

The impact of negative attributions on the link between observed partner social support and posttraumatic stress disorder symptom severity



Feea R. Leifker¹, Amy D. Marshall*

Department of Psychology, The Pennsylvania State University, 140 Moore Building, State College, PA 16802, United States

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ABSTRACT

Lack of perceived social support is one of the strongest correlates of the development and maintenance of posttraumatic stress disorder (PTSD). However, little is known about observed social support and PTSD. The stress buffering effect of social support may be partly determined by the subjective experience of support, which is created by attributions regarding support behaviors. We examined negative attributions about partner-provided support as a moderator of the expected relation between observed support during couple discussions and PTSD symptom severity. Participants included 128 individuals from 64 heterosexual married or cohabitating couples. Per clinician-administered interview, 72 (56%) participants met subthreshold or diagnostic criteria for PTSD. Receipt of relatively more partner support was modestly associated with lower PTSD symptom severity. Negative causal attributions about partner support were not associated with the amount of support received, but were associated with higher PTSD severity. Additionally, the frequency and quality of received partner support was associated with lower PTSD symptom severity only among those who did not make strong negative causal attributions about partner support. Thus, negative causal attributions may dampen the positive effects of social support on PTSD symptoms. PTSD treatments may more effectively facilitate recovery from trauma by decreasing negative support attributions.

1. Introduction

Recent research points to the key role of interpersonal processes in the development and maintenance of posttraumatic stress disorder (PTSD; e.g., Monson, Fredman, & Dekel, 2010). Perhaps one of the most robust and consistent interpersonal constructs associated with PTSD is social support. Meta-analyses have shown lack of perceived social support to be the strongest predictor of the development of PTSD following exposure to trauma and the presence of social support to be related to lower PTSD symptom severity subsequent to trauma exposure (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003; Wright, Kelsall, Sim, Clarke, & Creamer, 2013). Higher levels of support are associated with lower PTSD symptom severity within both veteran (e.g., King, King, Fairbank, Keane, & Adams, 1998; Schnurr, Lunney, & Sengupta, 2004) and civilian (e.g., Andrews, Brewin, & Rose, 2003) samples. It is theorized that the presence of social support can provide a buffer against stress by helping decrease negative appraisals of stressful events, improve coping self-efficacy, and promote efforts to diminish stressors, such as through self-disclosure about stressful situations (Cohen & Wills, 1985; Thoits, 1986), thereby promoting

recovery from stressful or traumatic events.

While much of extant research has focused on support providers in general (e.g., friends, relatives, fellow veterans), intimate partners are often considered one of the most important and preferred providers of social support (Dakof & Taylor, 1990). Indeed, among a sample of Air Force service members, partner support was uniquely associated with reduced PTSD symptom severity compared to support from other providers (i.e., friends, other family members; Balderrama-Durbin et al., 2013). Additionally, lack of partner social support following trauma exposure has been found to predict greater PTSD symptom severity 16 weeks after trauma (Robinaugh et al., 2011). Thus, more frequent and better quality support specifically from one's intimate partner is associated with lower PTSD symptom severity.

Although social support from one's intimate partner may be particularly important for promoting recovery from trauma, PTSD is also associated with increased problems in intimate relationships that may negatively impact one's ability to receive or benefit from social support. Specifically, PTSD is associated with intimacy problems, less self-disclosure, more negative communication patterns, and lower relationship satisfaction (Allen, Rhoades, Stanley, & Markman, 2010; Balderrama-

* Corresponding author at: 140 Moore Building, The Pennsylvania State University, University Park, PA 16802, United States.

E-mail address: AmyMarshall@psu.edu (A.D. Marshall).

¹ Present address: Department of Psychology, University of Utah, United States.

Durbin et al., 2013; Hanley, Leifker, Blandon, & Marshall, 2013; Riggs, Byrne, Weathers, & Litz, 1998; Taft, Watkins, Stafford, Street, & Monson, 2011). Furthermore, partners of individuals with PTSD also experience emotional problems, relationship distress, and more negative communication patterns within their intimate relationships (Allen et al., 2010; Jordan et al., 1992; Lambert, Engh, Hasbun, & Holzer, 2012; Riggs et al., 1998). Thus, while partner support may be powerful, given the disrupted relationship processes among individuals with PTSD, the presence of support may be especially tenuous.

Accurate social cognition is key to successful social interactions; however, this process is also often impaired among individuals with PTSD (Nietlisbach & Maercker, 2009). PTSD is associated with maladaptive interpersonal cognitions, including thoughts regarding the inability to trust or rely on others and concerns that others may not be what they seem (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). Such negative cognitions likely serve to reduce engagement in social situations (Nietlisbach & Maercker, 2009) and inhibit self-disclosure (Belsher, Ruzek, Bongar, & Cordova, 2012), including within intimate relationships. Of particular importance when considering how individuals process and interpret others' behaviors are attributions regarding the cause (i.e., causal attributions), intention (i.e., responsibility attributions), and meaning of these behaviors. Negative relationship attributions are frequently made among individuals in distressed relationships and among those experiencing stress, anxiety, or depression (Bradbury & Fincham, 1990; Hickey et al., 2005). Indeed, Miller et al. (2013) found that PTSD severity was associated with making more negative attributions regarding their partner's negative behaviors (e.g., criticizing, not helping around the house).

