




Couple-based interventions for PTSD among military veterans: An empirical review

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Abstract

Objective: Treatment for posttraumatic stress disorder (PTSD) is a commonly sought mental health service among military service members and veterans (SM/Vs). Such treatment is typically individually-based, despite many SM/Vs reporting a desire for greater partner involvement in treatment. This review examined couple-based treatments for PTSD among SM/Vs and their romantic partners.

Method: A database search conducted in July, 2018 yielded 167 studies, of which 16 (10%) met inclusion criteria. Brief intervention summaries, effect sizes, and distress change scores (where applicable) are reported.

Results: The 16 studies tested 7 interventions, which showed a reduction in self-rated and clinician-rated PTSD symptoms with large effect sizes observed in most studies. Relationship outcomes also improved for SM/Vs and their partners, with effect sizes ranging from small-to-medium for SM/Vs and small-to-large for partners.

Conclusions: Couple-based interventions show success in reducing PTSD symptoms and improving relationship outcomes, offering several alternatives to individual-based interventions among partnered SM/Vs.

KEYWORDS

couple therapy, marital therapy, military veterans, posttraumatic stress disorder, relationship adjustment, relationship satisfaction

1 | INTRODUCTION

The United States boasts the largest military force in the world, with a veteran population of nearly 19 million (National Center for Veterans Analysis & Statistics, 2015). Prevalence rates for posttraumatic stress disorder (PTSD) among military service members/veterans (SM/Vs) are higher than the general population, with estimates ranging from 11% to 18% (Hoge et al., 2004; Richardson, Frueh, & Acierno, 2010), compared to the prevalence rate of 6.8% observed in nonmilitary populations (Kessler et al., 2005). PTSD is associated with a number of negative mental health sequelae related to relationship function, including sexual dysfunction (Blais, Geiser, & Cruz, 2018; Breyer et al., 2014), decreased social support (Brancu et al., 2014; King, Taft, King, Hammond, & Stone, 2006), and lower relationship satisfaction (McGinn, Hoerster, Stryczek, Malte, & Jakupcak, 2017; Taft, Watkins, Stafford, Street, & Monson, 2011). Treatment for PTSD is one of the most commonly utilized mental health care services for veterans and active duty service members (Deployment Health Clinical Center, 2017; McGinn et al., 2017). Given that roughly 65% of all veterans are married (National Center for Veterans Analysis & Statistics, 2015), interventions that are couple-based may be particularly well-suited for the treatment of PTSD in this population. Indeed, extant research shows that veterans report a preference for greater romantic partner involvement in their PTSD treatment (Khaylis, Polusny, Erbes, Gewirtz, & Rath, 2011; Meis et al., 2013), however, nearly all of the established treatments for PTSD are individual-based (see reviews, Lancaster, Teeters, Gros, & Back, 2016; Watts et al., 2013).

Several individual-based treatments for PTSD are well-supported in the literature and have consistently shown success in reducing PTSD symptoms (see reviews, Cusack et al., 2016; Watts et al., 2013). Indeed, among individual treatments, cognitive behavioral therapy (CBT), and its theoretically divided subcategories, such as exposure-based CBT, have garnered the most empirical support with effect sizes ranging between $g = 1.08$ – 1.63 (see review, Watts et al., 2013). Couple-based therapy may offer another effective avenue for the treatment of PTSD among partnered SM/Vs, although there is less overall research examining these interventions. One advantage of couple-based treatments is that involving romantic partners in treatment is associated with higher mental health care utilization (McGinn et al., 2017), which may result in more positive treatment outcomes. Further, SM/Vs have expressed interest in increasing romantic partner involvement in their mental health treatment (Meis et al., 2013). Couple-based interventions are able to simultaneously address problems in other meaningful areas of life for SM/Vs, including relationship function. Such versatility in treatment may be particularly salient to SM/Vs as 65% are partnered or married (National Center for Veterans Analysis & Statistics, 2015).

Partnered SM/Vs face several unique stressors that may place additional strain on their relationship, making couple-based interventions particularly important for this subpopulation. These stressors include prolonged separation during deployment and higher psychological strain resulting from the dangers of deployment (Gimbel & Booth, 1994), risk for military sexual trauma (Blais, 2019; Ilies, Hauserman, Schwochau, & Stibal, 2003), frequent relocations (Erbes, Polusny, Macdermid, & Compton, 2008), and postdeployment adjustment difficulties, such as PTSD (Hoge et al., 2004; Kline et al., 2010), depression (Kline et al., 2010; Maguen et al., 2011), sexual dysfunction (Blais, Geiser, & Cruz, 2018), lower sexual satisfaction (Blais, Brignone, Fargo, Andresen, & Livingston, 2019), and lower social support (Brancu et al., 2014; King et al., 2006). These stressors are risk factors for marital strain and decreased relationship function even without the onset of PTSD symptomatology (Martin & Sherman, 2012). Indeed, the presence of PTSD symptoms is hypothesized to interact with relationship distress in a cyclic fashion, such that higher PTSD symptoms are associated with greater relationship distress and greater relationship distress is associated with higher PTSD symptom severity (Monson, Schnurr, Stevens, & Guthrie, 2004). Further, extant cross-sectional research observed that greater numbers of relationship problems are associated with higher PTSD symptom severity (see review, Taft et al., 2011).

One potential advantage of couple-based interventions is that they may more effectively break the cycle of relationship dysfunction and PTSD symptom severity by concurrently treating both the symptoms of PTSD and romantic relationship difficulties (Blow, Curtis, Wittenborn, & Gorman, 2015; Erbes, Polusny, MacDermid, &

Compton, 2008; Monson et al., 2004). Indeed, several core symptoms of PTSD are associated with problems in intimate relationship function (see review, Taft et al., 2011). Specifically, extant research demonstrated that PTSD symptoms of dysphoria are associated with poorer relationship function (Erbes, Meis, Polusny, Compton & Wadsworth, 2012). Further, emotional numbing was associated with increased relationship distress (Riggs, Byrne, Weathers, & Litz, 1998) and postdeployment relationship function (Meis, Erbes, Polusny, & Compton, 2010). Partner perceptions of PTSD symptoms were also negatively related to relationship function. For example, partner's perception of emotional numbing and withdrawal symptoms were associated with higher levels of marital distress (Renshaw & Caska, 2012). Given the evidence that supports the interconnectedness of PTSD symptoms and intimate relationship problems, couple-based interventions are uniquely positioned to intervene and address these concerns. Couple-based treatments may utilize psychoeducation strategies, behavioral interventions, and communication skill building to address the cyclic nature of PTSD symptoms and relationship dysfunction.

