not overlook potential associations among the variables in the study. Therefore, we elected to minimize the likelihood of committing Type II errors by setting our critical p-value at a more liberal value of $p < .075$. However, p-values that fell between .05 and .075 were labeled as marginally significant.

ANCOVA, correlational, and path analytic techniques were used to examine the data. College affiliation was entered as a control variable in all analyses as participants were sampled from two different institutions. Regarding the test of the first hypothesis, a significant partial correlation (controlling for college) was found between gender (1= male; 2 = female) and trauma symptoms ($r = .23$, $p = .017$), indicating that females reported a greater number of trauma symptoms than did males. An ANCOVA procedure confirmed this gender difference ($F(1, 132) = 3.91$, $p = .05$).

To address the second hypothesis, a path analysis was conducted to determine whether the proposed mediators would serve as significant intervening variables between gender and trauma symptomatology. In order to be considered a viable mediator the proposed variables must correlate with both the predictor variable (gender) and the criterion variable (trauma symptoms) (Baron and Kenny, 1986). To determine if these conditions were met partial correlations (controlling for college affiliation) were conducted to examine the relationship between gender and the proposed mediators and trauma symptoms and the proposed mediators (see Table 1). All associations were statistically significant except for the correlation between gender and just world beliefs ($r = -.15$, $p = .06$). Although this variable was not statistically significant, it was marginally significant and therefore, was retained in the overall path model. Therefore, all three proposed mediators were included in the path analysis.

Table 1

Partial Correlations among the Variables in the Study (Controlling for College Affiliation)

	G	TS	PB	JW	SC
G	1.0	.23***	.30***	-.15*	.17**
TS		1.0	.34***	-.19**	.42***
PB			1.0	-.05	.43***
JW				1.0	-.06
SC					1.0

Note: G = Gender; TS = Trauma Symptoms; PB = Perceived Benefits; JW = Just World Beliefs; SC = Social Connectedness.

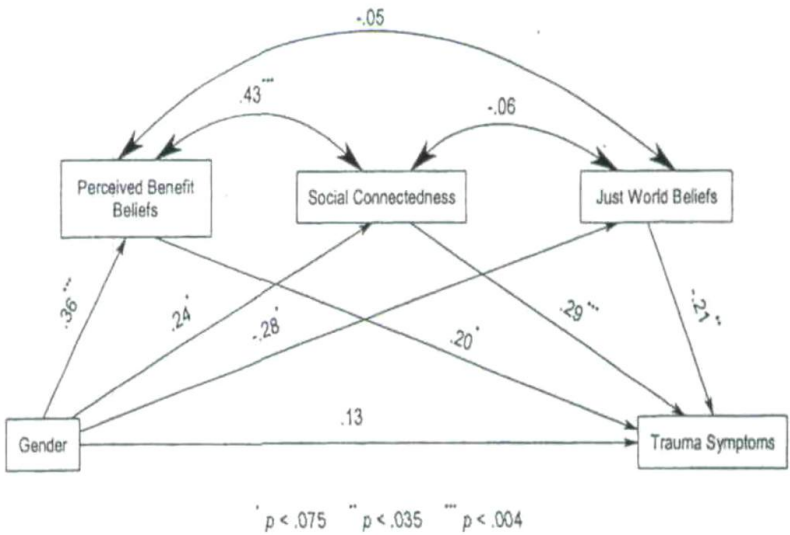
* $p < .065$ ** $p < .05$ *** $p < .01$

Path analysis results were obtained through simultaneous multiple regression analyses and the path coefficients represent standardized partial regression coefficients (β weights). Based on Baron and Kenny's (1986) recommendations, these path coefficients were obtained by computing two separate types of regression equations. First, gender (preceded by college) was entered into the equation to predict each of the proposed mediators.

Second, gender and the proposed mediators were simultaneously entered into the equation to predict trauma symptoms. In this second equation gender and the mediators were preceded by two covariates: college affiliation and trauma symptoms from Phase 1 of the study. The variable of Phase 1 trauma symptoms was included in the equation to control for the potential confound of initial trauma symptoms impacting upon the proposed mediators. Prior to conducting these regression analyses we screened for multivariate outliers. Specifically, all participants who evidenced statistically significant Mahalanobis D^2 values were excluded from the regression analyses.

Figure 1

Path Analysis Examining the Effect of the Proposed Mediators on the Association Between Gender and Trauma Symptoms



All analyses controlled for college affiliation and Phase 1 trauma symptoms.
Gender: 1 = male. 2 = female.

The results from the path analysis are presented in Figure 1. In this figure single-headed arrows represent standardized partial regression coefficients (beta weights) and double-headed arrows represent first-order partial correlations (controlling for college). In this path model gender exerted a significant effect on perceived benefits and a marginally significant effect on social connectedness and just world beliefs. The associations between gender and these mediators were all in the predicted direction. Specifically, females, compared to males, reported greater levels of perceived benefits and social connectedness and lower levels of just world beliefs. Regarding the effects of the

mediators, social connectedness and just world beliefs evidenced significant effects, and perceived benefits exerted a marginally significant effect, on trauma symptoms. These associations were in the predicted direction as well. That is, perceived benefits and social connectedness were associated with greater trauma symptoms. A greater just world belief was associated with lower levels of trauma symptoms. Finally, when gender was modeled in conjunction with the three mediators, the impact of gender on trauma symptoms was no longer significant ($\beta = .13$, $p = .38$).