The presence of negative attributions may also result in distorted processing of neutral or positive (e.g., supportive) social interactions with one's partner (Epstein & Baucom, 2002). Attributions made when a partner provides support will determine whether the behavior is experienced as supportive. Additionally, low frequency or low quality support will be more deleterious if it is viewed as intentional and within the partner's control (Fincham & Bradbury, 1990). These attributions may in turn diminish the stress buffering effect of such behaviors on PTSD symptom severity. Indeed, research among children exposed to trauma suggests that cognitive appraisals mediate the short- and long-term associations between social support and PTSD symptom severity (Hitchcock, Ellis, Williamson, & Nixon, 2015). Specifically, Hitchcock et al. found that children's perceived support was negatively associated with negative appraisals about the trauma, which were associated with higher PTSD symptom severity. Importantly, this association has not been examined among adults or intimate relationships, nor has the contribution of support-specific interpersonal cognitions been examined.

When conducting research among study participants who likely experience impaired social cognition, such as individuals with PTSD, support behaviors must be more objectively measured. Unfortunately, to date, research on the link between PTSD severity and social support is almost exclusively based on self-report measures of perceived availability and receipt of support, despite widespread knowledge that people are notoriously inaccurate when reporting on social behavior, including that of one's own partner (Christenson & Nies, 1980). These inaccuracies may also be systematically biased by negative outlook, anxiety, and depression (Vinokur, Schul, & Caplan, 1987), all frequent characteristics of individuals with PTSD. Additionally, attributions for others' behaviors are critical in determining whether an individual will perceive behaviors as supportive (Fincham & Bradbury, 1990). Because the association between PTSD and social support is bidirectional, such that, once PTSD becomes chronic, it leads to less perceived social support (Kaniasty & Norris, 2008), it is possible that this association is partly a function of PTSD-related negative attributions impeding the perception or recognition of supportive behaviors. As such, exclusive reliance on perceived support measures may produce biased estimates of the importance of social support in PTSD. Thus, the link between

PTSD severity and social support found in previous studies may be partly a function of PTSD-related distorted impressions of social support.

To further determine the extent to which partner support is associated with PTSD symptom severity, it is also important to consider what types of support most strongly contribute to the reduction in PTSD severity. Most research has focused on the specific roles of perceived emotional support, perceived informational support, or social network size. However, considering a broader range of social support behaviors (e.g., esteem support, tangible support) may reveal additional types of support that confer ameliorative benefits. For instance, Glass, Perrin, Campbell, and Soeken (2007) found that, following trauma exposure, greater tangible support decreased PTSD symptom severity, while the same relation was not found when considering emotional support. Thus, a broader, more multi-dimensional definition of social support can provide a more accurate estimate of the frequency and quality of support provided to individuals coping with traumatic situations as well as guide intervention development.

The current study addresses the limitations of prior research by using a multi-dimensional social support coding system to behaviorally code discussions among couples in which at least one partner exhibits elevated PTSD symptoms. We hypothesize that receipt of observed partner social support will be negatively associated with one's PTSD symptom severity. We also expect PTSD symptom severity to be associated with making stronger negative causal and responsibility attributions regarding observed partner social support. Further, we hypothesize that negative causal and responsibility attributions regarding partner social support will moderate the expected relationship between support and PTSD severity, such that those making stronger negative attributions will not exhibit as strong of a negative association between social support and PTSD. Lastly, we aim to explore what specific forms of social support are associated with PTSD symptom severity and negative attributions regarding support. It is expected that results from the present study could inform couples-based interventions for PTSD by elucidating whether it is helpful to reduce negative cognitions about support or focus on increasing partner support.

2. Methods

2.1. Participants and procedures

Participants include 128 individuals from 64 married or cohabitating heterosexual couples. Participants were recruited from rural or semi-rural communities for a study of PTSD and relationship functioning using flyers, newspaper, and online ads targeting couples in which at least one partner had experienced a stressful life event. Interested couples were asked to contact the lab, after which each partner was screened via telephone for probable PTSD using the PTSD Checklist-Civilian Version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993). This measure was used for screening and recruitment purposes only; PTSD symptom severity was later confirmed during a laboratory session using a clinician-administered diagnostic interview. Following screening, couples were excluded if neither partner met criteria for probable PTSD (i.e., PCL-C < 44; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; $n = 122$ couples), they were no longer interested in the study ($n = 8$), partners' combined income exceeded \$100,000 per year and/or either partner had more than six years post-high school education ($n = 3$), or they ended their relationship ($n = 1$). Because participant recruitment occurred in rural communities surrounding a university town, income and education restrictions were used to ensure a sample representative of rural communities and those often served by rural community clinics rather than university-affiliated individuals (e.g., faculty) who do not fully represent the communities.

On average, participants were 37.16 ($SD = 12.64$) years of age, with an individual monthly income of \$1733.00 ($SD = \1529.00), and 14.31 ($SD = 2.31$) years of education. Few (17%) participants were

students and most (68.6%) were currently employed. Participants self-identified their race/ethnicity as Caucasian (85.9%), African American (6.3%), biracial/multiracial (3.9%), or Hispanic/Latino (3.9%). Most (72.7%) couples were married. All but one participant experienced an event that met DSM-IV Criterion A for PTSD. Participants' index traumas were heterogeneous; the most frequent traumas endorsed were motor vehicle accidents, prior intimate partner violence victimization, and loved ones experiencing life-threatening events or sudden death.

Participants completed the study (including procedures not contained in the current study) during one 8-h session or two 4-h sessions (typically scheduled one week apart). Husbands and wives completed all procedures described below in separate rooms, with the exception of the relationship discussions.

