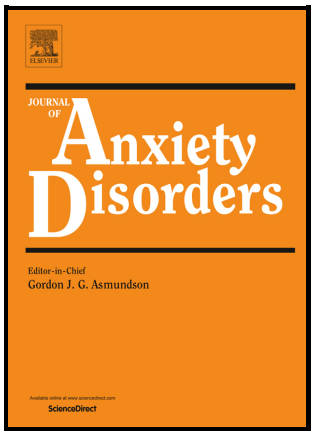

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PII: S0887-6185(22)00086-X

DOI: https://doi.org/10.1016/j.janxdis.2022.102613

Reference: ANXDIS102613

To appear in: *Journal of Anxiety Disorders*

Received date: 10 December 2021
Revised date: 11 July 2022
Accepted date: 4 August 2022

Please cite this article as: Iris Sijercic, Rachel E. Liebman, Jennifer Ip, Kristen M. Whitfield, Naomi Ennis, David Sumantry, Lauren M. Sippel, Steffany J. Fredman and Candice M. Monson, A Systematic Review and Meta-Analysis of Individual and Couple Therapies for Posttraumatic Stress Disorder: Clinical and Intimate Relationship Outcomes, *Journal of Anxiety Disorders,* (2021) doi:https://doi.org/10.1016/j.janxdis.2022.102613

A Systematic Review and Meta-Analysis of Individual and Couple Therapies for Posttraumatic Stress Disorder: Clinical and Intimate Relationship Outcomes

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This research was supported by funding from the Canadian Institutes of Health Research Foundation Grant # 196183 awarded to the last author and the Frederick Banting and Charles Best Canada Graduate Scholarships Doctoral Research Award awarded to the first author.

Abstract

The association between symptoms of posttraumatic stress disorder (PTSD) in adults and difficulties in intimate relationships is well documented. Growing literature suggests that interpersonally-oriented therapies, such as couple and family interventions, may lead to improvements in both PTSD symptoms and intimate relationship functioning. However, it is

unknown how individual PTSD treatments compare to couple/family interventions in relational outcomes. The present study was a systematic review and meta-analysis of individual and couple/family treatments to examine changes in PTSD symptoms and intimate relationship functioning. Twelve couple treatment studies with 13 unique samples and 7 individual treatment studies with 9 unique samples met inclusion criteria. No family-based treatments were identified. Meta-analytic findings indicated moderate to large reductions in PTSD symptoms for both couple and individual studies. Small but significant improvements in intimate relationship functioning across individual and couple studies were observed. Moderation analysis suggested that across both individual and couple treatment formats, trauma-focused treatments had larger effects on PTSD symptoms. Trauma-focused treatments had larger effects on intimate relationship functioning for individual studies. Military status did not moderate outcomes. This study supports the utility of both individual and couple treatment formats for treating PTSD and provides preliminary support for these modalities for also enhancing intimate relationship functioning.

Keywords: PTSD; couple therapy; intimate relationship functioning; relationship satisfaction; meta-analysis

Abbreviations: PTSD = posttraumatic stress disorder; RCT = randomized controlled trial; PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses; CBCT = cognitive-behavioral conjoint therapy for PTSD; CBT = cognitive-behavioral therapy; SAMD = sample-adjusted meta-analytic deviancy statistic

Posttraumatic stress disorder (PTSD) is a highly impairing mental health disorder associated with a multitude of interpersonal relationship problems. These problems include relationship discord

and intimacy problems in intimate relationships (Birkley et al., 2016; Taft et al., 2011) and increased withdrawal, distress, and avoidance during family interactions (e.g., Brockman et al., 2016). The association between PTSD and relationship functioning has been demonstrated in myriad ways, within cross-sectional (e.g., Alderfer et al., 2009; Allen et al., 2010) and longitudinal (e.g., Creech et al., 2013; 2019; Monson et al., 2021) studies alike. Additionally, PTSD has been shown to be associated with poorer psychological functioning in romantic partners and children (Lambert et al., 2012, 2014). Given the extensive evidence that problems with PTSD and relationship dysfunction co-occur, it is crucial that we explore how current PTSD treatments address both of these domains.

Individual treatment formats for PTSD do not specifically target intimate relationship functioning through their purported mechanisms. Improvements in broader psychosocial functioning are theorized to be a result of improvements in the individual symptoms of PTSD. However, emerging data indicate that interpersonal factors such as social support and couple/family functioning moderate responses to individual treatments for PTSD (Dorrington et al., 2019; Meis et al, 2010; Price et al., 2018). Many individuals with PTSD also wish to include their loved ones in treatment (Batten et al., 2009).

