

The Role of Social Support in Cognitive-Behavioral Conjoint Therapy for Posttraumatic Stress Disorder

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The current study examined the effect of total, as well as different sources (i.e., family, friends, significant other) of, pretreatment/baseline social support on posttraumatic stress disorder (PTSD) severity and treatment response to cognitive-behavioral conjoint therapy (CBCT) for PTSD. Thirty-six patients were randomized to receive treatment immediately or to a waitlist condition. Those in the treatment condition were offered CBCT for PTSD, a couple-based therapy aimed at reducing PTSD symptoms and improving relationship functioning. PTSD symptoms were assessed at pre-/baseline, mid-/4 weeks of waiting, and posttreatment/12 weeks of waiting using the Clinician-Administered PTSD Scale, and patients self-reported on their levels of pretreatment/baseline social support using the Multidimensional Scale of Perceived Social Support. Total support, as well as social support from family and friends, was not associated with initial PTSD severity or treatment response. However, there was a significant positive association between social support from a significant other and

initial PTSD severity ($g = .92$). Additionally, significant other social support moderated treatment outcomes, such that higher initial significant other support was associated with larger decreases in PTSD severity for those in the treatment condition ($g = -1.14$) but not the waitlist condition ($g = -.04$). Social support from a significant other may influence PTSD treatment outcomes within couple therapy for PTSD. The inclusion of intimate partners and other family members may be a fruitful avenue for improving PTSD treatment outcomes; however, future studies are needed to examine whether support can be increased with treatment and whether those improvements lead to greater PTSD symptom response.

Keywords: social support; posttraumatic stress disorder; cognitive-behavioral conjoint therapy; couple therapy

RESEARCH HAS IDENTIFIED SOCIAL SUPPORT as a key variable associated with posttraumatic stress disorder (PTSD; Guay, Billette, & Marchand, 2006). In fact, meta-analyses reveal that posttrauma social support is among the strongest factors associated with PTSD (e.g., Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Additionally, social support has been found to predict individual treatment outcomes (e.g., Price, Gros, Strachan, Ruggiero, & Acierno, 2013; Thrasher, Power, Morant, Marks, & Dalgleish, 2010). However, no study has examined the role of social support in couple/family therapies

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for PTSD. The current study examined whether pretreatment/baseline social support from various sources moderated treatment outcomes in a randomized waitlist controlled trial of cognitive-behavioral conjoint therapy (CBCT) for PTSD (Monson & Fredman, 2012).

To our knowledge, only two studies have investigated the role of pretreatment social support on PTSD treatment outcomes (Price et al., 2013; Thrasher et al., 2010). Data from a randomized controlled trial comparing exposure and/or cognitive restructuring to relaxation for civilians with chronic PTSD demonstrated that pretreatment social support was positively associated with PTSD treatment outcomes across conditions. However, the effect of pretreatment social support was stronger among those receiving exposure and/or cognitive restructuring compared with those in the relaxation condition (Thrasher et al., 2010). Similarly, in a sample of veterans with PTSD or subthreshold PTSD receiving exposure therapy, Price et al. (2013) investigated the association between four domains of perceived social support (i.e., positive social interactions, emotional/informational support, tangible support, and affectionate support) and pretreatment PTSD symptom severity, as well as the effects of social support on treatment response. Only pretreatment positive social interactions were negatively associated with pretreatment symptom severity. With regard to predicting treatment response, greater pretreatment emotional/informational support was associated with better response to treatment. Other studies examining pretreatment family functioning (e.g., expressed emotion, intimate relationship functioning) corroborate the seeming importance of interpersonal variables in PTSD and comorbid symptom response (Monson, Rodriguez, & Warner, 2005; Tarrrier, Sommerfield, & Pilgrim, 1999). These findings have led some to suggest that it may be beneficial to include family members in, or facilitate social support as part of, treatment for PTSD (e.g., Monson & Fredman, 2012; Thrasher et al., 2010).