2.2. Instruments

2.2.1. Posttraumatic stress disorder

The Clinician Administered PTSD Scale for DSM-IV (CAPS; Blake, Weathers, Nagy, & Kaloupek, 1995) is a semi-structured interview that assesses the frequency and intensity of each PTSD symptom. Rating scales for each symptom range from 0 to 4, with higher scores indicating higher frequency or intensity of each PTSD symptom. The CAPS has demonstrated high interrater reliability, high internal consistency, and high convergent validity with other PTSD measures (Weathers, Keane, & Davidson, 2001). In the current sample, coefficient alpha was 0.94. Interrater reliability for overall PTSD symptoms was $r = .92$.

2.2.2. Trauma history

The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) was used to aid in identification of the primary trauma to be assessed during the CAPS interview. The TLEQ lists 22 types of potentially traumatic events and asks respondents to indicate if, and how frequently, they experienced each event. For each potentially traumatic event, the measure includes queries about emotional reactions and which trauma currently causes the most distress. The TLEQ has demonstrated acceptable test-retest reliability and content validity (Kubany et al., 2000). Overall, participants experienced an average of 7.68 ($SD = 3.65$) potentially traumatic events; most commonly reported events include motor vehicle accidents, intimate partner violence, loved ones experiencing life-threatening events/sudden death, and physical abuse during childhood.

2.2.3. Support attributions

The Relationship Attribution Measure (Fincham & Bradbury, 1992) assesses causal and responsibility attributions regarding 8 negative relationship behaviors. Participants are asked to imagine their partner performing each behavior, then rate their attributions. Causal attributions assess the extent to which one believes the behavior is stable, global, and due to the partner. Responsibility attributions assess the extent to which one believes the problem is intentional on the part of their partner, selfishly motivated, and that their partner is responsible for their actions. Support attributions were assessed using the set of six items that ask participants to rate their level of agreement (1 “disagree strongly” to 6 “agree strongly”) about cause and responsibility when “your partner doesn't give you the support you need.” Higher scores indicate that individuals report insufficient support to be a long-lasting, stable, and global problem (causal attributions) and that their partner is responsible and blameworthy (responsibility attributions). In the present study, coefficient alpha for causal attributions was .75 and for responsibility attributions was .84.

2.2.4. Observed partner social support

Participants independently listed, in order of importance to themselves, the five most distressing aspects of, or problems in, their relationship. The highest rated topic common to both partners was

selected for a 10-minute video-recorded couple discussion. The Social Support Behavior Code (Cutrona & Suhr, 1994; Suhr, Cutrona, Krebs, & Jensen, 2009) was used to assess the frequency of social support behaviors during the discussions. The coding system measures a range of different types of social support including informational support (e.g., offer suggestions, give advice, teach skills, reappraise a situation), emotional support (e.g., express affection, show sympathy, express concern, provide reassurance or understanding), esteem support (e.g., compliment, validate, relieve blame), tangible support (e.g., offer a specific behavior to help or reduce stress, express willingness to help, comply with a request), network support (e.g., offer to spend time with the other, provide access to new companions), tension reduction (e.g., make a joke, distract partner) and attentiveness (e.g., responsive to partner, information seeking/inquiries). Subscales for each type of social support and overall support are computed by summing the frequency of each behavior within a given category. The coding scheme demonstrates good reliability and validity (Suhr et al., 2009).

For the present study, the coding scheme was modified to add quality ratings for each of the categories of support ranging from 1 “very poor” to 6, “very good.” When judging quality of each type of support, raters considered the appropriateness for the person/situation and how well each behavior was executed. A “point of view” behavior was added to the informational support subscale for instances when one partner explained their point of view about a problem (e.g., explained how they understood the problem, how they felt when their partner acted a certain way). This code was added to capture a subtler type of information provision than the original coding system provided.

Two undergraduate psychology students were trained to code the discussions following Suhr et al. (2009) guidelines. Ten percent of interactions were randomly selected for calculation of interrater reliability. Ratings by the first author were used as the “gold standard” to which other ratings were compared. Reliability for frequency ratings (intraclass correlation coefficients; ICC = .70 - .96) were akin to that found by Suhr et al. (2009); reliability for quality ratings were similarly adequate (ICC = .75 - .94). The network support category was removed from the coding scheme due to low prevalence of these behaviors. For all analyses, frequency and quality scores were multiplied, then summed across subscales to yield a total support score that represents the frequency and quality of social support.

2.3. Data analysis

Among all participants, continuous PTSD severity scores derived from the CAPS interview were used because taxometric analyses suggest that PTSD is a dimensional disorder representing an extreme reaction to traumatic life events (e.g., Broman-Fulks et al., 2006). Continuous scores also improve statistical power, are more reliable, and yield a greater amount of clinically relevant information than categorical measures. The expectation-maximization (EM) method was used to address missing data so participants with partial data could be included (Little & Rubin, 1987; $N = 26$ individuals had incomplete data on the Relationship Attribution Measure). EM provides less biased estimates than other methods such as listwise deletion, pairwise deletion, or regression substitution (Schafer & Graham, 2002). Little's chi-square test was used to confirm that data were missing completely at random prior to computing missing data.

Bivariate correlations were conducted to examine the relations among PTSD symptom severity, social support, and relationship attributions. The moderating role of negative support attributions was tested using the Actor-Partner Interdependence Model (Kenny, Kashy, & Cook, 2006). As husbands and wives are members of the same interpersonal system (i.e., a couple) and interacted during the relationship discussion paradigms, their behaviors, thoughts, and feelings are non-independent. Using this model, it is possible to test the effects of both one's own (actor) and one's intimate partner's (partner) supportive behaviors during the relationship discussion task. Actors' PTSD severity

Table 1
Descriptive Statistics and Bivariate Correlations Among Primary Study Variables.

Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11
1. PTSD Symptom Severity	36.11 (24.49)	–										
2. Negative Causal Attributions	9.63 (3.16)	.19*	–									
3. Negative Responsibility Attrib.	7.85 (2.90)	.16	.66***	–								
4. Received Informational Support	26.30 (20.00)	-.23**	-.07	.00	–							
5. Received Emotional Support	10.43 (14.40)	-.01	-.03	.03	.35***	–						
6. Received Esteem Support	9.05 (13.33)	-.09	-.04	.07	.17	.34***	–					
7. Received Tangible Support	1.48 (4.38)	.04	-.02	-.02	.38***	.29***	-.03	–				
8. Received Tension Reduction	3.90 (6.59)	-.16	-.05	-.08	.00	.26**	-.01	.20*	–			
9. Received Attentiveness Support	50.08 (35.13)	-.12	-.01	-.00	.11	.18*	.22*	.06	.09	–		
10. Total Received Social Support	101.23 (57.10)	-.19	-.05	.01	.57***	.62***	.51***	.33***	.25**	.77***	–	
11. Total Provided Social Support	101.23 (57.09)	-.11	-.05	-.02	.07	.22*	.40***	.24**	.15	.43***	.47***	–

Note. Attrib. = Attributions.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

scores, as measured by the CAPS, represented the dependent variable. Support provided by the actors and the partners, as well as actors’ negative support attributions, represented the independent variables, which were centered. Separate models were tested examining the moderating role of responsibility and causal attributions. For each model, an interaction term was created by multiplying the partners’ provision of support (i.e., the support received by the actors) by the actors’ negative causal or responsibility support attributions. As per Kenny et al.’s (2006) recommendation, data were treated as repeated within the dyad to account for negative nonindependence. Employment status (unemployed, part-time, or fulltime), cohabitating status (cohabitating or not), and race/ethnicity (White or non-White) were included as covariates because these variables are commonly associated with psychopathology and/or relationship problems (e.g., Brewin et al., 2000; Rosand, Slinning, Roysamb, & Tambs, 2014; Xue et al., 2015). Significant interactions were plotted and simple slopes were calculated at +/-1 SD from the mean to examine whether they differed significantly from zero. To examine whether the pattern of results was different for frequency or quality of support, two separate models were tested for each aspect of observed support. Across frequency and quality of support, the pattern of results remained consistent with that presented herein.

3. Results

3.1. Sample description and associations among study variables

Descriptive statistics and bivariate correlations among primary study variables and specific types of partner support are displayed in Table 1. Forty-seven participants (37%) met diagnostic criteria for PTSD and 25 (20%) met subthreshold criteria for PTSD (i.e., met all but 1 B, C, or D DSM-IV criteria for PTSD). In 48 couples, one partner met at least subthreshold criteria for PTSD, in 8 couples both partners met full or subthreshold criteria for PTSD, and in 7 couples neither partner met full or subthreshold criteria for PTSD. The mean CAPS score was 36.11 ($SD = 24.49$, range 0–102). Total social support received was significantly correlated with PTSD symptom severity ($r = -.19, p = .030$) such that receiving more frequent, higher quality support from one’s partner was associated with lower PTSD symptom severity. PTSD severity was not significantly associated with provision of total social support ($r = -.11, p = .236$) or responsibility attributions ($r = .16, p = .078$) but was associated with endorsing more negative causal attributions about partner support ($r = .19, p = .029$).

In terms of specific types of social support, PTSD symptom severity was negatively associated with receiving informational support ($r = -.23, p = .008$), such that receipt of more frequent and better quality informational support was associated with lower PTSD symptom

severity. PTSD symptom severity was not significantly associated with receipt of emotional support ($r = -.01, p = .910$), esteem support ($r = -.09, p = .329$), tangible support ($r = -.04, p = .656$), tension reduction ($r = -.16, p = .070$), or attentiveness ($r = -.12, p = .128$). The degree of negative causal and responsibility attributions about support was not associated with the frequency or quality of any form of received social support (r s range from $-.08$, to $.07, ps = .377-.977$). The domains of received social support were generally highly correlated with total support received during the observed interaction, and average quality of support received was highly correlated with the frequency of received support ($r = .64, p < .001$). Negative causal and responsibility attributions were also unrelated to the actual total amount of support received or provided.

3.2. APIM analyses and the moderating role of negative support attributions

In the Actor-Partner Interdependence Model examining the role of causal attributions, when adjusting for employment status, cohabitating status, and race/ethnicity, actors’ PTSD symptom severity was not associated with the frequency and quality of social support received from their partners or provided by the actors (see Table 2). A statistically significant main effect of negative causal attributions was observed such that actors’ stronger negative causal attributions about partner support was associated with higher PTSD severity. The interaction between received social support and negative causal attributions was also significant, as depicted in Fig. 1. The simple slope for strong negative attributions was not significant ($B < .01, p = .981$), but the simple slope for weak negative attributions was significant ($B = -.16, p$

Table 2
Prediction of PTSD Symptom Severity by Partner Support and Negative Attributions.

Variable	Causal Attributions		Responsibility Attributions	
	B	t	B	t
Intercept	41.83	4.55***	38.97	4.34***
Actors’ Support Provided	0.01	0.12	-0.00	-0.09
Actors’ Support Received	-0.08	-1.74	-0.08	-1.85
Actors’ Negative Support Attributions	1.56	2.33*	1.25	1.77
Actors’ Support Received x Actors’ Negative Support Attributions	0.03	1.99*	0.01	0.63

Note: Model included cohabitation status, employment status, and race/ethnicity as covariates.

* $p < .05$.