As a result, there have been more recent efforts to empirically test couple and family interventions designed to facilitate improvements beyond PTSD-specific outcomes. In fact, there have been several systematic reviews focused on couple and family interventions for adults with PTSD. Most notably, a relatively recent Cochrane review (Suomi et al., 2019) investigated the efficacy of couple and family therapies for adults with PTSD relative to no treatment conditions, standard care, and structured or nonspecific individual or group psychotherapies. The authors concluded that, compared to two studies that utilized a waitlist control and one study that had a

family education treatment comparison group, couple-based therapies may be beneficial in reducing PTSD symptoms, though they note evidence is preliminary. The authors did not examine changes in relationship functioning outcomes. This paper only included randomized controlled trials (RCTs) in their review and ultimately had a small sample size of four RCTs, only three of which were included in their meta-analysis. Although rigorous methodologically, the scope of this review was narrow and potentially unable to capture a wider range of treatment studies involving couple and family therapies for PTSD. Another systematic review conducted by Kugler et al. (2019) examined the efficacy of 16 couple therapies for veterans with PTSD. Distinct from Suomi et al.'s review, the study included RCTs, multi-subject empirical studies, and case studies with quantitative data. Kugler et al. (2019) required that one or more partner(s) in the dyads was a military service member or veteran. As a result, this specification limits the generalizability of these findings, as a burgeoning literature has explored dyadic interventions for PTSD within *community* samples.

A review examining the impact of both couple/family therapy for PTSD and individual therapy for PTSD on both PTSD and relationship functioning is critically needed to inform clinical decision-making. Thus far, research has indicated that *individual* therapies for PTSD may potentiate *overall* improvements in general psychosocial functioning (Lunney & Schnurr, 2007; Scoglio et al., 2020); however, these findings may not generalize to intimate relationship functioning with close others (i.e., romantic partners or family members) specifically (Glynn et al., 1999; Schnurr et al., 2007). In their systematic review, Scoglio et al. (2020) noted that the few individual treatment studies that examined social functioning outcomes revealed improvements in social functioning, in addition to improvements in PTSD symptoms. However, Scoglio et al. (2020) operationalized social functioning as a global construct, defined by one's

interactions with their environment and one's ability to fulfill social roles across multiple life domains (e.g., Bosc, 2000; Scoglio et al., 2020). This definition is in contrast to the concept of intimate relationship functioning, which focuses more specifically on relationship quality, functioning, and satisfaction in relation to romantic partners and close family members. To date, no extant reviews or meta-analyses have examined the effect of individual therapy for both PTSD and intimate relationship functioning.

By systematically reviewing and meta-analyzing a broad range of treatments for diverse populations, we hoped to synthesize and expand the literature on the effectiveness of individual, couple, and family treatment formats for PTSD and intimate relationship outcomes. A meta-analysis is typically used to reconcile findings in the extant literature, to explore sources of heterogeneity in study results, and to determine whether variability in treatment outcomes could be explained by potential moderators (Lee, 2018; Thompson & Higgins, 2002). Examination of such moderators is particularly critical to better understand who is most suitable for various interventions, which was not explored in Suomi et al.'s (2019) meta-analysis. The first moderator we chose to examine was whether treatments that were trauma-focused differentially impacted outcomes for individual, couple, and family treatment. Trauma-focused treatments for PTSD (i.e., interventions that include exposure or challenge trauma-related thoughts) are the recommended first-line treatments in clinical practice guidelines worldwide (American Psychological Association, 2017; Veterans Health Administration & Department of Defense, 2017), and previous research has indicated that trauma-focused treatments may yield greater effect sizes than non-trauma-focused treatments (Watkins et al., 2018). In their meta-analysis, Lenz et al. (2017) found that trauma-focused treatments had greater effects when compared with no treatment, supportive interventions, other interventions, and non-trauma-focused cognitive

behavior therapies. Our second potential moderator of interest was the sample type (i.e., community vs. military samples). Multiple studies indicate that military samples (i.e., active duty service members and veterans) have poorer PTSD outcomes compared to civilian samples (Bradley et al., 2005; Jacoby et al., 2022; Straud et al., 2019; Steenkamp et al., 2015; Watts et al., 2013). However, at least one study (Kline et al., 2018) did not find differences in effect sizes in their meta-analysis when comparing sample type. In summary, the aims of the present study were to: 1) examine PTSD and intimate relationship functioning outcomes in couple/family therapy formats; 2) examine PTSD and intimate relationship functioning outcomes in individual PTSD treatment formats; and to 3) test potential moderators of outcomes, including trauma versus non-trauma focus and sample type (military versus non-military), across studies. We hypothesized that both individual therapies and couple/family-based treatments would lead to significant improvements in PTSD symptoms and intimate relationship satisfaction but that couple/family treatments would have larger overall effects on intimate relationship functioning given that these studies directly aim to improve relationship functioning. We hypothesized that trauma-focused treatments would have stronger effects on treatment outcomes than non-trauma-focused treatments. Lastly, we hypothesized that treatments delivered to community samples would have stronger effects on outcomes than treatments delivered to military samples.

Method

Two separate literature searches (one for couple/family treatment studies, one for individual treatment studies) were conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021) guidelines. The PRIMSA Checklist is presented in Appendix C1.

Literature Search

Three electronic databases (PsycINFO, PubMed/Medline, and SCOPUS) were searched for journal articles and grey literature (i.e., theses, dissertations) on May 29, 2020. Search terms (see supplemental Appendix A1) were selected based on prior relevant review papers (e.g., Liebman et al., 2020; Suomi et al., 2019). No restrictions were applied in terms of date, language, or publication status. Hand searches of reference lists of articles that met inclusion criteria were conducted to identify additional studies.