Couple-based treatments for PTSD that recognize the importance of addressing the interpersonal problems associated with PTSD are emerging (see Cukor, Spitalnick, Difede, Rizzo, & Rothbaum, 2009). Among the existing couple-based interventions for PTSD (e.g., Johnson, 2002; Monson & Fredman, 2012; Sautter, Glynn, Armelie, & Wielt, 2011), CBCT for PTSD has garnered empirical support in improving PTSD and comorbid conditions, enhancing intimate relationships, and improving some partners' psychological symptoms (Monson et al., 2011, 2012; Monson, Schnurr, Stevens, & Guthrie, 2004; Monson, Stevens, & Schnurr, 2005;

Schumm, Fredman, Monson, & Chard, 2013; Shnaider, Pukay-Martin, Fredman, Macdonald, & Monson, 2014).

CBCT for PTSD is purported to address interpersonal processes that influence the presence and maintenance of PTSD (Monson & Fredman, 2012). However, it is unknown whether the effect of pretreatment social support on PTSD treatment outcomes is similar in CBCT for PTSD compared with those found in treatment studies that do not include significant others (i.e., Price et al., 2013; Thrasher et al., 2010). It is possible that the inclusion of intimate partners in treatment may mitigate the deleterious effect of having poorer levels of social support. For example, in a parallel line of research, poorer relationship functioning has been found to impede PTSD and comorbid condition improvements in non-dyadically delivered PTSD treatment (Monson, Rodriguez et al., 2005; Tarrrier et al., 1999), but not couple-based treatment for PTSD (Shnaider et al., 2015). Accordingly, if social support does not influence PTSD treatment outcome, this would suggest that the inclusion of intimate partners in treatment may be sufficient in addressing important interpersonal factors contributing to treatment outcome. In contrast, if social support moderates treatment outcome within CBCT for PTSD, this would highlight the value of engaging in additional efforts to increase social support either as part of, or prior to engaging in, treatment for PTSD.

Prior research also suggests that there may be benefits of examining the effects of different sources of social support (i.e., social support from family, friends, significant other) as opposed to social support more globally, because there appear to be differential associations between PTSD and support from these different sources. For example, a study of U.S. veterans found that support from significant others (i.e., intimate partners), family, and military peers was significantly associated with PTSD symptoms. However, social support from friends was not related to PTSD (Wilcox, 2010).

Building on previous work, we examined the role of total, as well as different sources (i.e., family, friends, significant other) of, self-reported social support in the efficacy of CBCT for PTSD in a randomized waitlist controlled trial. We hypothesized that initial total social support, as well as initial social support from significant others and family, would be negatively associated with pretreatment/baseline PTSD symptom severity. Similarly, we hypothesized that initial total, family, and significant other support would moderate treatment outcomes, such that higher initial levels of these supports would be associated with greater reductions in PTSD symptom severity for the

treatment immediately compared with the waitlist condition.

Method

PARTICIPANTS

The current study drew from 40 patients with PTSD who participated in a randomized waitlist controlled trial of CBCT for PTSD (Monson et al., 2012). Patients had to meet diagnostic criteria for PTSD, be at least 3-months posttrauma, and their intimate partners could not meet diagnostic criteria for PTSD at the time of enrollment into the study. Couples had to self-identify as an intimate dyad but were not required to be together for a specific length of time or cohabitate in order to participate. Patients and partners had to be between the ages of 18 and 70 years. Exclusion criteria included substance dependence in the 3 months prior to beginning the study, current uncontrolled bipolar or psychotic disorder, imminent suicidality or homicidality, severe cognitive impairment, or severe intimate partner violence in the past year. Additionally, if patients were taking any psychotropic medication, they had to maintain a stable medication regimen during the 2 months prior to enrolling into the study, as well as throughout the course of their participation. Finally, participants could not be receiving any couple therapy or evidence-based therapy for PTSD during the course of their participation (for complete inclusion/exclusion criteria, see Monson et al., 2012). The study was approved by ethics boards at all study sites and each participant provided written consent to participate.