Many veterans recognize that their PTSD symptoms are a source of stress not only for themselves but for their romantic partners. Indeed, one study of 185 veterans found that 87% ($n = 161$) of the sample viewed PTSD symptoms as a source of stress in their romantic relationship (Meis et al., 2013). Further, some evidence shows that veterans who seek individual-based treatments for PTSD and also have distressed relationships show poorer outcomes (Price, Gros, Strachan, Ruggiero, & Acierno, 2013). Couple-based interventions for PTSD are thus well positioned to achieve positive outcomes not only with PTSD symptoms, but also with relationship difficulties. Additionally, one study of 97 veterans examined the associations of PTSD, relationship satisfaction, and attitudes towards psychotherapy and found that veterans were significantly more willing to consider couple-based therapy compared to individual therapy (Khaylis et al., 2011). Another study of 185 veterans found that 78% ($n = 144$) desired greater involvement from their intimate partner in mental health treatment (Meis et al., 2013). Given that SM/Vs are aware that PTSD symptoms can strain their relationships and are interested in greater romantic partner involvement in their mental health treatment, couple-based interventions for PTSD appear to be strongly suited to meet the needs of SM/Vs with PTSD and relationship difficulties.

Although evidence suggests that couple-based interventions are of interest to veterans with PTSD, overall research in this area is limited. To date, there are no systematic literature reviews conducted on couple-based interventions for PTSD among SM/Vs. The present study seeks to extend the literature by thoroughly reviewing the existing couple-based interventions for PTSD and relationship outcomes among military SM/Vs. In this review, we briefly describe the assumptions of each intervention and evaluate the empirical support for each intervention by summarizing the results and reporting effect sizes or distress change scores.

2 | METHOD

2.1 | Procedure

A literature search conducted in PsycINFO and PubMed in July 2018 using a combination of search terms (a) "PTSD AND Couple Therapy AND Military" and (b) "Posttraumatic stress disorder AND Marital Therapy AND Veterans" yielded 167 results. For articles to merit inclusion in the present study, they must: (a) include a PTSD diagnosis for one partner, (b) one or more partner(s) must be a military SM/V, (c) the intervention tested must be couple-based (i.e., both partners undergo treatment simultaneously, as opposed to individually), (d) an intervention must be empirically tested rather than a proposed theoretical framework, and (e) outcome data for the intervention must include either a validated measure of PTSD symptom severity, relationship outcomes, or both. Studies were excluded if both members of the couple met diagnostic criteria for PTSD. Given high rates of comorbidity between substance use disorders and PTSD (e.g., Trivedi et al., 2015), we included studies with participants who reported comorbid PTSD and substance use disorder.¹

¹A literature search did not reveal any additional comorbid conditions that were studied in couple-based interventions for PTSD among SM/Vs.

2.2 | Analytic plan

The examination of the literature was conducted according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009; see Figure 1). Articles were reviewed for inclusion/exclusion criteria. Effect sizes were calculated from pre- to posttreatment using paired *t*-test values (Card, 2012), or were otherwise extracted from an article's results section. In the present review, we chose to convert all effect sizes to Cohen's *d*, to maintain consistency and ease interpretability (Card, 2012). Of note, negative effect sizes reflect that on average, measure scores increased from pre- to posttreatment. For example, a negative effect size for relationship satisfaction indicates that relationship satisfaction improved from pre- to posttreatment (assuming higher scores on the relationship satisfaction scale indicate higher satisfaction), whereas a positive effect size for PTSD symptom severity indicates that PTSD symptom severity decreased from pre- to posttreatment (assuming lower scores on the PTSD measure mean less distress). To assess meaningful change in the case studies included in this review, we examined whether posttreatment scores on PTSD and/or relationship outcome measures showed a change in symptoms that fell below/above the clinical cut-off specified for those measures. We utilized clinical cut-offs of 39 for the *Posttraumatic Stress Disorder Checklist* (PCL; Dickstein et al., 2015), 97 for the *Dyadic Adjustment Scale* (DAS; Spanier, 1976) and 104.5 for the *Couples Satisfaction Index-32* item version (CSI-32; Funk & Rogge, 2007).

3 | RESULTS

3.1 | Summary of reviewed studies

Seven unique couple-based interventions were identified across the 16 studies for the treatment of PTSD symptoms and improvement of relationship outcomes. The seven interventions included Cognitive-Behavioral Conjoint Therapy for PTSD (CBCT; *n* = 8, 47%; Monson, Guthrie, & Stevens, 2003), Mindfulness-Based Cognitive-Behavioral Conjoint Therapy for PTSD (MB-CBCT, *n* = 1, 6%; Luedtke, Davis, & Monson, 2015), Couple Treatment for Alcohol Use Disorder (AUD) and PTSD (CTAP; *n* = 1, 6%; Schumm, Monson, O'Farrell, Gustin, & Chard, 2015), Structured Approach Therapy (SAT; *n* = 2, 13%; Sautter, Glynn, Cretu, Senturk, & Vaught, 2015), Strategic Approach Therapy (STRAT; *n* = 1, 6%; Sautter, Glynn, Thompson, Franklin, & Han, 2009), Emotionally Focused Couples Therapy (EFCT, *n* = 1, 6%; Johnson, 2002), and the Veteran Couples Integrative Intensive Retreat (VCIIR;

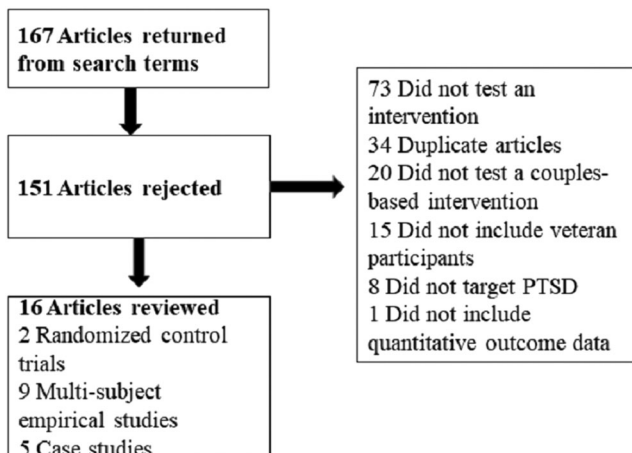


FIGURE 1 Preferred reporting items for systematic reviews and meta-analyses diagram of study attrition

$n = 2$, 13%; Monk, Ogolsky, & Bruner, 2016). Of the 16 articles reviewed, 11 (69%) were multisubject studies with quantitative data and five (31%) were case studies with quantitative data. Of the 11 multisubject studies, 11 (100%) reported quantitative data from pre- to posttreatment for self-rated PTSD symptoms, eight (73%) reported quantitative data from pre- to posttreatment for clinician-rated PTSD symptoms, and eight (73%) reported quantitative data from pre- to posttreatment for relationship outcomes. Of the 11 studies that reported data on pre- to posttreatment self-rated PTSD symptoms, seven (64%) provided effect sizes and four (36%) reported paired sample t -tests from pre- to posttreatment, from which Cohen's d was calculated (Card, 2012). Of the eight studies that reported quantitative data on clinician-rated PTSD symptoms, six (75%) provided effect sizes describing pre- to posttreatment changes and two (25%) studies reported paired sample t -test scores from which Cohen's d was calculated (Card, 2012). Of the eight studies that reported quantitative data for relationship outcomes, six (75%) provided effect sizes describing pre- to posttreatment changes for veterans and their partners, and two (25%) reported paired sample t -test scores from which Cohen's d was calculated (Card, 2012).