Selection Criteria

Selection criteria for the couple and family studies included: 1) empirical studies that reported PTSD symptoms as an outcome; and 2) delivered a couple or family-based psychotherapy to adults (18 years of age or older) in which the identified patient had clinically significant PTSD symptoms as assessed by self-report or clinician-administered measures; and 3) the treatment was designed to improve PTSD symptoms. Selection criteria for the individual therapy studies included empirical studies that: 1) reported intimate relationship functioning (i.e., romantic partner relationship or family relationship functioning) as an outcome; 2) delivered an individual psychotherapy to adults who had clinically significant PTSD symptoms as assessed by self-report or clinician-administered measures; 3) the treatment was designed to improve PTSD symptoms. For both categories, studies in which treatment was delivered to a group of individuals with PTSD and/or in multi-couple or multi-family group formats were included as well. Studies in which samples were trauma-exposed but did not report having clinically significant PTSD symptoms for the full sample were excluded in both searches. Treatments that were primarily lifestyle interventions rather than psychotherapies were excluded (e.g., Devilly, 2002), as were qualitative studies, study protocols, case studies, and case series with samples of

fewer than 10 participants (or 5 couples). Given the assumption of independence of data for meta-analyses, secondary outcome papers that used duplicate samples were excluded.

Methodological Quality of Included Studies

The methodological quality of each study was assessed by two raters (NE, KW) using the 27-item Downs and Black Checklist (1998). Consistent with prior research, a modified version of the power item was used (Kennelly, 2011; Trac et al., 2016) to indicate if an a priori power analysis was done. This instrument was selected because it can be used to evaluate both uncontrolled and controlled designs, though only randomized controlled designs can achieve an excellent quality level according to the scoring methodology. The test-retest reliability (r = .88), inter-rater reliability (r = .75), and internal consistency (Kruder-Richardson formula 20 = .89) of this instrument are good. Scores range from 0 to 28 and are interpreted as follows: excellent (26-28); good (20-25); fair (15-19); and poor (<14). The percent agreement between the two raters, who completed their ratings independently, was 90.29%.

Data Extraction

Data were extracted from each article independently by IS and JI for each of the two aims and independently checked by NE and KW to ensure accuracy. Another author (LS) reviewed all included studies to ensure they met inclusion criteria. The following data were extracted: author, year of publication, study location, study design, sample size, dropout rate, number of sessions, treatment type, treatment content, and sample characteristics (e.g., mean age, reported gender). Data for the PTSD treatment group in studies that included a waitlist control group were extracted. To obtain information for the effect sizes used in the meta-analysis, the mean and standard deviation of PTSD symptoms at pretreatment, posttreatment, and follow-up (if

applicable) and of intimate relationship functioning at pretreatment, posttreatment, and follow-up (if applicable) were extracted.

Statistical Analyses

Individual study effect sizes were calculated in Excel and then entered into JASP (JASP Team, 2020) to perform the meta-analyses. Using means and standard deviations (or standard errors) of the outcome measures, effect sizes were calculated as Hedges' *g*, a small sample bias-corrected version of a standardized mean difference. Effect sizes of 0.2, 0.5 and 0.8 refer to small, moderate, and large effect sizes, respectively (Cohen, 1988). Random effects models were used across all analyses. For three studies that included two active treatment groups (Forbes et al., 2012; Galovski et al., 2005; Sautter et al., 2015), each treatment group was entered separately, and these were treated as unique samples.

In one study that reported more than one follow-up time point (Creamer et al., 2006), the shorter follow-up period of 12 months was selected because it was more comparable to the follow-up periods from the other studies. In two studies that reported on a variety of social adjustment subscales as their intimate relationship outcome measure (Campanini et al. 2010; Monson et al., 2012), the marital subscale was chosen for analyses because this scale most clearly assessed intimate relationship functioning relative to the other subscales. All couple treatment studies except for one included both a self- and clinician-rated measure of PTSD symptoms; some of these studies also included partners' self-report ratings of their perceptions of patients' PTSD symptoms. Thus, self- clinician-, and partner-reported PTSD symptoms were analyzed in separate meta-analyses. Among individual treatment studies, most studies reported either clinician- or self-rated PTSD symptoms, but not both measures. To increase power, clinician- and self-ratings were collapsed for two studies to attain a single PTSD score. One

meta-analysis was then conducted to examine overall PTSD symptoms (i.e., clinician and self-report ratings combined as one).

Heterogeneity of the effect sizes was examined using Cochran Q_E-test and the corresponding p-value and the I^2 index, as well as visual inspection of forest plots. The Cochran Q_E test examines whether the dispersion of effects is due to random sampling error or real study differences; when the p-value is significant ($p < .05$), this suggests significant heterogeneity among the studies. The I^2 index estimates the percentage of between-study heterogeneity in the meta-analysis, where zero indicates no heterogeneity, and 25%, 50%, and 75% suggest low, moderate, and high heterogeneity, respectively. When the Q_E test p-value was nonsignificant and I^2 value was low, moderation analysis was not conducted, as the effect sizes are similar to one another and examination of moderation is, thus, deemed unnecessary (Huedo-Medina et al., 2006).

Following each effect, funnel plot inspection, a regression test (Egger et al., 1997), and a rank correlation test (Begg & Mazumdar, 1994) were conducted to test for publication bias. When either of these tests was significant ($p < .05$), indicating the presence of publication bias, Duval and Tweedie's Trim and Fill procedure (Duval & Tweedie, 2000) was conducted to obtain an adjusted Hedges' g estimate. Sensitivity analyses and outlier analyses were also conducted.