Unfortunately, the measure of social support used in the current study was not included until the fourth couple was randomized. Additionally, one patient did not complete the measure of social support due to difficulty with comprehension. The four participants that did not complete the social support measure (three in the treatment immediately condition and one in the waitlist condition) were excluded from the current study, leaving a sample of 36 individuals. Accordingly, the sample consisted of 9 (25%) men and 27 (75%) women ($N = 36$) with a mean age of 36.9 ($SD = 11.0$) years. The majority (72.2%) of patients were Caucasian. A large minority (41.7%) had never been married, 30.6% were married or remarried, 25% were divorced, and 2.8% did not report their marital status. Patients reported an average relationship length of 6.5 ($SD = 7.5$) years. Index traumatic events included adult sexual trauma (22.2%), childhood sexual trauma (30.6%), physical assault (11.1%), sudden death (11.1%), accident (8.3%), combat (2.8%), and illness (2.8%). Additionally, 11.1% of patients reported a different index traumatic

experience other than those listed above. The average length of time between participants' index trauma and enrolling into the study was 14.4 ($SD = 13.3$) years.

MEASURES

PTSD symptoms were measured using the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995), a semistructured, clinician-rated interview designed to diagnose and assess the severity of PTSD consistent with the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000)*. Both the frequency and intensity of the 17 core symptoms of PTSD are each rated on a 5-point scale (0 to 4), with higher scores indicating greater symptom severity. Total scores range from 0 to 136. Symptoms are considered to be present if they are rated to have a frequency ≥ 1 and an intensity ≥ 2 . A diagnosis of PTSD is made if the minimum symptom threshold for each PTSD symptom cluster is present (i.e., one reexperiencing symptom, three avoidance/emotional numbing symptoms, and two hyperarousal symptoms) and there is a total score ≥ 45 . The CAPS was administered by master's- and doctoral-level trained clinicians. As established in the parent trial from which these data were drawn, there was excellent interrater reliability between assessors' ratings on the CAPS and those of an independent assessment reliability monitor ($ICC = .99$; Monson et al., 2012).

Social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988), a 12-item, self-report measure of perceived social support from three sources: family, friends, and significant other. Items are rated on a 7-point scale (1 = *very strongly disagree*; 7 = *very strongly agree*), with higher scores indicating greater support. Total and subscale (i.e., family, friends, significant other) scores are derived by calculating the mean score on the respective (sub)scale and thus range from 1 to 7. Previous studies have supported the psychometric properties of the MSPSS, including its reliability, validity, and its three-factor structure, across various populations (Canty-Mitchell & Zimet, 2000; Kazarian & McCabe, 1991; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). The test-retest reliability for total scale and subscales has been shown to be strong (total = .85; family = .85; friends = .75; significant other = .72) when tested at a 2- to 3-month interval (Zimet et al., 1988). Unlike other measures of social support (e.g., the Medical Outcomes Study Social Support Survey Form, which distinguishes between positive social interactions, emotional/informational, tangible, and affectionate; Sherbourne & Stewart, 1991), the MSPSS does not

assess various facets of social support. However, an examination of MSPSS item content suggests that it focuses on emotional/informational support.

PROCEDURE

Participants received CBCT for PTSD immediately ($n = 17$) or after 3 months of waiting ($n = 19$). CBCT for PTSD is a 15-session conjoint therapy designed to simultaneously decrease symptoms of PTSD and enhance relationship functioning (Monson & Fredman, 2012). The treatment is divided into three phases. During Phase 1 (Sessions 1–2), the rationale for treatment and psychoeducation is provided, and relationship safety is established. Phase 2 (Sessions 3–7) focuses on using strategies to improve relationship functioning, and reduce emotional numbing and avoidance. Phase 3 (Sessions 8–15) is focused on challenging maladaptive cognitions contributing to the maintenance of PTSD and relationships distress. Individuals in the treatment-immediately condition received clinician assessments of PTSD symptom severity at pre-, mid-, and posttreatment. Participants randomized to the waitlist condition were scheduled to receive clinician assessments of PTSD symptom severity at baseline, after 4 weeks of waiting, and after 12 weeks of waiting, designed to parallel the timing of assessment in the treatment immediately condition. Additionally, participants completed a measure of perceived social support during their initial assessment, irrespective of condition. There were no significant differences between conditions with regard to age, sex, marital status, years since trauma, race/ethnicity, relationship length, as well as PTSD severity or social support at their respective initial assessments ($ps > .05$).