*** $p < .001$.

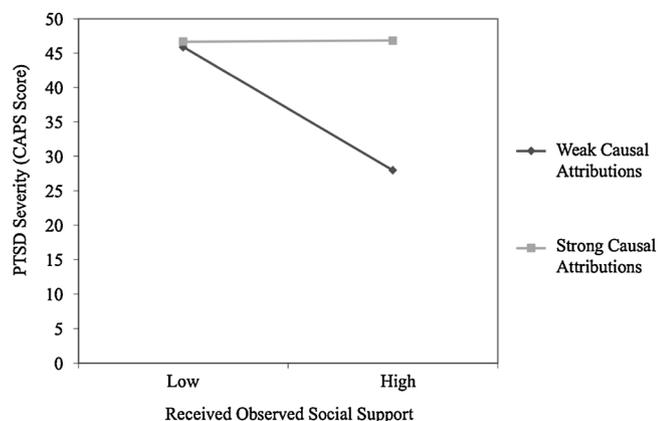


Fig. 1. Observed partner support is negatively associated with PTSD symptom severity among those who make relatively weak negative causal attributions about partner support, but not among those who make strong negative causal attributions about partner support.

= .006). Thus, the presence of high amounts of social support was associated with lower PTSD symptom severity among those who make relatively weak negative causal attributions about partner support, but not among those who make relatively strong causal attributions.

In the model examining the role of responsibility attributions, PTSD symptom severity was not statistically significantly associated with actors' responsibility attributions, received support, or provided support. The interaction between received support and responsibility attributions was also not statistically significant.

4. Conclusions

Lack of perceived receipt of social support is one of the most important predictors of the development and maintenance of PTSD (Brewin et al., 2000; Ozer et al., 2003). The present study sought to expand prior research on the relationship between social support and PTSD by disentangling the impact of observed receipt of support and attributions about support. That is, we observed and measured receipt of partner support during video-recorded couple discussions, and we tested the role of causal and responsibility attributions in moderating the relation between received social support and PTSD symptom severity. We conducted this work among intimate couples given the specific importance of partner social support (Dakof & Taylor, 1990). Results indicate that receipt of more frequent and higher quality social support was associated with lower PTSD symptom severity among individuals who make relatively weaker negative causal attributions about partner support. In contrast, among those who make relatively stronger negative causal attributions, the frequency and quality of received partner support was not associated with lower PTSD symptom severity. These results suggest that negative causal attributions may act to dampen the positive effects of social support, thereby hindering the stress buffering effects of social support among individuals with PTSD.

To date, the majority of PTSD research has assessed perceived social support or otherwise relied on self-report measures of received support. Meta-analyses of this research have shown a consistent negative relationship between PTSD symptom severity and social support (e.g., $r = -.40$ in Brewin et al., 2000; $r = -.28$ in Ozer et al., 2003). The present study is among the first to examine the relation between PTSD and observed (behaviorally coded) social support. Consistent with self-report measures of support, we found a negative association between PTSD symptoms and received partner support. However, the strength of this relation ($r = -.19$) was somewhat smaller than the average relation between PTSD symptoms and perceived support from various providers and between PTSD symptoms and perceived partner support, in particular ($r = -.36$; Balderrama-Durbin et al., 2013). This may suggest that

reports of perceived support are contaminated by cognitions, such as attributions and appraisals about partners' support behaviors. However, given that other studies measured general perceptions of support, our finding of a smaller association may be due to the specific context in which support was provided (i.e., during in-lab discussions of a problem in the couples' relationships). Support provided in contexts such as this may not be fully representative of the degree of support provided across other relationship contexts, thereby providing a more conservative estimate of the association between partner support and PTSD symptom severity. Additionally, prior estimates of the strength of the association between social support and PTSD symptoms using self-report measures may be somewhat inflated by shared method variance, in which case the current estimate of associative strength may be more accurate.

When examining specific forms of observed partner support, we found that informational support was the only individual form of support significantly associated with decreased PTSD symptom severity. Informational support, also called appraisal support, involves the provision of advice, guidance, suggestions, or useful information. This form of support may be a vital resource for individuals with PTSD because information and advice provided may help individuals re-appraise stressful situations (Cohen & Wills, 1985), which may generalize to reappraisal of traumatic experiences. Indeed, recent research suggests that positive responses to trauma disclosure, such as finding one's partner's response helpful, may be associated with increased tendency to disclose information about one's trauma (DiMaurio & Renshaw, 2018). Such a pattern may suggest that individuals are using their partners to help reappraise traumatic experiences, which may serve to improve their functioning. As such, receiving informational support following trauma may uniquely reduce symptoms of PTSD by helping individuals develop more flexible and adaptive cognitions.

While most research to date focuses on the link between PTSD symptoms and emotional support, we did not find an association between PTSD symptom severity and the amount of observed emotional support received. This finding does not appear to be due to limited variability in the occurrence of emotional support. Rather, the lack of an association is consistent with work by Woodward and Beck (2017) in which they found that observed emotional support from one's partner was not associated with reduced distress after viewing a traumatic film. While perceived emotional support has been shown to be beneficial for those with PTSD, PTSD is also associated with self-reported (Riggs et al., 1998) and observed (Hanley et al., 2013; Leifker, Hanley, Blandon, & Marshall, 2015) difficulties with emotional intimacy, including behaviors constituting emotional support. For example, in observed interactions, PTSD symptom severity is associated with increased negative emotions following receipt of emotional support (Leifker et al., 2015). It may be that, compared to emotional support, informational support is better tolerated by individuals with PTSD, while still conveying the message that one is supported and cared for. Consequently, because self-report measures of social support sometimes do not assess experiences of informational support, individuals may incorporate instances of informational support when reporting on perceived emotional support.