Two moderators were examined for the couple-based PTSD treatment studies. The first aimed to examine pretreatment to posttreatment differences in both PTSD symptoms and intimate relationship functioning outcomes in trauma-focused treatments versus non-trauma-focused treatments. Studies that treated PTSD by directly addressing thoughts, feelings, and/or memories of the trauma through interventions such as exposure or cognitive restructuring were considered to be trauma-focused. Studies that were present-centered and did not involve

processing of the trauma(s) were coded as non-trauma-focused treatments. The second moderator was whether the target individual with PTSD receiving treatment was a military member/veteran or not (i.e., community sample). We aimed to examine this moderator for pretreatment to posttreatment differences with respect to both PTSD symptoms and intimate relationship functioning outcomes. Given the small number of individual PTSD treatment studies identified, we examined only one moderator: trauma-focused vs non-trauma-focused treatments. This decision was made because having fewer than three studies per categorical level can result in a high chance of Type I and Type II error (de Winter, 2013). Omnibus Cochran Q_M tests were used to test for the effect of each moderators in the relevant analyses.

Results

Study Selection

The screening and article selection process is depicted in the PRISMA flow diagrams (Figures 1 and 2). For couple/family studies, 888 total studies were initially identified, and 515 remained after duplicates were removed. Following abstract and full-text screening, as well as hand searches of reference lists to identify additional studies, 12 couple studies with 13 unique samples met inclusion criteria. No family-based interventions met inclusion criteria (i.e., all studies were couple therapies). Total enrolled sample sizes of the couple studies ranged from six couples to 57 couples; the total number of participants was 246. For individual treatment studies, 919 were initially identified through the search, and 567 studies remained after duplicates were removed. Seven individual studies with nine unique samples met inclusion criteria after full-text screening. Total enrolled sample sizes of the individual studies ranged from 15 to 2,223 participants, and total number of participants was 4,393.

Study Characteristics

Study, treatment, and sample characteristics of all individual and couple studies are reported in Table 1. Across both couple and individual studies, most studies were uncontrolled treatment trials. All treatments were delivered in-person. Publication dates across all included studies ranged from 1984 to 2020.

Couple Treatments

Only one couple treatment was a general couple therapy that did not directly target PTSD symptoms; instead, the treatment consisted of communication skills training and behavioral interventions (Cahoon et al., 1984). Six studies delivered Cognitive-Behavioral Conjoint Therapy (CBCT) for PTSD (Monson & Fredman, 2012): Fredman et al., 2020; Monson et al., 2004, 2011, 2012; Pukay-Martin et al., 2015; Schumm et al., 2013). One of these CBCT for PTSD studies was adapted to be present-centered (Pukay-Martin et al., 2015). Three studies delivered Structured Approach Therapy (Sautter et al., 2011), which included psychoeducation about PTSD, emotion activation and skills training, and an in vivo exposure component (Sautter et al., 2009, 2014, 2015); the second active treatment condition in Sautter et al. (2015) was a couple-based PTSD psychoeducational intervention. One study delivered a couple treatment for concurrent alcohol use disorder and PTSD that included components of CBCT for PTSD (Schumm et al., 2015) and Behavioral Couples Therapy for Substance Use Disorder (O'Farrell & Fals-Stewart, 2006), and one study was an emotion focused couple therapy for PTSD (Weissman et al., 2018). With regard to the types of couple therapies, 8 out of 13 treatments were considered trauma-focused interventions (Fredman et al., 2020; Monson et al., 2004, 2011, 2012; Sautter et al., 2009, 2014, 2015; Schumm et al., 2013; 2015). Two couple studies were delivered in a multi-couple group format (Cahoon et al., 1984; Fredman et al., 2020), with one of these delivering the treatment in a retreat setting over a weekend (Fredman et al., 2020). The dose of treatment (i.e.,

number of sessions and duration of sessions) across couple treatments ranged from 10 60-minute sessions (Sautter et al., 2009) to 26-36 60-minute sessions (Weissman et al., 2018). Nine couple studies were delivered to service members or veterans with military-related traumas (Cahoon et al., 1984; Fredman et al., 2020; Monson et al., 2004; Sautter et al., 2009, 2014, 2015; Schumm et al., 2013, 2015; Weissman et al., 2018). Only one study required that couples had to have mild to moderate relationship distress at the time of enrollment as part of their inclusion criteria (Weissman et al., 2018). Most couple treatments were delivered to mixed gender couples (in several studies this was not reported), whereas two studies also included same-gender couples (Monson et al., 2011, 2012).

