

The Role of Couples' Interacting World Assumptions and Relationship Adjustment in Women's Postdisaster PTSD Symptoms

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This study examined 58 heterosexual couples' interacting assumptions about the world and relationship adjustment in predicting wives' posttraumatic stress disorder (PTSD) symptoms after severe flooding. Both partners completed the World Assumptions Scale (Janoff-Bulman, 1989), and wives reported on their intimate relationship adjustment and PTSD symptomatology. Neither husbands' nor wives' assumptions alone predicted wives' PTSD symptoms. However, the interaction of husbands' and wives' benevolent world assumptions significantly predicted wives' PTSD symptoms. When husbands held less benevolent world assumptions, there was a negative association between wives' assumptions and PTSD symptoms. Additionally, wives' relationship adjustment predicted their PTSD symptomatology when taking into account individual and interacting self-worth assumptions. Implications for understanding the role of intimate relationships in postdisaster mental health and interpersonally oriented prevention efforts are discussed.

Approximately 20% of U.S. citizens will be exposed to a natural disaster in their lifetime (Briere & Elliott, 2000; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Among those exposed, the incidence of posttraumatic stress disorder (PTSD) ranges from 4% to 54%, depending on the characteristics of the disaster (Waelde, Koopman, Rierdan, & Spiegel, 2001). Even in samples in which few people meet full criteria for a PTSD diagnosis, high levels of PTSD symptoms have been documented among those exposed to natural disasters (McMillen, North, & Smith, 2000). Studies have shown that being married is a risk factor for poor postdisaster adjustment among women and that poor intimate relationship functioning is associated with mental health problems after natural disaster exposure (e.g., Gleser, Green, & Winget, 1981; Solomon, 2002). Although studies have shown that PTSD symptoms are related to intimate relationship functioning, little has been done to

explicate the possible mechanisms that account for the association. The current study advances our understanding of this association by evaluating the independent and interacting role of husbands' and wives' trauma-related world assumptions and relationship adjustment in explaining wives' postdisaster PTSD symptoms.

Though several studies have found being married to be a protective factor for men exposed to a natural disaster, married women appear to be at greater risk for poor postdisaster mental health functioning than unmarried women (Brooks & McKinlay, 1992; Gleser et al., 1981; Solomon, 2002). Moreover, there is a well-documented association between relationship adjustment and PTSD symptoms in a range of trauma populations, including natural disaster victims (for a review, see Monson & Taft, 2005). In addition to the association between relationship- and individual-level functioning, prior cross-sectional studies have found that

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husbands' and wives' individual postdisaster mental health symptoms are correlated (Gleser et al., 1981; Landolt, Vollrath, Ribi, Gnehm, & Sennhauser, 2003; Vila et al., 2001). Gleser and colleagues (1981) found that husbands' symptoms were more strongly predictive of their wives' symptoms than vice versa, which is consistent with the literature on the differential influence of intimate relationships and husbands' mental health problems on wives' mental health problems more generally (e.g., Dawson, Grant, Chou, & Stinson, 2007; Steelman, 2007).

Cognitive theories of PTSD hold that traumatic experiences disrupt beliefs about self, others, and the world or seemingly confirm previously held negative beliefs (Ehlers & Clark, 2000; McCann & Pearlman, 1990; Resick, Monson, & Chard, 2007). More negative assumptions about the self, world, and others have been found in traumatized versus nontraumatized individuals, and these assumptions have been associated with PTSD severity (Owens & Chard, 2001; Wenninger & Ehlers, 1998). Although no study has yet to investigate these cognitions within dyads, Monson, Fredman, and Dekel (in press) and others (Joseph, Williams, & Yule, 1997) have proposed that significant others' cognitions influence individual appraisals of traumatic events and may at least partially account for the robust role of social support in trauma recovery.

This study sought to better understand the role of individual and couples' interacting assumptions in wives' postdisaster PTSD symptoms in a sample of heterosexual couples exposed to a severe flood. We hypothesized that the wives' world assumptions would be associated with their PTSD symptom severity. However, husbands' assumptions were hypothesized to moderate those associations based on theory that intimate partners' beliefs are influential and evidence suggesting that husbands' functioning may be particularly important to wives' functioning. No specific hypotheses were formed related to different types of assumptions because of the lack of prior research in this area. We examined the role of wives' relationship adjustment in testing the above associations because of the documented association between relationship satisfaction and PTSD and because relationship adjustment may influence the role that husbands' cognitions have on wives' cognitions.