DATA ANALYTIC PLAN

We adopted an alpha level of .05 and conducted two-tailed tests of statistical significance for all analyses. Bivariate correlations between pretreatment/baseline CAPS and MSPSS scores were conducted to evaluate how these variables were associated. To determine the association between initial social support and initial PTSD symptom severity and the effect of initial social support on treatment response, we conducted growth curve modeling from a hierarchical linear modeling framework using restricted maximum likelihood estimation using intention-to-treat principles. The Level-1 component of the models estimated within-person change (i.e., changes in PTSD across assessments) and the Level-2 component of the model evaluated how the Level-1 change parameters (i.e., initial status and change over time) varied as a function of condition (waitlist = 0; treatment immediately = 1), pretreatment/baseline social support, and the condi-

tion by pretreatment/baseline social support interaction. Although there was attrition in the current sample (i.e., some participants did not complete all assessments), growth curve modeling is robust to missing Level-1 data and thus capitalizes on all available data to produce the best estimate of each parameter (Singer & Willett, 2003). To assist with interpretation, the total and subscale scores on the MSPSS were mean centered prior to being entered in models described below. Time was modeled using the number of weeks from the initial assessment, making the Level-1 intercept an estimate of pretreatment/baseline PTSD severity (0 = pretreatment/baseline, 4 = mid-treatment/after 4 weeks of waiting, and 12 = posttreatment/after 12 weeks of waiting). All Level-1 estimates were modeled as random effects.

To determine the effects of total, as well as each particular source of social support (i.e., family, friends, significant other) on initial PTSD symptom severity and treatment response, four models were constructed. The effects of the MSPSS subscales were examined in separate models, given the small sample size and potential related power issues that could limit the ability to detect findings. To assist with the interpretation, Hedges' g effect size estimates were calculated for each predictor included in the models.

For each model, the CAPS was specified as the outcome variable (Level-1), with time as the only Level-1 predictor. Condition, mean-centered MSPSS at pretreatment/baseline, and their interaction were entered as Level-2 predictors of initial status (intercept) and change (slope) on the CAPS. As indicated above, four models were constructed in order for the effects of the total MSPSS and each respective subscale (i.e., family, friends, significant other) to be examined independently.

Additionally, post-hoc analyses were conducted to interpret significant interaction terms associated with the effect of pretreatment/baseline significant other social support on PTSD symptom response across the two conditions (i.e., treatment immediately and waitlist). Additionally, these analyses examined the effect of treatment across high (1 SD above the mean) and low (1 SD below the mean) levels of significant other social support. A Bonferroni correction was applied to control for the four additional comparisons that were conducted ($p = .05/4$). Accordingly, a p value of .013 was utilized to assess statistical significance for post-hoc comparisons.

Results

Means and standard deviations for the total and subscales of the MSPSS at pretreatment/baseline

and the CAPS across assessment points can be found in Tables 1 and 2, respectively. Internal consistency was strong for the CAPS across assessment points ($\alpha_s = .78$ to $.95$), and excellent for the total scale ($\alpha = .84$), as well as each subscale of the MSPSS (significant other: $\alpha = .94$, family: $\alpha = .92$, friends: $\alpha = .94$). Correlations between pretreatment/baseline variables can be found in Table 3. Based on results of the growth curve models (see Table 4), total pretreatment/baseline social support, as well as social support from family and friends, were not significantly associated with initial PTSD symptom severity or treatment response. In contrast, there was a significant positive association between initial PTSD symptom severity and initial significant other social support. Additionally, there was a significant interaction between treatment condition and initial significant other social support for the change in PTSD symptoms over time (slope).

Post-hoc analyses revealed a significant effect of initial significant other social support on PTSD symptom response for treatment immediately, $b = -.93$, $SE = .27$, $t(32) = -3.43$, $p = .002$, $g = -1.14$, but not waitlist, $b = -.03$, $SE = .21$, $t(32) = -.13$, $p = .895$, $g = -.04$, suggesting that social support from significant others moderated treatment outcome in CBCT for PTSD. Additionally, there was a significant effect of treatment at high (1 *SD* above the mean), $b = -2.55$, $SE = .66$, $t(32) = -3.86$, $p < .001$, $g = -1.29$, but not low (1 *SD* below the mean) levels

of significant other social support, $b = -.39$, $SE = .72$, $t(32) = -.54$, $p = .596$, $g = -.18$. Fig. 1 presents the trajectories of the CAPS across high and low scores on the significant other subscale of the MSPSS for both the treatment immediately and waitlist conditions.