The current study is the first to demonstrate that PTSD severity is associated with making negative attributions regarding the occurrence of partner support. This association was significant for causal attributions ($r = .19$, $p = .029$), but not statistically significant ($r = .16$, $p = .078$) for the association between responsibility attributions and PTSD symptom severity. Negative causal attributions may be more strongly affected by PTSD severity than negative responsibility attributions because this pattern of thinking more closely resembles the patterns of distorted cognitions in PTSD (e.g., Foa et al., 1999; Resick, Monson, & Chard, 2016). That is, for example, believing that lack of support is due to a negative characteristic about themselves or their partner resembles distorted cognitions about one's self-worth present among those with PTSD. Of note, the strength of these attributions was not related to the frequency or quality of support provided by partners

during observed couple discussions, suggesting that PTSD symptoms, rather than partners' behaviors, are key to the development of these attributions. This finding demonstrates another way in which maladaptive cognitions may contribute to interpersonal impairment and a sense of interpersonal detachment among individuals with PTSD.

To gain a clearer understanding of how receipt of social support and individual cognitions interact to predict PTSD severity, longitudinal research that includes more objective measurements of social support is needed. Such work is especially necessary to better understand the bidirectional nature of social support and PTSD over time. That is, existing research suggests that social support leads to less severe PTSD symptoms immediately after trauma, but PTSD additionally may lead to less perceived social support as PTSD becomes chronic (Kaniasty & Norris, 2008; King, Taft, King, Hammond, & Stone, 2006). However, because only perceived support, rather than observed support, has been measured longitudinally it is unclear if actual observed support declines over time. That is, because our results demonstrate that PTSD severity is associated with negative attributions about support, it is possible that observations of PTSD leading to less perceived social support are partly a function of PTSD-associated negative attributions. Specifically, individuals with chronic PTSD may be receiving support; however, the development of negative attributions may impede their ability to interpret such behaviors as supportive. Because we found that observed social support is not negatively associated with PTSD symptoms among those who make stronger negative causal attributions, as negative causal attributions grow stronger, it is possible that individuals with PTSD may receive the same amount of support, but derive less ameliorative effects from the support they receive, thereby maintaining their PTSD symptoms.

Our findings of a weak relation between received partner support and PTSD severity, as well as the important role of support attributions, have implications for PTSD treatment. Couple-based therapies for PTSD are becoming widespread, with a focus on enhancement of partner support (e.g., Greenman & Johnson, 2012; Monson et al., 2012). Our findings suggest that, in addition to increasing partner support, it may also be important to directly address the cognitive biases that color interpretations of these behaviors. For example, when addressing maladaptive PTSD-related cognitions, utilizing the partner to help formulate alternative and less biased cognitions is an integral element of Cognitive Behavioral Conjoint Therapy (CBCT) for PTSD (Monson & Fredman, 2012). It may also be important for clinicians to help individuals with PTSD and their partners identify maladaptive interpersonal attributions, expectations, and standards for social support in their relationship. Focusing on interpersonal attributions is also consistent with individual treatments for PTSD, such as Cognitive Processing Therapy (CPT) for PTSD (Resick et al., 2016), and may help individuals improve their relationship and benefit from social support without directly involving their partner in treatment.

The present article has several strengths, including the first assessment of the frequency and quality of social support provided during observed interactions among couples in which one or more partners met screening criteria for PTSD. This study was also among the first to examine the presence of negative causal and relationship attributions about social support as a form of cognitive bias associated with PTSD symptoms. Despite the study's strengths, the results should be considered in light of its limitations. Most importantly, because this study was cross-sectional, it is not possible to determine the temporal nature of the observed processes. That is, while we interpret our findings consistent with the majority of PTSD research suggesting high social support leads to decreased PTSD symptom severity, it is also possible that PTSD severity leads to less partner support, particularly among those who make stronger negative attributions about the lack of support. Regardless of the directional relation, our central conclusion that causal attributions of support must be taken into consideration remains unchanged. An additional potential limitation is that we assessed support provision during 10-minute laboratory discussions as an analogue

for actual partner support commonly received. Although couple interactions have been found to be externally valid (Gottman, 1979), partners do tend to be more somewhat more supportive in laboratory settings (Foster, Caplan, & Howe, 1997). However, we do not have reason to believe that this increase in provision of support in a lab setting occurs systematically based on partners' PTSD severity; thus, we have little reason to think that this limitation of the laboratory paradigm would change the pattern of results found in the present study, but the results may be a conservative estimate of support. Given the link between relationship distress and negative attributions, it is possible that, among more distressed couples, the associations found in the present study would be stronger. Finally, a rural to semi-rural sample was used in the present study; therefore, it is unclear whether these results would generalize to urban or treatment seeking couples, or to samples with other forms of trauma exposure (e.g., combat trauma).

In conclusion, the current study provides evidence to suggest that observed partner social support is associated with lower PTSD symptom severity. PTSD symptom severity is also related to increased strength of negative causal attributions and these negative causal attributions moderate the inverse relationship between partner social support and PTSD severity. Although additional research is necessary, particularly using longitudinal study designs, the present study provides initial evidence regarding the important role of negative attributions on the stress-buffering relationship between social support and PTSD. Although it has become more common to integrate interventions focused on increasing social support into treatments for PTSD, this study suggests that it may be especially important to address attributions about support to maximize its effects on individuals' ability to recover from traumatic events.