METHOD

Participants

The parent study, from which the current participants were drawn, was focused on women's experience of domestic violence and related sequelae after exposure to a natural disaster. These women reported on a variety of measures related to the flood experience, mental health, substance use, and family functioning. A subsample of the women's husbands completed a relatively brief battery of self-report materials reported on here. Participants were 58 heterosexual couples who were cohabitating in Monroe County, Illinois, or St. Louis, Missouri, when the Mississippi River flooded in 1993.

This flood affected land in eight states and is recorded as one of the most devastating floods in American history. Over 15,000 square miles of land were submerged by flood water; 50 people died; and 55,000 homes were damaged. Unlike many disasters that occur and end swiftly, the river did not recede back into its banks for 80 days.

Recruitment began approximately 9 months after the end of the flood. Tax records were used to obtain potential participant names, which were then matched with addresses of residential property in the flooded areas. Potential study participants were randomly selected from the list of those affected by the flood and was sent an introductory letter and response postcard to indicate their interest in participating. Assessment occurred on one occasion and participants completed all measures on a laptop computer. The couples had to be cohabitating six months prior to, and at the time of, the flood. All but one couple were married (98%), with an average relationship length of 26.1 years ($SD = 17.8$). The wives' average age was 53 years ($SD = 16$). All of the wives, except one, identified as Caucasian; one wife identified herself as Hispanic, but did not report her race. Forty-five percent of the wives worked fulltime, 7% were employed parttime, 7% were unemployed or disabled, 16% were retired, and 26% self-described as a homemaker. The husbands' average age was 55 years ($SD = 17$). All of the husbands identified as Caucasian. Fifty-five percent of the husbands worked fulltime, 3% were employed parttime, 7% were unemployed or disabled, and 35% were retired.

Measures

The National Women's Study PTSD module (NWS; Kilpatrick, Resnick, Saunders, & Best, 1989) is a descendant of the Diagnostic Interview Schedule used in the National Vietnam Veterans Readjustment Study (Kulka et al., 1990); it has been used in several epidemiological studies (e.g., Hanson, Kilpatrick, Freedy, & Saunders, 1995; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). The modification for the current study consisted of the women self-reporting the presence or absence of symptoms in the month prior to assessment. The total number of symptoms endorsed (up to 20) was used as an indicator of the extent of PTSD symptomatology. Only the wives completed this measure, and the internal consistency reliability estimate for this measure was .91 in this subsample.

The 32-item World Assumptions Scale (WAS; Janoff-Bulman, 1989) measures basic assumptions about the world. Each item is rated on a 6-point Likert scale, and items are summed to calculate subscale scores. The three major subscales used were (a) benevolence of the world, (b) self-worth, and (c) meaningfulness of the world. Higher scores indicate more positive assumptions. In the current study, husbands and wives both completed this scale, and the alpha coefficients for the three subscales ranged from .76 to .87.

Table 1. Bivariate Correlations Among the Variables of Interest

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Wives' PTSD symptomatology	5.8	5.2	–	–.26*	–.08	.12	–.16	–.16	.00	.02
2. Wives' relationship adjustment	111.6	14.3		–	.51**	.19	.07	.20	.11	–.06
3. Wives' WAS–Benevolence of the world	33.8	4.6			–	.30*	.02	.27*	.24	–.05
4. Wives' WAS–Self-worth	46.9	5.2				–	.20	.15	.20	.19
5. Wives' WAS–Meaningfulness of the world	40.5	7.5					–	–.06	–.08	–.01
6. Husbands' WAS–Benevolence of the world	33.9	4.1						–	.38**	.02
7. Husbands' WAS–Self-worth	47.1	6.5							–	–.08
8. Husbands' WAS–Meaningfulness of the world	43.0	6.9								–

Note. PTSD = Posttraumatic stress disorder; WAS = World Assumption Scale.