Out of 16 total studies, 13% ($n = 2$; Monk et al., 2016; Weissman et al., 2018) did not report data on the sex of their sample. In all but five (31%) of the studies reviewed (Blount, Peterson, & Monson, 2017; Monk et al., 2016; Monk, Oseland, Goff, Ogolsky, & Summers, 2017; Monson et al., 2011; Monson et al., 2012), samples were entirely comprised of a male SM/V with PTSD and a female, nonmilitary partner. Out of 16 total studies, 19% ($n = 3$) did not report data on the race/ethnicity of their sample (Blount et al., 2017; Fredman, Monson, & Adair, 2011; Monson, Gradus et al., 2008). In these 13 studies, the majority of all samples were comprised of white veterans and partners.

Out of the 16 total studies that provided quantitative self-report data on PTSD symptoms at pre- and posttreatment, all utilized a version of the PCL (e.g., Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL is a widely used self-report measure of PTSD symptom severity that assesses the degree to which a person is bothered by the symptoms of PTSD over the past month. Further, of the 16 reviewed studies, 81% ($n = 13$) also included a clinician-rated measure of PTSD symptoms. Of these studies, 69% ($n = 11$) utilized the *Clinician Administered PTSD Scale* (CAPS; Blake et al., 1995) and 13% ($n = 2$) utilized the *PTSD Symptom Scale Interview* (PSS-I; Foa & Tolin, 2000; Foa, Riggs, Dancu, & Rothbaum, 1993). The CAPS is considered the gold standard of PTSD assessment and assesses the frequency and intensity of PTSD symptoms in a structured interview format (Blake et al., 1995; Hunt, Chesney, Jorgensen, & Schumann, 2018). The PSS-I also utilizes a structured interview format and assesses the presence, severity, and frequency of PTSD symptoms in response to a traumatic event (Foa et al., 1993). Relationship outcomes were assessed in 88% ($n = 14$) of studies. Of these studies, 86% ($n = 12$) utilized the DAS (Spanier, 1976) and 14% ($n = 2$) utilized the CSI-32 (Funk & Rogge, 2007). The DAS is a widely used self-report measure that was developed to assess dyadic adjustment in couples and is comprised of four subscales: dyadic consensus, dyadic cohesion, affectional expression and dyadic satisfaction, as well as a total score, which reflects overall dyadic adjustment (Graham, Liu, & Jeziorski, 2006; Spanier, 1976). The CSI-32 is a self-report measure that was developed to specifically assesses relationship satisfaction independent of other facets of relationship quality among couples (Funk & Rogge, 2007).

The overall summary from the 16 reviewed studies suggested that each of the seven interventions showed evidence of reducing PTSD symptoms from pre- to posttreatment among veterans (see Table 1 and 2). Specifically, these interventions displayed consistently large effect sizes for self-rated PTSD symptom reduction (see Table 1). These effect sizes are comparable to, and in some cases larger than, the most effective individual treatments for PTSD, which ranged from $g = 0.73$ – 1.69 (Watts et al., 2013). Further, for the studies that reported data on relationship outcomes, results showed relationship outcomes, such as dyadic adjustment and relationship satisfaction, improved at posttreatment (see Tables 1 and 2) with small-to-large effect sizes. A brief summary of the theoretical underpinnings and mechanisms of change for the seven interventions are described below, followed by a summary of the empirical support for each intervention, which includes effect sizes and/or change scores for the pre- to posttreatment change in PTSD symptoms and relationship outcomes. Effect sizes for all multisubject studies are qualitatively described as small, medium, and large according to characterizations described by Cohen (1992).

TABLE 1 Sample size and effect size (Cohen's *d*) for PTSD symptom scores and relationship satisfaction for all multisubject studies

Author	Intervention	Sample size	Effect size principle	PTSD symptom change <i>d</i>		Relationship satisfaction change <i>d</i>	
				Self (PCL)	Clinician (CAPS)	Patient (DAS)	Partner (DAS)
Monson et al. (2004)	CBCT	14	AC	0.64	1.60	0.05	-0.92
Monson et al. (2011)	CBCT	12	AC	1.32	1.62	-0.71	-1.41
Monson et al. (2012)	CBCT	12	ITT	0.86	1.16	-0.30	-0.48
Schumm et al. (2013)	CBCT	12	AC	1.43	1.51	-0.11	-1.03
Schumm et al. (2015)	CTAP	18	AC	1.18	0.94	-0.27	-0.52
Sautter et al. (2014)	SAT	14	AC	2.71	3.82	-0.56	-0.68
Sautter et al. (2015)	SAT	58	ITT	1.69	2.17	-0.65	-0.27
Sautter et al. (2009)	STRAT	12	AC	3.00	2.09	-	-
Weissman et al. (2018)	EFCT	14	AC	1.11	0.16	-0.50	-0.96
Monk et al. (2016)	VCIIR	298	AC	1.45	-	-	-
Monk et al. (2017)	VCIIR	152	AC	0.42	-	-0.41	-0.58

Note: Sample size indicates number of participants, not number of couples.

Abbreviations: "-", data not reported; AC, assessment completion; CAPS, Clinician Administered PTSD Scale; CBCT, Cognitive Behavioral Conjoint Therapy for PTSD; CTAP, Couple Treatment for Alcohol Use Disorder and PTSD; DAS, Dyadic Adjustment Scale; EFCT, Emotionally Focused Couples Therapy; ITT, intention-to-treat; PCL, PTSD Checklist; SAT, Structured Approach Therapy; STRAT, Strategic Approach Therapy; VCIIR, Veteran Couples Integrative Intensive Retreat Model.