Individual Treatments

In terms of individual treatment studies, three studies delivered individual Cognitive Processing Therapy that included written trauma accounts (Forbes et al., 2012; Galovski et al., 2005; Monson et al., 2012). One of these studies also included an active treatment-as-usual condition that was an intervention delivered dependent on the therapist's orientation (Forbes et al., 2012), and one of the studies included another active treatment, Prolonged Exposure (Galovski et al, 2005). Two studies were primarily group-based cognitive-behavioral treatments (CBTs) that involved both inpatient and outpatient components and included a variety of interventions such as psychoeducation, symptom management (for anxiety, anger, depression), discussions about the trauma, management of addictive behaviors, interpersonal, problem-solving, and communications skills, and physical health/lifestyle issues (Creamer et al., 2006; Evans et al., 2009). One treatment was a concurrent treatment of PTSD and substance use disorders using Prolonged Exposure (Flanagan et al., 2017), and one study was a group-based interpersonal therapy (Campanini et al., 2010). Five out of the nine treatments were considered

trauma-focused (Flanagan et al., 2017; Forbes et al., 2012; Galovski et al, 2005; Monson et al., 2012). The dose of treatment across individual treatments ranged from 12 60-minute sessions (Flanagan et al., 2017; Forbes et al., 2012; Monson et al., 2012) to 12 weeks of an intensive treatment program (total hours and sessions not reported; Creamer et al., 2006; Evans et al., 2009). All but two studies (Campanini et al., 2006; Galovski et al, 2005) delivered treatment to samples that were veterans with military-related trauma. One study (Flanagan et al., 2017) required participants to have a romantic partner at baseline, but no studies required that individuals be relationally distressed as part of their inclusion criteria.

Methodological Quality Ratings

Total scores from the Downs and Black Checklist are presented in Table 1. Ratings across all individual and couple studies ranged from 15 to 26 (out of a maximum score of 28), indicating fair to excellent quality. Most deductions were for the following reasons: not reporting adverse events that may have occurred during the study period, not recruiting patients representative of the entire population, not being a randomized controlled trial, and not conducting a priori power calculations. Most studies gained quality rating points for accurately describing hypotheses, outcomes, and the intervention delivered, providing estimates of random variability in the data for the main outcomes (e.g., standard deviations), as well as using appropriate statistics and main outcome measures.

Meta-Analyses

Individual study effect sizes, baseline means and standard deviations, and names of PTSD and interpersonal relationship measures are included in Table 2. Table 3 includes results from all meta-analyses, tests of heterogeneity, and tests of publication bias. Forest plots are

presented in Figures 3 and 4. Appendix B1 includes results of sensitivity analyses and the sample-adjusted meta-analytic deviancy statistic (SAMD).

Investigation of publication bias revealed imbalanced funnel plots, largely in analyses of couple treatment studies. Conversely, individual treatment studies were more likely to have influential statistical outliers according to the SAMD statistic and sensitivity analyses. In summary, couple treatment studies were more likely to be positively biased whereas individual treatment studies were more likely to be variable in their effect sizes.

Comparison of Couple Versus Individual Treatments

There were no significant differences when couple treatment studies were compared to individual treatment modalities on PTSD outcomes from pretreatment to posttreatment and from pretreatment to follow-up or for intimate relationship functioning outcomes from pretreatment to posttreatment and from pretreatment to follow-up.

Couple Treatments

Changes in PTSD symptoms from pretreatment to posttreatment and from pretreatment to follow-up were examined separately for clinician, self-report, and partner ratings. A combined clinician and self-report effect size was also computed to aid in comparison to individual studies that were based on combined scores. Across clinician and self-report ratings, there were significant and large effect size reductions in the severity of PTSD symptoms from pretreatment to posttreatment as well as from pretreatment to follow-up. Effect sizes were significant and moderate in size from pre-post on partners' reports of their perceptions of patients' PTSD symptoms (it was not possible to examine effects from pretreatment to follow-up, as only one study reported partner-reported follow-up). In both self- and partner-reported intimate relationship functioning, there were significant and small effect size improvements in intimate

relationship functioning from pretreatment to posttreatment. Both the self- and partner-reported intimate relationship functioning effect sizes from pretreatment to follow-up were small and nonsignificant.

Individual Treatments

Across clinician and self-report ratings, there were significant and moderate effect size reductions in the severity of PTSD symptoms from pretreatment to posttreatment as well as from pretreatment to follow-up. There were significant and small effect size improvements in patient-rated intimate relationship functioning from pretreatment to posttreatment and from pretreatment to follow-up.

Moderation Analyses

Moderation analysis was conducted when there was a sufficient number of studies to do so ($k > 5$), as well as significant heterogeneity that warranted examination of potential moderators. According to Cochran's *QE* test, only combined self- and clinician-report PTSD outcomes, as well as clinician-report PTSD outcomes in the couple studies had significant heterogeneity (see Table 3) and were, thus, examined in moderator analyses. Combined self- and clinician-reported PTSD outcomes had significant heterogeneity for the individual studies, as did interpersonal functioning. It was not possible to conduct moderation analysis on interpersonal functioning outcomes for couple studies due to non-significant heterogeneity.

Couple Treatments

The categorical treatment focus moderator (i.e., whether the treatment was trauma-focused or not) was examined on pretreatment to posttreatment differences on the combined clinician and self-report PTSD symptom scores. There was a significant difference ($Q_M(1) = 4.64$, ß= 0.68, $SE = 0.32$, $p = .031$) in the effect size for trauma-focused treatments ($k = 9$, $g =$

1.28, *SE* = 0.19, $p < .001$) compared to non-trauma-focused treatments ($k = 4$, $g = 0.60$, *SE* = 0.26, $p = .020$), indicating that trauma-focused treatments had larger effect sizes. Heterogeneity was reduced with the inclusion of this moderator ($Q_E(11) = 15.98$, $p = .142$, $I^2 = 31.16$). This moderator was also examined for pretreatment to posttreatment changes for clinician-rated PTSD severity. Similarly, there was a significant difference ($Q_M(1) = 7.73$, *ß* = 0.93, *SE* = 0.33, $p = .005$) in the effect size for trauma-focused treatments ($k = 9$, $g = 1.43$, *SE* = 0.20, $p < .001$) compared to non-trauma-focused treatments ($k = 4$, $g = 0.50$, *SE* = 0.27, $p = .064$), with small, non-significant heterogeneity remaining ($Q_E(11) = 17.08$, $p = .106$, $I^2 = 35.58$).