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

The 32-item Dyadic Adjustment Scale (DAS; Spanier, 1976) measures relationship adjustment, including degree of relationship consensus, cohesion, expression of affection, and satisfaction. Items are summed to create a total score, with higher scores indicative of more dyadic adjustment. Several studies provide evidence for this measure's strong psychometric properties (e.g., Heyman, Feldbau-Kohn, Ehrensaft, Langhinrichsen-Rohling, & O'Leary, 2001; Sharpley & Cross, 1982). Only the wives completed this measure, and the alpha coefficient was .94 in this sample.

Data Analysis

The hypotheses were tested using hierarchical linear regression analyses, with wives' PTSD symptom severity as the outcome variable. The wives' and husbands' individual WAS scales were entered in the first step and their interaction was entered in the second step. Wives' DAS scores were entered at the third and final step to control for the effect of relationship adjustment in the associations between assumptions and PTSD symptoms. As recommended by Aiken and West (1991), the two continuous predictor variables in the interaction term were centered. We probed interactions using Preacher, Curran, and Bauer's (2006) procedures for simple slope analysis, with conditional values of the predictors set at plus or minus one standard deviation of the husbands' and wives' assumptions.

RESULTS

As shown in Table 1, wives' PTSD symptoms were significantly associated with their DAS scores. However, there were no significant associations between wives' or husbands' WAS scale scores and wives' PTSD symptoms.

Table 2 shows that wives' and husbands' benevolence of the world assumptions did not predict wives' PTSD symptoms, but the interaction of their assumptions did in the second step. The effect size for the interaction, represented by the standardized beta,

was approximately medium size according to Cohen's (1988) effect size descriptions. Probing of the interaction revealed the expected negative association between wives' benevolent world assumptions and PTSD symptoms when husbands' benevolent world assumptions were set at one standard deviation below the mean, $B = -0.44$, $SE(B) = 0.23$, $p < .05$. There was not an association between the wives' benevolence of the world assumptions and PTSD when husbands' benevolent world assumptions were set at one standard deviation above the mean, $B = 0.20$, $SE(B) = 0.20$, *ns*. Figure 1 shows the modifying effect of husbands' assumptions about the world on wives' PTSD when their wives' had less benevolent assumptions. With the addition of the wives' DAS scores in the third step, which were not significantly related to their PTSD symptoms, the interaction of the wives' and husbands' benevolent world assumptions became a trend. However, the effect size of the interaction changed minimally with the addition of the DAS.

With regard to self-worth assumptions, there was a trend for a medium-sized association between husbands' and wives' interacting self-worth assumptions in predicting wives' PTSD symptoms in the second step of these analyses. A significant negative association was found between wives' DAS scores and PTSD symptoms in the third step. In the regression analysis related to meaningfulness of the world assumptions, the wives' and husbands' interacting assumptions did not predict the wives' PTSD symptoms in the second or third steps. In the final step, there was a trend for a negative, medium-sized association between wives' DAS scores and PTSD symptoms.¹

DISCUSSION

Recent large-scale natural disasters accentuate the need to better understand the individual and interpersonal factors associated with postdisaster adjustment. This study of couples exposed to a natural disaster expands the current knowledge of the role of

¹ We ran these analyses controlling for traumas occurring prior and subsequent to the disaster and did not find differences in the results presented here.

Table 2. Hierarchical Multiple Regression Analyses Predicting Wives' PTSD Symptom Severity