Discussion

This study confirmed the association between gender and trauma symptoms that has been previously reported in the literature (Breslau, Chilcoat, Kessler, & Davis, 1999; North, Smith, Spitznagel, 1994; Silver, Homan, McIntosh, Poulin, & Gil-Rivas, 2002; Stretch, Knudson, & Durand, 1998). That is, females reported significantly greater traumatic symptoms than did males in response to the events of September 11th. However, results from the path analysis suggest that when the intervening variables of perceived benefits, just world beliefs, and coping are considered, gender is no longer significantly associated with trauma. Collectively, these findings indicate that gender exerts its influence on trauma symptoms through these other, more proximal, variables.

Regarding the effects for each of the mediators, females were more likely to perceive benefits from their experience than were males, and perceiving benefits from the events of September 11th was predictive of greater trauma symptoms. This finding is consistent with other studies that have reported an association between perceived benefits and greater distress in response to a traumatic event (McMillen & Fisher, 1998; McMillen, Zuravin, & Rideout, 1995). Although in the long-term, perceiving benefit from one's traumatic experience is generally considered an adaptive response and is associated with greater adjustment (Davis, 2001; McMillen & Fisher, 1998), in the short-term, individuals who contemplate benefiting from their experience may temporarily increase their experience of anxiety or stress as they recall and review the event (McMillen & Fisher, 1998). Because females reported greater perceived benefits than did males, this might have, at least in the short term, contributed to their heightened symptoms of stress and trauma.

Although the mediating influence of the perceived benefits construct is consistent with our hypothesis, it is important to note that there is an alternate explanation for this finding. As previously mentioned in the introduction, a reciprocal relationship might exist between perception of benefits and trauma symptoms. Rather than the perception of benefits impacting upon trauma symptoms, experiencing high levels of trauma might serve as a motivating influence to make sense of one's experience by trying to find some benefit from it. While this alternative explanation cannot be completely ruled out, it was addressed by entering initial trauma symptoms measured during Phase 1 of the study as a covariate in the path analysis. In doing so, this lessens the likelihood of trauma symptoms impacting upon all of our mediators, including the perceived benefits variable, and allows more confidence in the directionality of the effects specified in the path model.

Regarding the mediating influence of just world beliefs, females, compared to males, reported lower just world beliefs and holding lower beliefs in a just world was associated with greater trauma symptoms. This finding is consistent with previous work that has demonstrated that low just world beliefs are associated with more dissatisfaction in response to an unfair event, such as receiving a poor grade on a task (Hafer & Olson, 1998). The results from our study extend these findings by examining the role that just world beliefs play when individuals respond to a highly threatening event. This effect was found in the context of indirect exposure to the stressor. Future work should examine

whether this same effect is found when individuals are directly confronted with a traumatic event.

With respect to the finding for coping, females, when compared to males, were more likely to cope with the events of September 11th by engaging in a strategy we labeled social connectedness. This technique was associated with greater trauma symptoms. To understand why social connectedness was associated with greater symptoms of trauma one needs to first examine the items that make-up this scale. Although questions that make up the social connectedness scale as a whole assess the motivation to interact with others, the items that are most strongly associated with the scale (i.e., strongest item-to-total correlation) involve elements of empathic concern for the victims of September 11th. Therefore, it can be surmised that individuals who reported greater social connectedness empathized to a greater degree with the victims of September 11th. Surprisingly, it is this empathetic response that might have contributed to increased symptoms of trauma reported by the participants. However, the relationship between empathy and vicarious traumatization has been documented with other populations as well. For example, research conducted in a therapeutic setting has shown that therapists who reported higher levels of empathy were at greater risk for developing PTSD symptoms (Moosman, 2002). Furthermore, given the nature of the attacks of September 11th, participants may be displaying what Richard Lazarus labels a pseudovicarious empathetic experience. This type of experience occurs when "we react emotionally to another's state because we think we might soon be in a similar position" (Lazarus, 1991, p. 288). Research has shown that females generally display more empathetic responses than do males (Koestner, Franz, Weinberger, 1990; Buss, 1995), and because of this they might be more vulnerable to the development of stress symptoms when observing others victimized by terrorist attacks. The results of this study are consistent with this postulation.

While these findings add to our understanding of the relationship between gender and trauma response, several limitations of this study should be acknowledged. First, this study utilized a college student sample and, as such, the results may be somewhat limited in their generalizability. Second, although we examined several theoretically-relevant mediating variables, we do not presume to have accounted for all of the factors that might serve as intervening factors between gender and trauma symptoms. For example, the personality trait of neuroticism might also prove to be an important mediator in the gender- trauma association. Females tend to score higher on neuroticism scales than do males (Costa, Terracciano, & McCrae, 2001), and neuroticism is an important predictor of posttraumatic reactions following a traumatic event (Holeva & Tarrier, 2001; Lauterbach & Vrana, 2001; Morgan, Matthews, & Winton, 1995). Future research should examine this trait, as well as others that might mediate the relationship between gender and trauma.

Although there are some limitations of this study, these findings may have relevance in the clinical domain as they might prove informative to clinicians working with trauma victims. A clinician's knowledge about factors that contribute to gender differences in traumatic reactions may be helpful in screening or predicting severity of response and need for treatment. This work identifies three variables (just world beliefs, perceived benefit beliefs, and coping through social connectedness) that therapists should be aware of when formulating specific treatment plans for clients suffering from traumatic symptoms.

In conclusion, although many studies have documented a relationship between gender and trauma symptomatology, less is known about the manner by which these two constructs are related. Results of this preliminary study demonstrate that the variables of perceived benefit beliefs, just world beliefs, and coping strategy serve as mediators

between gender and trauma symptoms. These findings represent an important initial step in facilitating our understanding of factors that play a role in men and women's differential experience of trauma.

Author Note

The authors wish to thank Dr. James Hittner for his helpful comments and for his assistance with the figure in this manuscript.

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Received 11/15/2003; Accepted 02/04/2004