Discussion

The present study examined the effect of pretreatment/baseline levels of total social support and the effects of social support from three different sources (i.e., family, friends, significant other) on PTSD treatment response within CBCT for PTSD. Contrary to hypothesis, initial social support from significant others was *positively* associated with initial PTSD symptom severity. As hypothesized, significant other social support moderated treatment outcome; as initial support increased, PTSD symptom response improved for those in the treatment-immediately condition but not the waitlist condition. Notably, total, family, and friend social support were not associated with initial PTSD symptom severity or treatment response.

Our findings that initial total and family support were not significantly associated with pretreatment/baseline PTSD symptom severity, and that significant other support was positively associated with pretreatment/baseline PTSD, runs contradictory to prior research documenting the association between these constructs (Brewin et al., 2000; Ozer et al.,

Table 1
Pretreatment/Baseline Characteristics by Condition

Variable	Treatment Immediately (<i>n</i> = 17)		Waitlist (<i>n</i> = 19)		Overall Sample (<i>N</i> = 36)	
	<i>M</i> (%)	<i>SD</i>	<i>M</i> (%)	<i>SD</i>	<i>M</i> (%)	<i>SD</i>
Men	(35.3%)		(15.8%)		(25.0%)	
Age	39.9	11.0	34.2	10.7	36.9	11.0
Caucasian	(76.5%)		(68.4%)		(72.2%)	
Married or Remarried	(35.3%)		(26.3%)		(30.6)	
Relationship Length (years)	7.6	8.7	5.4	6.0	6.5	7.5
Index Trauma						
Adult Sexual Trauma	(23.5%)		(21.1%)		(22.2%)	
Childhood Sexual Trauma	(17.6%)		(42.1%)		(30.6%)	
Physical Assault	(11.8%)		(10.5%)		(11.1%)	
Sudden Death	(11.8%)		(10.5%)		(11.1%)	
Accident	(5.9%)		(10.5%)		(8.3%)	
Combat	(5.9%)		(0.0%)		(2.8%)	
Illness	(0.0%)		(5.3%)		(2.8%)	
Other	(23.5%)		(0.0%)		(11.1%)	
Years Since Index Trauma	15.6	13.4	13.3	13.4	14.4	13.3
MSPSS Total	4.9	1.2	4.7	.9	4.8	1.0
MSPSS Family	4.3	1.8	3.6	1.7	3.9	1.8
MSPSS Friends	4.4	1.6	4.8	1.5	4.6	1.6
MSPSS Significant Other	6.0	1.1	5.6	1.2	5.8	1.2

Note. MSPSS = Multidimensional Scale of Perceived Social Support.

Table 2
Means and Standard Deviations for the CAPS by Condition

Variable	Pre-treatment/ Baseline			Mid-treatment/ 4 weeks of waiting			Post-treatment/ 12 weeks of waiting		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
CAPS									
Treatment Immediately	17	71.4	12.5	16	51.0	21.4	14	34.1	25.8
Waitlist	19	75.4	15.1	17	64.0	24.3	18	62.8	26.7
Overall Sample	36	73.5	13.9	33	57.7	23.5	32	50.3	29.7

Note. CAPS = Clinician-Administered PTSD Scale.

2003). Given that the association between social support and PTSD has been well established, our findings are likely best explained by study- and sample-specific factors. The positive association between significant other support and initial PTSD severity may have been due to the fact that our study examined a treatment-seeking sample, all of whom met diagnostic criteria for PTSD. Although the broader literature suggests that, on average, long-standing PTSD may erode social support (Kaniasty & Norris, 2008; King, Taft, King, Hammond, & Stone, 2006), individuals in more supportive relationships, particularly those supportive enough to have partners who are willing to engage in a couple-therapy for PTSD, may have partners who make additional efforts to be supportive as PTSD symptomatology worsens. Relatively high levels of significant other support found within the current study supports this explanation (see Table 1). This finding highlights an important selection bias that likely occurs when conducting research on individuals or dyads who are treatment seeking, particularly those who are seeking couple-based interventions, compared with research on a broader population of individuals with PTSD.