	Benevolence of the world			Self-worth			Meaningfulness of the world		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Step 1:	$R = .16, R^2 = .03$			$R = .12, R^2 = .02$			$R = .16, R^2 = .03$		
Wives' assumptions	-0.04	0.16	-.04	0.12	0.14	.13	-0.11	0.09	-.16
Husbands' assumptions	-0.18	0.17	-.15	-0.02	0.11	-.02	0.01	0.10	.02
Step 2:	$R = .33, R^2 = .11$			$R = .27, R^2 = .08$			$R = .17, R^2 = .03$		
Wives' assumptions	-0.12	0.16	-.11	0.08	0.14	.08	-0.11	0.09	-.16
Husbands' assumptions	-0.20	0.17	-.16	0.02	0.11	.02	0.03	0.11	.04
W*H assumptions	0.08	0.04	.29**	0.03	0.01	.25*	0.01	0.02	.05
Step 3:	$R = .37, R^2 = .14^*$			$R = .38, R^2 = .14^*$			$R = .30, R^2 = .09$		
Wives' assumptions	0.01	0.18	.00	0.15	0.14	.15	-0.08	0.09	-.12
Husbands' assumptions	-0.18	0.17	-.14	0.02	0.11	.02	0.02	0.11	.03
W*H assumptions	0.07	0.04	.24*	0.02	0.01	.21	0.01	0.02	.07
Wives' relationship adjustment	-0.08	0.06	-.22	-0.10	0.05	-.27**	-0.09	0.05	-.25*

Note. PTSD = Posttraumatic stress disorder; W*H = husbands' and wives' interacting assumptions.

* $p < .10$. ** $p < .05$.

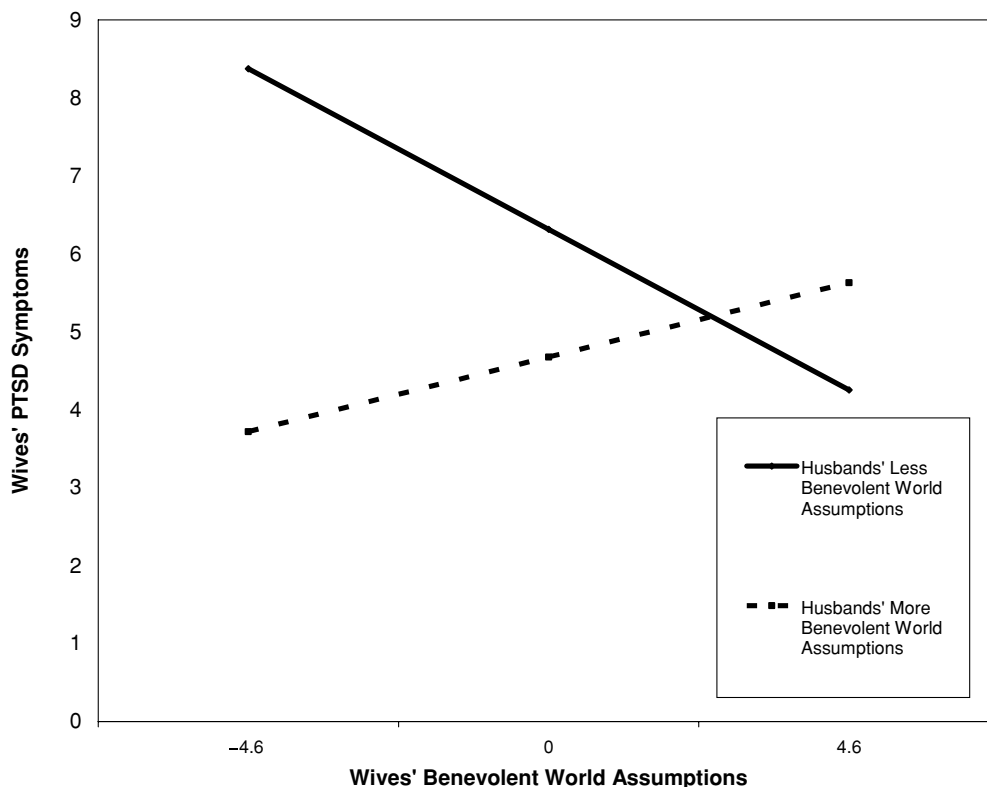


Figure 1. The figure illustrates the modifying effect of husbands' assumptions on wives' posttraumatic stress disorder (PTSD) symptoms when their wives had less benevolent assumptions.

intimate partners in individual disaster-related PTSD symptoms by examining the interaction of trauma-related assumptions held by each member of the couple. Across analyses, individually held world assumptions did not predict the wives' PTSD symptomatology. However, the interaction between the wives' and husbands' benevolent world assumptions was associated with wives' PTSD symptoms. When husbands held less benevolent world assumptions, there was a negative association between the wives' benevolence of the world assumptions and PTSD symptoms. In addition, wives' relationship adjustment was significantly associated with their PTSD symptoms after taking into account individual and interacting self-worth assumptions. Although the association between wives' relationship adjustment and PTSD symptoms failed to meet conventional levels of statistical significance in other analyses, this association was consistently of a medium effect size in the analyses.