TABLE 2 Pretreatment to posttreatment scores for relationship satisfaction for all reviewed case studies

Authors	Intervention	Relationship satisfaction measure	Relationship satisfaction			
			Patient		Partner	
			Pre-tx	Post-tx	Pre-tx	Post-tx
Blount et al. (2015)	CBCT	CSI-32	140	156	74	110 ^a
Blount et al. (2017)	CBCT	CSI-32	159	147	152	157
Fredman et al. (2011)	CBCT	DAS	107	112	90	108 ^a
Monson et al. (2008) ^b	CBCT	DAS	<97	>97	<97	>97
Luedtke et al. (2015)	MB-CBCT	DAS	92	130 ^a	90	121 ^a

Abbreviations: CBCT, Cognitive Behavioral Conjoint Therapy for PTSD; CSI-32, Couples Satisfaction Index-32 item version; DAS, Dyadic Adjustment Scale; MB-CBCT, Mindfulness-Based Cognitive Behavioral Conjoint Therapy; Pre-tx, pretreatment scores; Post-tx, posttreatment scores.

^aReduction in symptoms below clinical cutoff.

^bRaw data not provided, measure scores were qualitatively described in the study.

3.2 | Cognitive-Behavioral Conjoint Therapy for PTSD (*n* = 8)

3.2.1 | Treatment overview

CBCT for PTSD was developed as a frontline treatment to decrease PTSD symptom severity and concurrently enhance intimate relationship function (Monson et al., 2003, 2004). The theory that guides CBCT posits that PTSD

and relationship function have a reciprocal relationship, with problems in either area negatively impacting the other. Consistent with this theory, mechanisms of change include cognitive restructuring techniques that decrease behavioral and cognitive avoidance patterns associated with PTSD and addressing communication skills deficits that affect relationship function. Thus, treatment targets both the symptoms of PTSD that contribute to relationship dysfunction and relationship dysfunction that exacerbates PTSD symptoms (Monson et al., 2003). Monson et al. (2012) more thoroughly described the rationale, treatment targets and underlying theory for CBCT in their treatment manual.

CBCT for PTSD is comprised of 15 manualized sessions, each lasting approximately 75 min. Treatment includes three phases: (1) rationale and psychoeducation about PTSD and its impact on relationships, (2) enhancing relationship satisfaction and overcoming avoidance, and (3) cognitive interventions to alter problematic trauma beliefs and appraisals.

3.2.2 | Summary of findings

Eight studies applying CBCT for PTSD were published, including one randomized control trial (RCT), three nonrandomized multisubject studies, and four case studies. As shown in Table 1, effect sizes were consistently large for all studies. Overall, these findings suggest CBCT for PTSD shows success in simultaneously improving PTSD symptoms and relationship outcomes (Blount et al., 2017; Blount, Fredman, Pukay-Martin, Macdonald, & Monson, 2015; Fredman et al., 2011; Monson et al., 2004, 2011, 2012).

One RCT was conducted to compare CBCT for PTSD with a waitlist condition (Monson et al., 2012). Self-rated PTSD symptoms were assessed using the *Posttraumatic Stress Disorder Checklist-Stressor Specific* (PCL-S; Weathers et al., 1993), and clinician-rated PTSD symptoms were assessed using the CAPS (Blake et al., 1995). Relationship outcomes assessed in this study included relationship satisfaction, which was measured using the DAS (Spanier, 1976). Of note, military veterans comprised only 30% ($n = 12$) of the sample; as such, the authors contacted the corresponding author and statistician and requested outcome data for the 30% of the sample that had military service (N.D. Pukay-Martin, personal communication, October 16, 2018). The results presented in this review include only the veterans and their romantic partners. Results showed that those in the CBCT condition reported a reduction in self-rated PTSD symptoms, clinician-rated PTSD symptoms and an improvement in relationship satisfaction (see Table 1). All effect sizes were calculated using intention-to-treat principles, with large effect sizes observed in self-rated and clinician-rated PTSD symptom reduction for the CBCT for PTSD condition (see Table 1). Improvements in relationship satisfaction for both the patient and partner were also observed, with a small effect size for patients and a small-medium effect size for partners (see Table 1). Further, when compared to the waitlist condition, patients in the CBCT for PTSD condition showed a significantly greater reduction in PTSD symptoms (see Table 1).

Three studies with a nonrandomized multisubject design were conducted utilizing CBCT for PTSD (Monson et al., 2004; Monson et al., 2011; Schumm, Fredman, Monson, & Chard, 2013). Self-rated PTSD symptoms were assessed via the PCL-S (Weathers et al., 1993) and clinician-rated PTSD symptoms were assessed using the CAPS (Blake et al., 1995). Each study assessed relationship outcomes using the DAS (Monson et al., 2004; Monson et al., 2011; Schumm et al., 2013; Spanier, 1976). Findings indicated that CBCT appeared to reduce self-rated PTSD symptoms, clinician-rated PTSD symptoms, and improved relationship outcomes (i.e., adjustment, distress and satisfaction) for both the patient and partner (see Table 1). All effect sizes were calculated using assessment-completion principles, with large effect sizes observed across each study for self-rated and clinician-rated PTSD symptom reduction from pre- to posttreatment (see Table 1). For improvements on the DAS for patients and partners, effect sizes ranged from small-to-large from pre- to posttreatment (see Table 1).

Four case studies utilized CBCT for PTSD (Blount et al., 2017; Blount et al., 2015; Fredman et al., 2011; Monson, Fredman, & Adair, 2008). Self-rated PTSD symptom severity for each of the four case studies was assessed via the PCL-S (Weathers et al., 1993; see Table 3). Findings indicated improvements on self-rated PTSD

TABLE 3 Pretreatment to posttreatment PTSD Scores for all Reviewed Case Studies

Authors	Intervention	PTSD Measure		Patient PTSD Scores			
				Self-rated		Clinician-rated	
		Self-rated	Clinician-rated	Pre-tx	Post-tx	Pre-tx	Post-tx
Blount et al. (2015)	CBCT	PCL-S	PSSI	58	35 ^a	35	–
Blount et al. (2017)	CBCT	PCL-S	PSSI	49	39 ^a	19	–
Fredman et al. (2011)	CBCT	PCL	CAPS	36	21 ^a	58	20
Monson et al. (2008) ^b	CBCT	PCL	–	>39	<39	–	–
Luedtke et al. (2015)	MB-CBCT	PCL	CAPS	72	23 ^a	68	21

Abbreviations: “–”, data not reported; CAPS, Clinician Administered PTSD Scale; CBCT, Cognitive Behavioral Conjoint Therapy for PTSD; MB-CBCT, Mindfulness-Based Cognitive Behavioral Conjoint Therapy; PCL, PTSD checklist; PCL-S, PTSD Checklist-Stressor Specific; Pre-tx, pretreatment scores; Post-tx, posttreatment scores; PSSI, PTSD symptoms scale-interview.

^aReduction in symptoms below clinical cutoff.