Although the results of the growth curve model did not find a significant association between initial family support and PTSD, there was a significant negative bivariate correlation between these variables (see Table 3). Although both of these analyses tested the association between initial family support

Table 3
Correlations between Pretreatment/Baseline Variables

	CAPS	MSPSS Total	MSPSS Family	MSPSS Friends
CAPS	-			
MSPSS Total	.04	-		
MSPSS Family	-.38*	.71***	-	
MSPSS Friends	.24	.75***	.21	-
MSPSS Significant Other	.37*	.59***	.07	.33*

* $p < .05$. *** $p < .001$.

Note. For abbreviations, see Tables 1 and 2.

and PTSD, the growth curve analysis accounted for the other variables contained in the model, whereas the correlational analysis tested the bivariate association without accounting for other variables. Accordingly, the null finding in the growth curve model was likely a result of the small sample size and inclusion of the interaction term in the model, which reduced the statistical power needed to detect a smaller effect, as the bivariate correlation was in the expected direction and consistent with previous work on the association between social support and PTSD (Brewin et al., 2000; Ozer et al., 2003). The finding that the association between family social support (a non-couple-specific type of support) and pretreatment/baseline PTSD was in the expected direction is consistent with the broader literature across a range of PTSD samples, lending further support to the possibility that there is a selection bias when examining cross-sectional associations in a sample of patients seeking couple therapy for PTSD. An alternative, but related, explanation may be that the null finding for family support was attributable to a restricted range in symptom severity, as PTSD was an inclusion criterion of the current study, while most studies examining the association between social support and PTSD include participants with and without PTSD. Finally, the finding that social support from friends was not associated with initial PTSD severity is consistent with previous work (Wilcox, 2010). Moreover, it is likely that total social support, representing an average of the three sources of support, was influenced by the contradictory associations detected for significant other and family support (i.e., negative association for significant other support and positive association for family support), resulting in a null finding for the association between total social support and initial PTSD severity.

Our finding that significant other social support moderated PTSD treatment outcomes in CBCT for PTSD is consistent with prior research with individual therapies (Price et al., 2013; Thrasher et al., 2010). Individuals with PTSD often perceive

Table 4

Hierarchical Linear Models Predicting Pretreatment/Baseline PTSD Symptom and Treatment Response from Total and Subscales of the MSPSS

MSPSS Total						
Effect	<i>b</i>	<i>SE</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>g</i>
Initial CAPS Severity (Intercept)	72.78	3.77	19.33	32	<.001	6.44
Condition	-4.82	4.68	-1.03	32	.311	-.34
MSPSS	4.15	3.34	1.24	32	.223	.41
Interaction	-5.67	4.47	-1.27	32	.214	-.42
CAPS Severity Over Time (Slope)	-.96	.34	-2.82	32	.008	-.94
Condition	-1.62	.63	-2.56	32	.016	-.85
MSPSS	.32	.35	.93	32	.361	.31
Interaction	-1.00	.59	-1.69	32	.101	-.56
MSPSS Family						
Effect	<i>b</i>	<i>SE</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>g</i>
Initial CAPS Severity (Intercept)	71.26	3.19	22.35	32	<.001	7.45
Condition	-2.72	4.08	-.67	32	.511	-.22
MSPSS	-3.16	1.97	-1.60	32	.119	-.53
Interaction	1.03	2.70	.38	32	.705	.13
CAPS Severity Over Time (Slope)	-.94	.32	-2.90	32	.007	-.97
Condition	-1.76	.70	-2.51	32	.017	-.84
MSPSS	.12	.21	.56	32	.579	.19
Interaction	-.30	.43	-.70	32	.487	-.23
MSPSS Friends						
Effect	<i>b</i>	<i>SE</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>g</i>
Initial CAPS Severity (Intercept)	71.46	3.12	22.91	32	<.001	7.64
Condition	-3.84	4.43	-.87	32	.393	-.29
MSPSS	4.30	2.36	1.82	32	.078	.61
Interaction	-5.12	3.25	-1.57	32	.126	-.52
CAPS Severity Over Time (Slope)	-1.05	.34	-3.11	32	.004	-1.04
Condition	-1.75	.60	-2.92	32	.006	-.97
MSPSS	.21	.17	1.25	32	.222	.42
Interaction	-.32	.44	-.72	32	.480	-.24
MSPSS Significant Other						
Effect	<i>b</i>	<i>SE</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>g</i>
Initial CAPS Severity (Intercept)	73.59	3.60	20.44	32	<.001	6.81
Condition	-6.26	4.67	-1.34	32	.190	-.45
MSPSS	6.14	2.22	2.77	32	.009	.92
Interaction	-4.80	3.62	-1.33	32	.195	-.44
CAPS Severity Over Time (Slope)	-.99	.36	-2.78	32	.009	-.93
Condition	-1.47	.56	-2.64	32	.013	-.88
MSPSS	-.03	.21	-.13	32	.895	-.04
Interaction	-.90	.35	-2.61	32	.014	-.87