Though preliminary, these findings suggest that significant others' assumptions can influence the association between individual assumptions about the world and PTSD symptoms. This seems especially true in cases in which there are more negative assumptions held by both partners. Jointly held negative beliefs would seem to be mutually reinforcing and might lead to greater avoidance and, consequently, more PTSD symptoms. Interacting benevolence of the world assumptions, and perhaps self-worth assumptions, but not meaningfulness of the world assumptions were relevant to the wives' PTSD symptoms. Prior research supports the relative impact of benevolent world and self-worth assumptions compared with meaningfulness of the world assumptions in PTSD symptoms (e.g., Dekel, Solomon, Elklit, & Ginzburg, 2004; Elklit, Shevlin, Solomon, & Dekel, 2007; Solomon, Iancu, & Tyano, 1997). Furthermore, the significant interaction between husbands' and wives' benevolent world assumptions more specifically may be attributable to the externally oriented focus of these assumptions related to safety in the world. This is in contrast to assumptions involving the self as the referent in self-worth assumptions; husbands and wives responded to the self-worth assumptions with themselves as the focus. Externally oriented assumptions may be more likely than internally oriented assumptions to interact in a dyad to influence individual PTSD symptomatology. Consistent with prior research in a range of traumatized samples, intimate relationship adjustment was inversely associated with PTSD symptoms. Prevention efforts employed to date have focused on individual factors, such as individual trauma memories and trauma-relevant cognitions. There is a range of intimate relationship factors that might be targeted, including spousal support, intimacy, and consensus, to reduce the likelihood of postdisaster mental health symptoms. Interventions focused on intimate relationships may be an attractive alternative to the trauma-focused individual prevention efforts tested to date (see Feldner, Monson, & Friedman, 2007 for review). The current findings also indicate that individuals in relationships in which both partners hold negative assumptions might be especially good candidates for such dyadic interventions.

Future prospective studies that investigate a range of individual and interpersonal variables are needed to test these propositions.

Several limitations to the current study should be considered. First, the sample size precluded power to find statistically significant results in some cases. We included effect size estimates to facilitate interpretation, given this limitation. In addition, the number of PTSD symptoms endorsed by the wives was relatively low, which may have underestimated the true correlation between these assumptions and PTSD symptoms. That said, some prior research has failed to find an association between the cognitions measured on the WAS and trauma-related symptoms (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999; Owens, Pike, & Chard, 2001). Future research should include other validated measures of PTSD symptoms (e.g., Posttraumatic Stress Disorder Checklist; Weathers, Litz, Herman, Huska, & Keane, 1993) and cognitions (e.g., Posttraumatic Cognitions Inventory; Foa et al., 1999). Another important future extension is the evaluation of husbands' PTSD symptoms and relationship adjustment, as well as spouse-specific social support in wives' PTSD symptoms. Unfortunately, these variables were not assessed in the current study, which limited their exploration. As previously reviewed, research suggests that husbands' functioning is particularly important to wives' mental health. Thus, it might be hypothesized that husbands' hyperarousal and emotional numbing symptoms, for example, may be especially related to wives' PTSD symptoms and/or the association between wives' cognitions and PTSD symptoms. Likewise, husbands' relationship adjustment needs to be considered in these associations. The data were collected cross-sectionally, which makes it impossible to determine the directionality of the relationships among the variables. There is the potential for changes in the associations among the variables over the course of trauma recovery. For example, as Kaniasty and Norris (2008) have found in the case of social support, interpersonal relationship factors may initially predict individual postdisaster problems, but individual postdisaster problems may result in subsequent interpersonal problems. Finally, the sample was limited in its ethnic/racial and sexual orientation diversity, which limits the generalizability of the current findings to different groups. Despite these limitations, the current study adds to the limited knowledge of the interpersonal context in which postdisaster mental health symptoms develop, and further informs prevention and treatment efforts.

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