^bRaw data not provided, measure scores were qualitatively described in the study.

symptoms, such that all patients scored below the clinical cutoff at posttreatment (see Table 3). Each of the four case studies also included data on relationship outcomes. Two studies assessed relationship outcomes using the DAS (Fredman et al., 2011; Monson, Fredman et al., 2008; Spanier, 1976). The remaining two studies (Blount et al., 2017; Blount et al., 2015) measured relationship satisfaction with the *Couples Satisfaction Index-32 item version* (CSI-32; Funk & Rogge, 2007). Results across these studies showed that patients and their partners showed improvement in relationship outcomes (i.e., adjustment, distress and satisfaction) following treatment and scored above the clinical cut-off for the DAS or CSI-32 at posttreatment (see Table 2). However, it should be noted that the scores on the DAS for several of the participants in these studies were above the clinical cutoff at pretreatment, indicating a high degree of adjustment with their relationship before treatment. Two of the four studies included follow-up data, which indicated that treatment gains were maintained at 2 months (Blount et al., 2017) and 10 months (Blount et al., 2015) following posttreatment assessment.

3.3 | Mindfulness-Based Cognitive Behavioral Conjoint Therapy for PTSD ($n = 1$)

3.3.1 | Treatment overview

MB-CBCT is an adaptation of CBCT for PTSD that includes an emphasis on increasing mindfulness skills (Luedtke et al., 2015). MB-CBCT was guided by the theory underlying CBCT and extended this to hypothesize that mindfulness skills, such as present moment awareness, would reduce both internal and external avoidance behaviors (i.e., avoidance of trauma-related thoughts and avoidance of trauma-triggers) associated with PTSD and increase awareness of communication styles in the relationship (Luedtke et al., 2015). Within MB-CBCT, a primary mechanism of change included increasing mindfulness skills to tolerate distress and reduce avoidant behaviors that are characteristic of PTSD. Further, these skills were utilized to improve inter-relationship communication and decrease the incidence of judgment to affect change in relationship function (Adair, Boulton, & Algoe, 2018; Luedtke et al., 2015). Thus, consistent with MB-CBCT's underlying theory, mindfulness skills were implemented to improve symptoms of PTSD and improve facets of relationship function (Luedtke et al., 2015). Luedtke et al. (2015) more fully described the underlying rationale and theory for MB-CBCT in their article.

MB-CBCT was also designed to be shorter in duration compared to traditional CBCT, given the dropout rates observed in military veterans with PTSD engaged in mental health treatment (Luedtke et al., 2015). Although shorter in overall treatment duration, MB-CBCT utilizes longer sessions (i.e., 90 min compared to 75 min), as well as a weekend retreat to create a more intense, but shorter, alternative to CBCT that may be preferable to veterans

and their partners. MB-CBCT begins with a weekend retreat for the patient and partner, followed by 10 weekly sessions lasting approximately 90 minutes. Treatment includes three phases: (1) weekend retreat day one, which focuses on psychoeducation regarding PTSD symptoms (sessions 1–3), (2) weekend retreat day two, which focuses on relationship skills training with an emphasis on mindfulness (sessions 4–7), and (3) weekly conjoint therapy, which focuses on further improving relationship communication and decreasing avoidant behavior (sessions 8–16; Luedtke et al., 2015).

3.3.2 | Summary of findings

One case study utilized MB-CBCT for PTSD (Luedtke et al., 2015). Self-rated PTSD symptom severity was assessed via the PCL-S (Weathers et al., 1993) and clinician-rated PTSD symptom severity was assessed via the CAPS (Blake et al., 1995). Relationship outcomes assessed in this study used the DAS (Spanier, 1976). Results showed a reduction in self-rated PTSD symptoms, such that the patient scored below the clinical cutoff of 39 at posttreatment (see Table 3). Reductions in clinician-rated PTSD symptoms were also observed (see Table 3). Relationship adjustment decreased slightly for both the patient and partner, however, the average of the patient and partner scores were still above the clinical cutoff of 97 for the DAS at posttreatment (see Table 2; Spanier, 1976).

3.4 | Couple Treatment for Alcohol Use and PTSD ($n = 1$)

3.4.1 | Treatment overview

CTAP is a treatment for comorbid PTSD and AUD that integrates key elements of two empirically supported treatment protocols: behavioral couple therapy for AUD (BCT for AUD; Jacobson & Margolin, 1979; O'Farrell & Fals-Stewart, 2000) and CBCT for PTSD (Monson et al., 2004). Specifically, BCT for AUD posits that use of alcohol functions as a maintaining factor for PTSD symptoms and utilizes behavioral principles, in particular, frequent reinforcement from a supportive romantic partner, to achieve abstinence from alcohol and reduce PTSD symptoms (O'Farrell & Fals-Stewart, 2000). CBCT posits that PTSD symptoms negatively affect relationship function and relationship dysfunction negatively affects PTSD symptoms, and that conjointly treating both of these areas will result in the most effective change (Monson et al., 2003). Within CTAP, primary mechanisms of change include contingency management and reinforcement of abstinence from alcohol, cognitive modification for trauma-related thoughts and avoidance behaviors as well as increasing communication skills between partners to improve relationship function (Schumm et al., 2015). Schumm et al. (2015) provided a thorough description of treatment targets in CTAP in their article.

CTAP is comprised of 15 manualized sessions lasting approximately an hour. Treatment includes four phases: (1) psychoeducation and assessment, which focuses on providing information regarding alcohol use and PTSD symptoms, an assessment of satisfaction in the romantic relationship and commitment to treatment (sessions 1–3), (2) avoidant behaviors, which focuses on unhealthy avoidance behaviors and coping methods, problematic cognitions, and psychoeducation for identifying emotions (sessions 4–7), (3) acceptance skills, which focuses on barriers to recovery and using acceptance to reduce shame or guilt, (sessions 8–12), and (4) recovery and relapse prevention, which focuses on developing a recovery plan, preventing relapse and acknowledging progress in the relationship (sessions 13–15).

3.4.2 | Summary of findings

One nonrandomized multisubject study utilized CTAP for PTSD (Schumm et al., 2015). Self-rated PTSD symptom severity was assessed via the PCL-S (Weathers et al., 1993), and clinician-rated PTSD symptom severity was assessed via the CAPS (Blake et al., 1995). One relationship outcome, relationship adjustment, was assessed using

the DAS (Spanier, 2001). Results showed significant reductions in both self-rated and clinician-rated PTSD symptoms, as well as significant improvement in relationship adjustment for both the patient and partner (see Table 1). Effect sizes were calculated using assessment completion principles with large effect sizes observed for self-rated and clinician-rated PTSD symptom reduction from pre- to posttreatment (see Table 1). A small effect size was observed for increasing relationship adjustment from pre- to posttreatment in the patient, and a medium effect size was observed for increasing relationship adjustment observed in the partner (see Table 1).