Note. The MSPSS was mean centered. Condition (0 = waitlist; 1 = treatment immediately). For abbreviations, see Tables 1 and 2.

the world, including their social support networks, to be threatening (e.g., Ehlert & Clark, 2000). Higher levels of social support from a significant other may foster increased feelings of safety that facilitate treatment engagement and symptom improvement (Charuvastra & Cloitre, 2008). Additionally, significant other support may help overcome PTSD-related emotional numbing and avoidance by fostering

patients' engagement with the dyadic treatment interventions included in CBCT for PTSD (e.g., sharing thoughts and feelings, engaging in dyadic approach tasks, dyadic cognitive interventions). In contrast, support from family and friends may be less relevant to treatment outcomes in a couple-based intervention or in cases where support from one's significant other is particularly strong, as was the case in the current

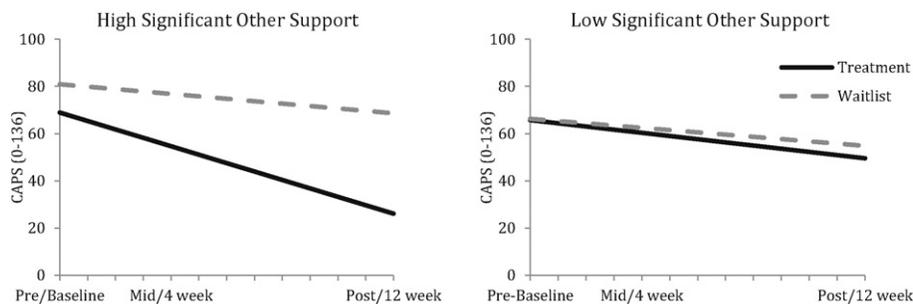


FIGURE 1 Trajectories of the CAPS for each condition across high and low scores on the significant other subscale of the MSPSS. Trajectories are depicted at 1 standard deviation above (high) and below (low) the mean of the significant other subscale MSPSS. Note. MSPSS = Multidimensional Scale of Perceived Social Support; CAPS = Clinician-Administered PTSD Scale.

sample (see Table 1). However, social support from other sources may be of greater importance when a patient does not have an intimate partner, or when their perceived support from a significant other is particularly low, as might be the case among patients seeking individual or group treatment for PTSD.

The current study suggests that social support from significant others can influence PTSD treatment response within CBCT for PTSD. This finding has important clinical implications with regard to identifying patients who are most likely to benefit from CBCT for PTSD, as well as when considering how treatment could be modified to improve patient outcomes. Our results suggest that couples with patients who perceive their partners to be highly supportive may be most likely to benefit from CBCT for PTSD. In contrast, couples with patients who perceive their partners to be less supportive may benefit from specific interventions aimed at increasing social support prior to beginning CBCT for PTSD. Interestingly, these findings are different from those of a related study that did not find an association between patients' or partners' pretreatment relationship satisfaction and PTSD outcomes in CBCT for PTSD (Shnaider et al., 2015). A possible explanation of the difference in findings between these studies may be related to the specific aims of, and interventions used in, CBCT for PTSD. In addition to improving PTSD symptoms, CBCT for PTSD aims to enhance relationship functioning (Monson & Fredman, 2012). Accordingly, it contains interventions designed to increase dyadic communication and satisfaction (e.g., catching each other doing nice things, paraphrasing, sharing thoughts and feelings). Through the inclusion of these interventions, the deleterious effect of poorer pretreatment relationship functioning on treatment outcomes detected in PTSD treatments (Monson, Rodriguez et al., 2005; Tarrier et al., 1999) may be bypassed. In contrast, social support appears to play an important role in treatment