A second categorical moderator, whether the couple treatments were delivered to a sample in which the individual with PTSD was a military member versus delivered to a mixed community sample, was examined. In examining this moderator for pretreatment to posttreatment differences on the combined PTSD ratings, there was no significant difference ($Q_M(1) < 0.01$, *ß* < 0.01, *SE* = 0.44, $p = .991$) in the effect size for military ($k = 10$, $g = 1.09$, *SE* = 0.21, $p = .991$) compared to non-military samples ($k = 3$, $g = 1.08$, *SE* = 0.39, $p = .005$). There was significant, moderate residual heterogeneity when this moderator was included ($Q_E(11) = 23.27$, $p = .016$ $I^2 = 52.73$). Similarly, there was no significant difference ($Q_M(1) = 0.02$, *ß* = 0.07, *SE* = 0.50, $p = .887$) in the effect size for military ($k = 10$, $g = 1.13$, *SE* = 0.24, $p < .001$) compared to non-military samples ($k = 3$, $g = 1.20$, *SE* = 0.44, $p = .006$), when examining pretreatment to posttreatment changes in clinician-rated PTSD. Significant residual heterogeneity remained in the model when this moderator was included ($Q_E(11) = 29.26$, $p = .002$, $I^2 = 62.40$).

Individual Treatments

The categorical moderator of treatment focus was examined on pretreatment to posttreatment differences on the combined clinician and self-report PTSD symptom scores.

There was a significant difference ($Q_M(1) = 12.51$, ß = 0.92, $SE = 0.26$, $p < .001$) in the effect size for trauma-focused treatments ($k = 3$, $g = 1.51$, $SE = 0.23$, $p < .001$) compared to non-trauma-focused treatments ($k = 4$, $g = 0.59$, $SE = 0.12$, $p < .001$), indicating that trauma-focused treatments had larger effect sizes. However, significant large heterogeneity remained with the inclusion of this moderator ($Q_E(5) = 17.00$, $p = .005$, $I^2 = 70.58$).

Treatment focus was also examined as a moderator of overall improvements in intimate relationship functioning. At posttreatment, trauma-focused treatments ($k = 5$, $g = 0.68$, $SE = 0.17$, $p < .001$) indicated greater improvements than non-trauma-focused treatments ($Q_M(1) = 7.78$, ß = 0.63, $SE = 0.22$, $p = .005$). Non-trauma-focused treatments did not have significant changes in intimate relationship functioning ($k = 4$, $g = 0.05$, $SE = 0.15$, $p = .715$). Significant heterogeneity remained ($Q_E(7) = 28.93$, $p < .001$, $I^2 = 75.80$). Contrasting pretreatment to follow-up effect sizes between treatment foci, those that were trauma-focused ($k = 3$, $g = 0.90$, $SE = 0.21$, $p < .005$) had larger effects than those that were not trauma-focused ($Q_M(1) = 7.99$, ß = 0.74, $SE = 0.26$, $p = .005$). Significant improvements were not found for non-trauma-focused treatments ($k = 3$, $g = 0.16$, $SE = 0.16$, $p = .309$). Again, there was a significant amount of residual heterogeneity when this moderator was included ($Q_E(4) = 21.60$, $p < .001$, $I^2 = 81.40$).

Discussion

A growing body of literature has encouraged the use of more systemic approaches to treating PTSD and associated relationship problems that go beyond an individual psychotherapy frame. Building on this literature, this systematic review and meta-analysis examined the effectiveness of individual and couple interventions for treating both PTSD and intimate relationship functioning. Twelve couple treatment studies and seven individual treatment studies met inclusion criteria. Results suggest that both individual and couple treatment formats were

effective psychological interventions for treating PTSD, with moderate to large effect size changes in clinician-, self-, and partner-reported PTSD symptoms from pretreatment to follow-up. When comparing couple-based treatment studies directly to individual treatment studies, results were nonsignificant, suggesting that these modalities are comparably beneficial for the treatment of PTSD. This is consistent with previous reviews of couple (Kugler et al., 2019; Suomi et al., 2019) and individual therapies for PTSD (Watts et al., 2013; Lewis et al., 2020) and supports the effectiveness of both modalities. Thus, as recommended by others, the decision to pursue one format or another should not be based on the greater overall effectiveness of one modality for the primary outcome of PTSD but rather on patient preference (Monson et al., 2018).

Both couple and individual treatment formats produced significant, small effects on intimate relationship functioning during treatment, suggesting that both modalities exert positive changes on interpersonal functioning beyond PTSD symptoms. This finding is encouraging in that it demonstrates extended benefits of individual treatment formats on the social milieu simply from treating the PTSD. At the same time, given the small overall effect sizes, further adaptations to treatment or sequential interventions may be needed to bolster intimate relationship functioning outcomes.