3.5 | Structured Approach Therapy (n = 2)

3.5.1 | Treatment overview

SAT is a couple-based treatment that seeks to reduce relationship distress and symptoms of PTSD (Sautter et al., 2015). The theory that underlies SAT posits that couples must learn to join together to recognize, communicate, and challenge trauma-related thought patterns and avoidance behaviors that are negatively impacting their relationship (Sautter, Glynn, Arseneau, Cretu, & Yufik, 2014). Within SAT there are three key mechanisms of change: extinguishing the conditional response to trauma cues through repeated exposure, increasing the processing of the traumatic event through discussions with a partner and improving coping and emotion regulation in the relationship dyad (Sautter et al., 2015). Thus, SAT seeks to treat PTSD symptoms through rebuilding the relationship dyad and engaging in conjoint exposures to reduce trauma reactions. Sautter et al. (2015) included a more thorough description of the therapeutic techniques and theory underlying SAT in their article.

SAT is comprised of 12 manualized sessions, each lasting approximately 1 hr, across three phases. SAT is organized within three phases of a stress inoculation framework (Meichenbaum, 1994). Phases include (1) psychoeducation, which focuses on learning about the symptoms of PTSD and highlighting avoidant behaviors that impact the relationship (session 1–2), (2) skills training, which seeks to improve empathic communication, reduce experiential avoidance, manage anxiety symptoms, and engage in behavioral activation strategies to promote symptom recovery (sessions 3–6), and (3) disclosure-based exposure, which focuses on encouraging the couple to confront the patient's trauma-related emotions together (sessions 7–12).

3.5.2 | Summary of findings

Two studies have been published utilizing SAT for PTSD, including one nonrandomized multisubject study (Sautter et al., 2014), and one RCT (Sautter et al., 2015). In both studies, self-rated PTSD symptoms were assessed using the *Posttraumatic Stress Disorder Checklist-Military Version* (PCL-M; Weathers et al., 1993), and clinician-rated PTSD symptoms were assessed using the CAPS (Blake et al., 1995). One relationship outcome, relationship adjustment, was assessed in both studies using the DAS (Spanier, 1976). Overall findings revealed significant reductions of both self-rated and clinician-rated PTSD symptoms (see Table 1). Improvements in relationship adjustment were also observed for both the patient and partner. All effect sizes were calculated using intention-to-treat principles, with large effect sizes observed for reductions in self-rated and clinician-rated PTSD symptoms from pre- to posttreatment (see Table 1). Effect sizes for improved relationship adjustment from pre- to posttreatment were medium in size for patients and small-to-medium-large for partners (see Table 1).

3.6 | Strategic Approach Therapy (n = 1)

3.6.1 | Treatment overview

STRAT is a couple-based treatment that seeks to reduce PTSD symptoms by targeting a reduction in avoidance symptoms. The theory underlying STRAT posits that PTSD symptoms, such as effortful avoidance (e.g., avoidance of external reminders of trauma or of trauma-related thoughts and feelings), negatively affect relationship function, which further exacerbates PTSD symptoms (Sautter et al., 2009). Within STRAT, primary mechanisms of change

include motivational enhancement, coping effectiveness and increasing positive communication between partners to reduce internal avoidance of emotions (Sautter et al., 2009). Partner-assisted anxiety reduction techniques are utilized to decrease avoidance and build attachment in the relationship. Thus, STRAT seeks to reduce shared avoidance activities to rebuild damage in the relationship and reduce PTSD symptoms. Sautter et al. (2009) provided a more thorough description of the intervention techniques and treatment rationale for STRAT in their article.

STRAT is comprised of 10 manualized sessions, each lasting approximately 1 hr. Treatment includes three phases: (1) psychoeducation about PTSD and motivational enhancement (sessions 1–2), (2) behavior exchange to increase behaviors likely to result in positive emotions (sessions 3–4), and (3) partner-aided anxiety reduction strategies (sessions 5–10; Sautter et al., 2009).

3.6.2 | Summary of findings

One nonrandomized multisubject study utilized STRAT for the treatment of PTSD (Sautter et al., 2009). Self-rated PTSD symptoms were assessed via the PCL-S (Weathers et al., 1993) and clinician-rated PTSD symptoms were assessed via the CAPS (Blake et al., 1995). There were no relationship outcomes assessed in this study. Results showed reductions in both self-rated and clinician-rated PTSD symptoms. All effect sizes were calculated using assessment-completion principles, with large effect sizes observed for both self-rated and clinician-rated PTSD symptom reduction from pre- to posttreatment (see Table 1).

3.7 | Emotionally Focused Couples Therapy

3.7.1 | Treatment overview

EFCT is an intervention designed for couples to increase their emotional responsivity and sense of emotional safety with their partner (Johnson, 2002). EFCT's underlying theory is rooted in objects relations and attachment theory and posits that symptoms of PTSD contribute to a dysfunctional pattern of attachment, which results in a reduction of resiliency and fosters insecure attachment to a romantic partner (Johnson, 2002; Weissman et al., 2018). Within EFCT, primary mechanisms of change include creating secure attachment bonds between partners and emphasizing affective regulation of distressing emotions to reduce avoidance of internal emotional experiences (Johnson, 2002; Weissman et al., 2018). Thus, EFCT seeks to rebuild attachment to a romantic partner as a means of increasing relationship satisfaction and reducing symptoms of PTSD. Johnson (2002) more thoroughly described the underlying theory and intervention techniques of EFCT in her treatment manual.

EFCT is comprised of 26–36 sessions, each lasting approximately 1 hr. Treatment is comprised of three phases: (1) de-escalation, which focuses on problematic interaction styles in the couple's communication patterns, (2) restructuring the attachment bond, which focuses on developing awareness of emotional needs for both partners and increasing skill of communicating those emotional needs in both partners, and (3) consolidation of relationship roles, which strengthens the couple's sense of unity and encourages the use of new skills to address longstanding problems and ability to support one another.

3.7.2 | Summary of findings

One nonrandomized multisubject study utilized EFCT for PTSD (Weissman et al., 2018). Self-rated PTSD symptoms were assessed via the PCL-S (Weathers et al., 1993) and clinician-rated PTSD symptoms were assessed via the CAPS (Blake et al., 1995). One relationship outcome, relationship satisfaction, was assessed using the DAS (Spanier, 1976). Findings revealed reductions for self-rated and clinician-rated PTSD symptoms, as well as an improvement in relationship satisfaction for both patient and partner. All effect sizes were calculated using assessment-completion principles, with a large effect size observed in pre-to posttreatment self-rated PTSD symptom reduction and a large effect for clinician-rated PTSD symptom reduction (see Table 1). There was a medium effect size observed for

improvement in relationship satisfaction from pre- to posttreatment for the patient and a large effect size for improvement in relationship satisfaction the partner (see Table 1).