outcome across both individual (Price et al., 2013; Thrasher et al., 2010) and couple-based treatments for PTSD, suggesting that the interventions within CBCT for PTSD may benefit from some modifications designed to more explicitly increase social support from significant others. This is particularly important because low levels of social support may be interfering with treatment progress. Accordingly, additional attention to fostering a strong emotional connection between partners may be essential, as this appears to be what is captured by the significant other subscale of the MSPSS (Zimet et al., 1988), whereas the measures used to assess relationship functioning in other studies (Monson, Rodriguez et al., 2005; Shnaider et al., 2015) seem to examine a more global construct which includes elements of dyadic communication, conflict management, engagement in relationship behaviors, and similarity of beliefs and values.

An additional point worth noting is that social support from significant others did not predict changes in PTSD symptoms within the waitlist condition. This suggests that social support on its own is likely insufficient for reducing PTSD symptoms among individuals who have had PTSD for several years. Although social support has been shown to be robustly associated with PTSD symptoms following trauma exposure (Brewin et al., 2000; Ozer et al., 2003) and put forth as an important factor promoting recovery (Kaniasty & Norris, 2008), the effect that social support may have on alleviating symptoms of PTSD appears to be constrained to the early period following trauma exposure. This is consistent with previous literature examining the association between social support and PTSD symptoms over time following trauma exposure (Kaniasty & Norris, 2008).

Although the current study has several strengths, it is important to recognize the various limitations of our work. Specifically, the small sample size, and associated lack of power, may have restricted our

ability to detect some significant effects or resulted in spurious findings. Relatedly, the small sample size limits the generalizability of the findings. Accordingly, in order to increase the confidence in these results, these findings should be replicated in a larger, more diverse sample. It is also important to note that although the assessment schedule for the waitlist condition was designed to parallel that of the treatment-immediately condition with regard to timing of assessments, some dyads in the treatment-immediately condition took longer than anticipated to complete treatment, resulting in the assessment schedules not being as uniform as initially planned. Our work is also limited by the selection bias and restricted range in social support that occurred as a result of utilizing a sample that consisted of treatment-seeking couples. As suggested earlier, it is possible that those who seek out a couple-based therapy may have greater support from their significant other. Notably, an examination of the mean levels of support across the various sources suggests that social support from a significant other was higher than support from other sources within the current sample (see Table 1). However, levels of social support from a significant other in the current study appear to be similar to those found in previous samples. Specifically, in samples of pregnant women, high school students, and pediatric medical residents, scores on the significant other subscale of the MSPSS ranged from 5.51 to 6.39 (Zimet et al., 1990). In contrast, scores on the family subscale (5.52 to 6.02) and friends subscale (5.48 to 5.64), as well as total MSPSS scores (5.58 to 6.01) appear to be higher in these prior samples (Zimet et al., 1990), compared with those found in the current study. These findings suggest that individuals seeking a couple-based therapy for PTSD are likely endorsing normative levels of support from significant others, but that they may have significant impairment in obtaining support from other sources (i.e., family and friends). However, it is necessary to examine levels of social support, across the various sources, within a non-treatment-seeking sample of individuals with PTSD to more confidently substantiate this hypothesis.

Our study is the first to suggest that social support may moderate treatment outcome in couple-based treatments for PTSD. Given that CBCT for PTSD has a focus on improving interpersonal functioning, stronger support from one's partner may provide a greater opportunity to practice skills learned in treatment and consolidate gains. Previous researchers have suggested that there may be benefits of facilitating social support during (Thrasher et al., 2010), or including family members in, treatment (Monson & Fredman, 2012). The current study

extends this literature by demonstrating that social support may also influence PTSD outcomes within couple-therapy for PTSD and provides further justification for work examining the effects of including significant others in treatments. However, future studies are needed to examine whether social support can be increased with treatment and whether those improvements would lead to greater PTSD symptom response.

Conflict of Interest Statement

Candice M. Monson receives royalties from Guilford Press. The remaining authors declare that there are no conflicts of interest.

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