It was unexpected that, compared to the individual treatments, the positive gains on intimate relationship functioning in couple interventions may not be significantly sustained after treatment ends. There are a few possible explanations for this null effect. First, it may be that interpersonally-oriented changes require a more intensive course of treatment to result in lasting improvements than do individually-oriented outcomes, such as PTSD. There may also be methodological reasons for the null effect. The null effect may be due to the relatively small

number of studies included at follow-up (i.e., the lack of statistical significance is most likely not due to a substantially smaller effect size than the pre-post analysis, but simply a larger standard error). It is unknown if studies in one type of treatment category (e.g., individual treatments) had overall higher baseline relationship distress means, which would lead to greater room for improvement. It was not possible to compare across studies and test this empirically given the diverse instruments used to measure intimate relationship functioning. Although we required the patients in included studies to have clinically significant PTSD for this meta-analysis, there was no inclusion criterion with regard to level of distress in intimate relationships. Because individuals in some of these samples may have already had relatively high levels of interpersonal relationship functioning at baseline, this may have limited the potential to detect larger effects. Additionally, in the couple treatment studies, intimate relationship functioning was measured in regard to the partner participating in the treatment, whereas the individual treatment studies used a variety of scales that assess marital or family functioning more broadly. It may be that, although broader functioning may improve following individual PTSD treatment, the specific dyadic changes expected in the couple format may require more intensive treatment to sustain. Using a common measure of intimate relationship functioning across individual and couple studies in the future may aid in effect size comparisons.

Only a select few moderators could be examined due to an insufficient number of studies. Trauma-focused treatments had significantly larger effect sizes on PTSD than non-trauma-focused treatments, and this moderator significantly reduced heterogeneity across studies for couple treatments. Heterogeneity was not significantly reduced with the inclusion of this moderator for individual treatment studies, suggesting there are other moderators that may account for differences in the individual treatments included (e.g., length of treatment, setting

type, group versus individual therapy). This is consistent with previous reviews (Gerger et al 2014; Lewis et al., 2020) and current treatment guidelines (e.g., Forbes et al., 2020), which recommend trauma-focused treatments as the first-line approach to treating PTSD above present-focused or other supportive therapies, and suggest that this recommendation may apply to trauma-focused couple interventions for PTSD as well. Although it was not possible to examine moderation of intimate relationship outcomes for couple studies, trauma-focused treatments had larger effects than non-trauma-focused treatments on intimate relationship functioning in individual studies. Moderation by sample type could not be examined in the individual treatment studies due to lack of heterogeneity. Sample type did not moderate PTSD outcomes in couple studies. This finding is surprising, as multiple meta-analyses have shown that military samples exhibit less improvement in individual therapies for PTSD (Bradley et al., 2005; Goodson et al., 2011; Watts et al., 2013). Low power may have precluded our ability to detect significant effects, as only three couple intervention studies included non-military samples. However, if replicated, this finding may suggest that these treatments work in a variety of populations, and, in fact, may be more effective for treating PTSD in military/veteran populations than individual modalities, though, of course, this would need to be tested empirically.

This study is the first meta-analysis to examine the effect of interventions on both PTSD and intimate relationship quality. Strengths of the study are inclusion of a diverse range (i.e., with regard to study methodology, treatment, sample) of both individual and couple interventions and examination of key moderators of treatment outcome. There are also several limitations that should be considered. First, the number of studies that met inclusion criteria for intimate relationship functioning was small, and the present study's definition of intimate relationship functioning is quite narrow compared to other forms of interpersonal functioning. When

combined with the heterogeneity in study characteristics, power to detect effects may have been limited. Relatedly, we were able to test only a limited number of moderators due to the small number of studies and the lack of heterogeneity in potential moderators. There was also no significant heterogeneity in intimate relationship functioning outcomes for couple studies, which constrained our ability to examine moderators for this outcome. Other potential moderators that may have an impact on outcomes, such as group (vs. individual) format, treatment orientation (CBT vs. other), treatment focused on PTSD only (vs. other concurrent issues such as substance use), length and dose of treatment, and type of measure used, should be investigated in future studies. Meta-analyses have consistently found CBT interventions to be more effective for treating PTSD than non-CBT treatments (Taylor & Harvey, 2010; Arroyo et al., 2017), but no studies have examined treatment orientation as a moderator of effects on intimate relationship functioning. Future studies should examine these moderators to better inform treatment matching. Furthermore, although we sought to include both couple and family intervention studies, no family-based treatments met inclusion criteria. Given research demonstrating the negative association between PTSD and family relationships (Creech & Misca, 2017; Evans et al., 2010), more studies that examine family-based approaches to treating PTSD and relationship functioning are needed. Finally, quality of study methodology ranged from fair to good, suggesting room for improvement. Only a small portion of individual and couple intervention studies included in our meta-analysis used randomized controlled designs, a priori power analyses, and representative samples. More studies that include active comparison groups, including studies that directly compare individual to couple modalities of trauma-focused treatments, would help to better inform matching to treatment modality. Studies with more

rigorous methodology (e.g., a priori power analyses, adverse event reporting, representative samples) would add to the strength of findings reported in the current meta-analysis.

This study supports the utility of both individual and couple treatment formats for PTSD, and it provides preliminary support for these modalities for treating intimate relationship functioning. Results suggest that trauma-focused interventions are particularly beneficial and that these treatments work for a variety of populations. These treatments should be made available to patients to maximize the psychosocial benefits gleaned from treatment.