3.8 | Veteran Couples Integrative Intensive Retreat ($n = 2$)

3.8.1 | Treatment overview

VCIIR is a 7-day retreat-styled intervention that seeks to reduce PTSD symptoms and improve relationship distress in veterans and their partners (Monk et al., 2016). The VCIIR model was developed based upon the success of existing retreat models, such as the *Specialized Care Program*, which was developed by the Deployment Health Clinical Center (Bruner, 2014). The theory that underlies VCIIR is a holistic health theory, which posits that PTSD symptoms negatively affect relationship function through shared avoidance behaviors that maintain PTSD symptoms and decrease relationship function (Monk et al., 2016). Within VCIIR, primary mechanisms of change include conjoint-psychoeducation to reduce stigma surrounding PTSD symptoms and increase help-seeking, building emotion regulation skills for trauma reminders and rebuilding dyadic attachment through empathic communication and shared nontherapeutic activities such as yoga and wellness activities (Monk et al., 2016). Thus, VCIIR seeks to reduce PTSD symptoms through the use of evidence-based therapeutic techniques and repair damaged relationships through increasing communication skills and shared positive experiences. Monk et al. (2016) more thoroughly described the VCIIR model and the activities of the retreat in their article.

The VCIIR protocol can also be shortened into a 4-day retreat with less emphasis on recreational activities (Monk et al., 2017). The recreational activities are carefully selected not only for popularity, but for their effects that augment therapy (Monk et al., 2016, 2017). Treatment phases included: (1) psychoeducation about PTSD, (2) relationship skills training, (3) intergenerational interaction and support, (4) yoga and recreational wellness activities to engender relaxation between other therapeutic services, and (5) community involvement.

3.8.2 | Summary of findings

Two studies with nonrandomized multisubject designs have been published utilizing VCIIR for the treatment of PTSD symptoms (Monk et al., 2016, 2017). One study utilized the 7-day protocol of VCIIR for PTSD (Monk et al., 2016). Self-rated PTSD symptoms were assessed using the PCL-M (Weathers et al., 1993). Clinician-rated PTSD symptoms and relationship outcomes were not assessed in this study. Overall findings revealed significant reductions in self-rated PTSD symptom severity. All effect sizes were calculated using assessment-completion principles, with a large effect size observed for self-rated PTSD symptom reduction from pre- to posttreatment (see Table 1). Researchers also conducted a 6-month follow-up, and results suggested that treatment gains were maintained with no significant differences in their posttreatment to follow-up PTSD symptom severity scores (Monk et al., 2016).

Another nonrandomized multisubject study utilized the 4-day protocol of VCIIR for PTSD (Monk et al., 2017). Self-reported PTSD symptoms were assessed using the *Posttraumatic Stress Disorder Checklist-5th Edition* (PCL-5; Weathers et al., 2013). Clinician-rated PTSD symptoms were not assessed in this study. One relationship outcome, relationship adjustment, was assessed using the DAS (Spanier, 1976). Results revealed significant reductions in self-reported PTSD symptom severity and improvements in relationship adjustment for both the patient and partner. The effect size for self-rated PTSD symptom reduction from pre- to posttreatment was medium in size. There was a small-medium effect size for pre- to posttreatment improvement in relationship adjustment for patients, and a medium-large effect size for partners (see Table 1).

4 | DISCUSSION

The primary goal of this review was to identify and summarize the existing couple-based interventions for the treatment of PTSD and improvement of relationship outcomes that have been studied in SM/V samples. The results of this review suggest there are several couple-based interventions that show success in the simultaneous treatment of PTSD and relationship distress among military SM/Vs.

Among the 11 multisubject studies that were included in this review, seven interventions were examined: CBCT for PTSD (Monson et al., 2003), MB-CBCT for PTSD (Luedtke et al., 2015), CTAP (Schumm et al., 2015), SAT (Sautter et al., 2014), STRAT (Sautter et al., 2009), EFCT (Weissman et al., 2018), and VCIIR (Monk et al., 2016). These interventions demonstrated reductions in PTSD symptoms and improvements in relationship outcomes (e.g., relationship adjustment or satisfaction) from pre- to posttreatment. Effect sizes for these studies ranged from medium-to-large in self-rated PTSD and small-to-large for clinician-rated PTSD. For improvements in relationship outcomes, effect sizes were small-to-medium for SM/Vs with PTSD and small-to-large for romantic partners. The average dropout rate across multisubject studies was 19%, which is consistent with extant research on dropout rates in individual PTSD treatment (Imel, Laska, Jakupcak, & Simpson, 2013).

Five case studies were included in this review, four of which tested CBCT and one of which tested MB-CBCT. Though effect sizes cannot be calculated for case studies, the effectiveness of these interventions was evaluated by examination of pre- and posttreatment measure scores on self-rated PTSD symptoms and relationship outcomes. Specifically, the authors reported whether posttreatment scores fell below/above the clinical cut-off on a given measure, which unfortunately is a less rigorous evaluation of efficacy relative to effect sizes. Each of the five studies demonstrated a reduction in self-rated PTSD symptoms to below clinical cut-offs at posttreatment. Further, all studies demonstrated an improvement in their respective relationship outcomes (i.e., relationship adjustment or satisfaction) to above clinical cut-offs at posttreatment. Although case studies should be interpreted with caution due to their limited generalizability, the results offer further support for CBCT and suggest that CBCT may be able to flexibly adopt therapeutic techniques, such as mindfulness.

Overall, CBCT for PTSD appears to be the most widely used and empirically supported intervention for couple-based PTSD treatment among military SM/Vs. Primary mechanisms of change of CBCT for PTSD, such as cognitive restructuring techniques to decrease avoidance behaviors and building skill in inter-relationship communication, appear to be key components of other couple-based interventions for PTSD and may warrant examination in dismantling studies. Additionally, one case study tested an adapted protocol of CBCT for PTSD that included an emphasis on mindfulness training (MB-CBCT; Luedtke et al., 2015). MB-CBCT also reduced the number of sessions by five and found clinically meaningful reductions in PTSD symptoms (Luedtke et al., 2015). These results suggest that CBCT for PTSD may be an adaptable intervention that can retain its effectiveness even when shortened, but additional research in a larger sample is needed. Other interventions garnered less research overall but achieved success in reducing PTSD symptoms and improving relationship outcomes. These interventions included MB-CBCT (Luedtke et al., 2015), CTAP (Schumm et al., 2015), SAT (Sautter et al., 2014), STRAT (Sautter et al., 2009), EFCT (Weissman et al., 2018), and VCIIR (Monk et al., 2016). Although the preliminary evidence for these interventions is promising, future research in several areas would greatly expand our understanding of couple-based interventions for PTSD among SM/Vs.