References

- Allen, E. S., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2010). Hitting home: Relationships between recent deployment, posttraumatic stress symptoms, and marital functioning for army couples. *Journal of Family Psychology, 24*, 280–288.
- Andrews, B., Brewin, C. R., & Rose, S. (2003). Gender, social support, and PTSD in victims of violent crime. *Journal of Traumatic Stress, 16*, 421–427.
- Balderrama-Durbin, C., Snyder, D. K., Cigrang, J., Talcott, G. W., Tatum, J., Baker, M., ... Slep, A. M. S. (2013). Combat disclosure in intimate relationships: Mediating the impact of partner support on posttraumatic stress. *Journal of Family Psychology, 27*, 560–568.
- Belsher, B. E., Ruzek, J. I., Bongar, B., & Cordova, M. J. (2012). Social constraints, posttraumatic cognitions, and posttraumatic stress disorder in treatment-seeking trauma survivors: Evidence for a social-cognitive processing model. *Psychological Trauma: Theory, Research, Practice, and Policy, 4*, 386–391.
- Blake, D. D., Weathers, F. W., Nagy, L. M., & Kaloupek, D. G. (1995). The development of a Clinician-Administered PTSD Scale. *Journal of Traumatic Stress, 8*, 75–90.
- Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behavior Research & Therapy, 34*, 669–673.
- Bradbury, T. N., & Fincham, F. D. (1990). Attributions in marriage: A review and critique. *Psychological Bulletin, 107*, 3–33.
- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*, 748–766.
- Broman-Fulks, J. J., Ruggiero, K. J., Green, B. A., Kilpatrick, D. G., Danielson, C. K., Resnick, H. S., ... Saunders, B. E. (2006). Taxometric investigation of PTSD: Data from two nationally representative samples. *Behavior Therapy, 37*, 364–380.
- Christenson, A., & Nies, D. C. (1980). The spouse observation checklist: Empirical analysis and critique. *The American Journal of Family Therapy, 8*, 69–79.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.
- Cutrona, C. E., & Suhr, J. A. (1994). Social support communication in the context of marriage: An analysis of couples' supportive interactions. In B. Burleson, T. Albrecht, & I. Sarason (Eds.), *The communication of social support: Messages, interactions, relationships, and community* (pp. 113–135). Newbury, CA: Sage.
- Dakof, G. A., & Taylor, S. E. (1990). Victims' perceptions of social support: What is helpful from whom? *Journal of Personality and Social Psychology, 58*, 80–89.
- DiMaurio, J., & Renshaw, K. D. (2018). Trauma-related disclosure in sexual assault survivors' intimate relationships: Associations with PTSD, shame, and partners' responses. *Journal of Interpersonal Violence*. <https://doi.org/10.1177/0886260518756117> advanced online print.
- Epstein, N. B., & Baucom, D. H. (2002). *Enhanced cognitive-behavioral therapy for couples: A contextual approach*. Washington, D.C.: American Psychological Association.
- Fincham, F. D., & Bradbury, T. N. (1990). Social support in marriage: The role of social cognition. *Journal of Social and Clinical Psychology, 9*, 31–42.

- Fincham, F. D., & Bradbury, T. N. (1992). Assessing attributions in marriage: The relationship attribution measure. *Journal of Personality and Social Psychology*, *62*, 457–468.
- Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The Posttraumatic Cognitions Inventory (PTCI): Development and validation. *Psychological Assessment*, *11*, 303–314.
- Foster, D. A., Caplan, R. D., & Howe, G. W. (1997). Representativeness of observed couple interaction: Couples can tell, and it does make a difference. *Psychological Assessment*, *9*, 285–294.
- Glass, N., Perrin, N., Campbell, J. C., & Soeken, K. (2007). The protective role of tangible support on post-traumatic stress disorder symptoms in urban women survivors of violence. *Research in Nursing & Health*, *30*, 558–568.
- Gottman, J. M. (1979). *Marital interaction: Experimental investigations*. New York: Academic Press.
- Greenman, P. S., & Johnson, S. M. (2012). United we stand: Emotionally focused therapy for couples in the treatment of posttraumatic stress disorder. *Journal of Clinical Psychology: In Session*, *68*, 561–569.
- Hanley, K., Leifker, F. R., Blandon, A. Y., & Marshall, A. D. (2013). Gender differences in the impact of posttraumatic stress disorder symptoms on intimacy among community couples. *Journal of Family Psychology*, *27*, 525–530.
- Hickey, D., Carr, A., Dooley, B., Guerin, S., Butler, E., & Fitzpatrick, L. (2005). Family and marital profiles of couples in which one partner has depression or anxiety. *Journal of Marital and Family Therapy*, *31*, 171–182.
- Hitchcock, C., Ellis, A. A., Williamson, P., & Nixon, R. D. (2015). The prospective role of cognitive appraisals and social support in predicting children's posttraumatic stress. *Journal of Abnormal Child Psychology*, *43*, 1485–1492.
- Jordan, B. K., Marmar, C. R., Fairbank, J. A., Schlenger, W. E., Kulka, R. A., Hough, R. L., ... Weiss, D. S. (1992). Problems of families of male Vietnam veterans with post-traumatic stress disorder. *Journal of Consulting and Clinical Psychology*, *60*, 916–926.
- Kaniasty, K., & Norris, F. H. (2008). Longitudinal linkages between perceived social support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. *Journal of Traumatic Stress*, *21*, 274–281.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Guilford.
- King, L. A., King, D. W., Fairbank, J. A., Keane, T. M., & Adams, G. A. (1998). Resilience-recovery factors in posttraumatic stress disorder among female and male Vietnam veterans: Hardiness, postwar social support, and additional stressful life events. *Journal of Personality and Social Psychology*, *74*, 420–434.
- King, D. W., Taft, C., King, L. A., Hammond, C., & Stone, E. R. (2006). Directionality of the association between social support and posttraumatic stress disorder: A longitudinal investigation. *Journal of Applied Social Psychology*, *36*, 2980–2992.
- Kubany, E. S., Leisen, M. B., Kaplan, A. S., Watson, S. B., Haynes, S. N., & Owens, J. A. (2000). Development and preliminary validation of a brief broad-spectrum measure of trauma exposure: The Traumatic Life Events Questionnaire. *Psychological Assessment*, *12*, 210–224.
- Lambert, J. E., Engh, R., Hasbun, A., & Holzer, J. (2012). Impact of posttraumatic stress disorder on the relationship quality and psychological distress of intimate partners: A meta-analytic review. *Journal of Family Psychology*, *26*, 729–737.
- Leifker, F. R., Hanley, K., Blandon, A. Y., & Marshall, A. D. (2015). Posttraumatic stress disorder symptoms impact the emotional experience of intimacy during couple discussions. *Journal of Anxiety Disorders*, *29*, 119–127.
- Little, R. J. A., & Rubin, D. B. (1987). *Statistical analysis with missing data*. New York, NY: Wiley.
- Miller, M. W., Wolf, E. J., Reardon, A. F., Harrington, K. M., Ryabchenko, K., Castillo, D., ... Heyman, R. (2013). PTSD and conflict behavior among veterans and their partners. *Journal of Anxiety Disorders*, *27*, 240–251.
- Monson, C. M., & Fredman, S. J. (2012). *Cognitive-behavioral conjoint therapy for PTSD*. New York, NY: Guilford Press.
- Monson, C. M., Fredman, S. J., Macdonald, A., Pukay-Martin, N. D., Resnick, P. A., & Schnurr, P. P. (2012). Effect of Cognitive-behavioral couple therapy for PTSD: A randomized controlled trial. *Journal of the American Medical Association*, *308*, 700–709.
- Monson, C. M., Fredman, S. J., & Dekel, R. (2010). Posttraumatic stress disorder in an interpersonal context. In J. G. Beck (Ed.). *Interpersonal processes in the anxiety disorders: Implications for understanding psychopathology and treatment* (pp. 179–208). Washington, DC: APA.
- Nietlisbach, G., & Maercker, A. (2009). Social cognition and interpersonal impairments in trauma survivors with PTSD. *Journal of Aggression, Maltreatment & Trauma*, *18*, 382–402.
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, *129*, 52–73.
- Resick, P. A., Monson, C. M., & Chard, K. M. (2016). *Cognitive processing therapy for PTSD: A comprehensive manual*. New York, NY: Guilford.
- Riggs, D. S., Byrne, C. A., Weathers, F. W., & Litz, B. T. (1998). The quality of the intimate relationships of male Vietnam veterans: Problems associated with posttraumatic stress disorder. *Journal of Traumatic Stress*, *11*, 87–10.
- Robinaugh, D. J., Marques, L., Traeger, L. N., Marks, E. H., Sung, S. C., Beck, G. J., ... Simon, N. M. (2011). Understanding the relationship of perceived social support to post-trauma cognitions and posttraumatic stress disorder. *Journal of Anxiety Disorders*, *25*, 1072–1078.
- Rosand, G. B., Slinning, K., Roysamb, E., & Tambs, K. (2014). Relationship dissatisfaction and other risk factors for future relationship dissolution: A population based study of 18,523 couples. *Social Psychiatry and Psychiatric Epidemiology*, *49*, 109–119.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*, 147–177.
- Schnurr, P. P., Lunney, C. A., & Sengupta, A. (2004). Risk factors for the development versus maintenance of posttraumatic stress disorder. *Journal of Traumatic Stress*, *17*, 85–95.
- Suhr, J. A., Cutrona, C. E., Krebs, K. K., & Jensen, S. L. (2009). The social support behavior code (SSBC). In P. K. Kerig, & D. Baucom (Eds.). *Couple observational coding systems* (pp. 307–318). Mahway, NJ: Erlbaum.
- Taft, C. T., Watkins, L. E., Stafford, J., Street, A. E., & Monson, C. M. (2011). Posttraumatic stress disorder and intimate relationship problems: A meta-analysis. *Journal of Consulting and Clinical Psychology*, *79*, 22–33.
- Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology*, *54*, 416–423.
- Vinokur, A., Schul, Y., & Caplan, R. D. (1987). Determinants of perceived social support: Interpersonal transactions, personal outlook, and transient affective states. *Journal of Personality and Social Psychology*, *53*, 1137–1145.
- Weathers, F. W., Keane, T. M., & Davidson, J. R. T. (2001). Clinician Administered PTSD Scale: A review of the first ten years of research. *Depression and Anxiety*, *13*, 132–156.
- Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M. (1993). The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility. *Paper Presented at the Meeting of the International Society for Traumatic Stress Studies*.
- Woodward, M. J., & Beck, J. G. (2017). Using the trauma film paradigm to explore interpersonal processes after trauma exposure. *Psychological Trauma: Theory, Research, Practice, and Policy*, *9*, 445–452.
- Wright, B. K., Kelsall, H. L., Sim, M. R., Clarke, D. M., & Creamer, M. C. (2013). Support mechanisms and vulnerabilities in relation to PTSD in veterans of the Gulf War, Iraq War, and Afghanistan deployments: A systematic review. *Journal of Traumatic Stress*, *26*, 310–318.
- Xue, C., Ge, Y., Tang, B., Liu, Y., Kang, P., Want, M., ... Zhang, L. (2015). A meta-analysis of risk factors for combat-related PTSD among military personnel and veterans. *PLoS One*, *10*, e0120270.