Research has yet to examine the convergence of common mechanisms of change across couple-based interventions for PTSD. There are several common mechanisms of change across the interventions included in this review that appear to be critical in reducing PTSD symptoms and improving relationship outcomes. These mechanisms include increasing empathic communication between partners (CBCT for PTSD, MB-CBCT, CTAP, SAT, STRAT, EFCT, and VCIIR), conjoint exposure and processing of trauma reactions (SAT and STRAT), development of emotion regulation skills (SAT, STRAT, EFCT, and VCIIR), and utilizing various cognitive restructuring techniques to decrease internal and external avoidance behaviors (CBCT for PTSD, MB-CBCT and CTAP). As such, one potential avenue of research for couple-based interventions are dismantling studies that elucidate effective mechanisms of

change. Additionally, interventions such as Integrative Behavioral Couple Therapy (IBCT) have shown great promise in military couple research but have yet to be adapted and empirically tested to treat PTSD in SM/Vs (Christensen, Jacobson, Babcock, Jacobson, & Gurman, 1995; Erbes et al., 2008; Jacobson & Christensen, 1996; Roddy, Nowlan, Doss, & Christensen, 2016). Future research might consider the mechanisms of change in IBCT and develop any necessary adaptations to treat PTSD among SM/Vs.

One limitation for many of the studies included in this review included small and demographically homogenous sample sizes. More specifically, of the 11 multisubject studies that were reviewed, only four studies reported sample sizes greater than 16, of whom the vast majority of the sample were White, male veterans with PTSD and their female, civilian partners. As the pre-9/11 and post-9/11 veteran cohorts display the largest percentage of racial or cultural minorities to date (United States Department of Veterans Affairs, 2015), much of the previous research does not reflect the growing diversity of the military. Further, extant research reported that racial/ethnic minority veterans had higher rates of PTSD symptoms compared to White veterans (Dohrenwend, Turner, Turse, Lewis-Fernandez, & Yager, 2008; Kulka et al., 1990), even after covarying for exposure to war-related stressors (Dohrenwend et al., 2008). This may suggest a more complex presentation of PTSD among racial/ethnic minorities, which may impact outcomes in couple-based interventions for PTSD among minority SM/Vs. Additionally, women are entering military branches in larger numbers during the pre-9/11 and post-9/11 service eras (United States Department of Veterans Affairs, 2015). Of the 16 studies reviewed, only four utilized samples that included female SM/Vs with PTSD (Blount et al., 2017; Monk et al., 2016; Monk et al., 2017; Monson et al., 2012; Monson et al., 2011). The lack of samples in this review that included a female SM/V with PTSD limits our understanding of potential sex differences related to PTSD, relationship outcomes and efficacy of couple-based therapy for PTSD among female SM/Vs.

To address these limitations, future research should explore the effectiveness and efficacy of couple-based therapy for PTSD using diverse samples of male and female SM/Vs and their romantic partners to reflect the growing diversity of the military. It is possible that key differences in the severity and presentation of PTSD symptoms exist in these subgroups. Thus, researchers might consider the role of stressors that are unique to these underrepresented groups, such as the impact of racial discrimination on PTSD symptoms and relationship outcomes among minority SM/Vs in couple-based therapy (Carlson, Endlsey, Motley, Shawahin, & Williams, 2018). Additionally, one study found sex differences among SM/Vs experience of PTSD symptoms, such that female SM/Vs experienced hyperarousal symptoms as the most functionally impairing symptom of PTSD, whereas male SM/Vs reported the greatest functional impairment with negative alterations in cognition/mood (Meyer et al., 2018). Another study observed that while males had increased risk for a PTSD diagnosis relative to females, exposure to MST significantly increased risk for PTSD in females relative to males (Tannahill et al., 2018). Such results underscore the need for future research to include female SM/Vs with PTSD, as their experience of PTSD appears to differ in meaningful ways compared to males and thus may impact outcomes in couple-based treatments for PTSD. Relatedly, there is a need for research to include designs using randomization to active control conditions to improve the overall efficacy evidence for couple-based interventions for PTSD among SM/Vs. Studies that directly compare couple-based interventions for PTSD to individual-based treatments for PTSD may also be useful to determine differences in PTSD symptom reduction between these modalities of treatment.

In this review, only two studies (Monson et al., 2012; Sautter et al., 2015) utilized intention-to-treat principles in calculating their effect sizes. This approach more cautiously estimates effect sizes for missing data resulting from dropout (Gupta, 2011). Given that average dropout rates associated with PTSD treatment are approximately 18% (Imel et al., 2013), future researchers who are testing couple-based interventions should attempt to utilize intention-to-treat principles when possible to avoid potential bias in their analyses of treatment efficacy. As such, interpretations regarding the efficacy of the interventions described above should be made with caution, as effect sizes from nonrandomized samples that utilized completer-analysis principles may be inherently biased through self-selection and additional confounding variables.

The studies included in this review primarily targeted two relationship outcomes, adjustment, and satisfaction, although several other outcomes may warrant future study. Relationship adjustment and satisfaction are distinct constructs that share some overlap and are frequently studied in relationship research (Funk & Rogge, 2007). Relationship adjustment can be broadly defined as a measurable, dynamic process of relationship quality that is operationally determined by the degree of interpersonal tensions and personal anxiety, dyadic satisfaction, dyadic cohesion and consensus on matters of importance to dyadic function that is present at a given time in a romantic relationship (Spanier, 1976). Conversely, relationship satisfaction is defined as a subjective evaluation of positive feelings in a relationship (Funk & Rogge, 2007; Rusbult & Buunk, 1993). In this review, 32% ($n = 5$) of the studies indicated that they were studying satisfaction but utilized the DAS (Spanier, 1976), which is a broader measure of adjustment. Although satisfaction and adjustment are important indicators of relationship function, there are several other relationship outcomes that have yet to be studied or have been minimally studied. Such outcomes include sexual function and satisfaction, rates of separation following treatment and commitment to the relationship. Researchers may also consider incorporating longer-term outcomes following treatment, such as symptom relapse, separation or divorce, and quality of life or functional impairment. Finally, researchers may be interested in aspects of relationship function that negatively impact the success of couple-based interventions, such as the presence of on-going affairs, the presence of a personality disorder, history of domestic violence and prior separations.

In conclusion, the couple-based interventions included in this review show promising results in reducing PTSD symptoms for the patient and improving relationship outcomes for both the patient and partner. CBCT for PTSD has garnered the bulk of empirical testing, however, interventions such as SAT and STRAT showed effectiveness in reducing PTSD symptoms with and improving relationship outcomes with large effect sizes but need additional research with large, diverse samples and rigorous study designs. Given the effectiveness of couple-based interventions and interest in these interventions from SM/Vs (Meis et al., 2013), clinics providing PTSD interventions should consider employing a colocated clinician who can provide couple-based therapy to clients housed in their clinics.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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