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Table 1 *Sample and Treatment Characteristics of Included Studies*

Study	Location	Design	Active Treatment, N	Treatment Dropout, N (%)	Mean Age (SD)	% Female	Number of Sessions	Trauma-focused	Military Sample	Quality Rating
Couple Treatment Studies										
Cahoon, 1984	USA	Uncontrolled trial	19 couples	10 couples (52.63%)	NR	NR	7-week group	N	Y	17
Fredman et al., 2020	USA	Uncontrolled trial	24 couples	0	IP 40.49 (7.12); CO 38.70 (8.18)	IP 4.17%; CO 95.83%	2-day retreat	Y	Y	20
Monson et al., 2011	USA	Uncontrolled trial	6 couples	1 couple (14.28%)	IP 41.7 (13.1); CO 40.3 (12.8)	IP 50%; CO 16.67%	15	Y	N	18
Monson et al., 2012	Canada, USA	RCT (CBCT vs WL)	20 couples	6 couples (30%)	IP 40.4 (11.3) CO 40.7 (12.5)	IP 65%; CO 50%	15	Y	N	18
Monson et al., 2004	USA	Uncontrolled trial	7 couples	0	IP 56 (range 53-58); CO	IP 0%; CO 100%	15	Y	Y	25

					51 (range 42-59)					
Pukay-Martin et al., 2015	Canada	Uncontrolled trial	7 couples	1 couple (14.28%)	IP 45.86 (6.09); CO 44.86 (7.78)	IP 57.1%; CO 42.9%	15	N	N	15
Sautter et al., 2009	USA	Uncontrolled trial	6 couples	0	IP 59.2 (NR); CO 53.1 (NR)	IP 0%; CO 100%	10	Y	Y	15
Sautter et al., 2014	USA aaaaaaaa	Uncontrolled trial	7 couples	0	IP 38.7 (10.8); CO 35.4 (9.8)	IP 0%; CO 100%	12	Y	Y	21
Sautter et al., 2015 (SAT)	USA	RCT (SAT vs PFE)	29 couples	8 couples (27.59%)	IP 32.55 (6.16); CO 32.17 (7.68)	IP 0%; CO 100%	12	Y	Y	23
Sautter et al., 2015 (PFE)	USA	RCT (SAT vs PFE)	28 couples	7 couples (25%)	IP 33.71 (7.01); CO 32.25 (7.89)	IP 3.6%; CO 96.4%	12	N	Y	23
Schumm et al., 2013	USA	Uncontrolled trial	6 couples	0	IP 37.2 (7.2); CO 35.5	IP 0%; CO 10	15	Y	Y	17

					(6.0)	0%				
Schumm et al., 2015	USA	Uncontrolled trial	12 couples	3 couples (25%)	IP 42.22 (16.4); CO 39.33 (12.64)	IP 0%; CO 100%	15	Y	Y	17
Weissman et al., 2018	USA	Uncontrolled trial	15 couples	8 couples (53.33%)	43 (NR)	NR	26-36	N	Y	15
Individual Treatment Studies										
Campanini et al., 2010	Brazil	Uncontrolled trial	33	7 (21.21%)	NR	70%	16	N	N	18
Creamer et al., 2006	Australia	Naturalistic study	2149	64 (3%)	52.29 (5.05)	0%	12-week program	N	Y	15
Evans et al., 2009	Australia	Naturalistic study	311	N/A[a]	52.10 (4.74)	0%	12-week program	N	Y	15
Flanagan et al., 2017	USA	RCT follow-up (COPE condition)	13	N/A[a]	40.93 (11.41)	6.70%	12	Y	Y	15
Forbes et al., 2012 (CPT)	Australia	RCT (CPT vs TAU)	30	9 (30%)	53.13 (13.97)	7%	12	Y	Y	26
Forbes et al., 2012 (TAU)	Australia	RCT (CPT vs TAU)	29	9 (31.93%)	53.62 (13.33)	0%	12	N	Y	26

Galovski et al., 2005 (CPT)	USA	RCT secondary outcomes (CPT vs PE)	35	N/A[a]	32.77 (9.50)	100%	12	Y	N	19
Galovski et al., 2005 (PE)	USA	RCT secondary outcomes (CPT vs PE)	35	N/A[a]	33.61 (11.09)	100%	9	Y	N	19
Monson et al., 2012	USA	RCT (CPT vs WL)	30	6 (20%)	54.3 (6.7)	10.69 %[b]	12	Y	Y	19

Note. CBCT = Cognitive Behavioral Conjoint Therapy for PTSD; CO = Close Other; COPE = Concurrent Treatment of PTSD and Substance Use Disorders Using Prolonged Exposure; CPT = Cognitive Processing Therapy; IP = Identified Patient; NR = Not Reported; PE = Prolonged Exposure; PFE = PTSD Family Education; RCT = Randomized Control Trial; SAT = Structured Approach Therapy; SUD = Substance Use Disorder; TAU = Treatment as Usual; WL = Waitlist. Treatment dropout reported for active condition only and considered between study enrollment and last session. Mean age and % female reported for active treatment group only unless otherwise indicated.

[a] Only reported on the completer sample from the parent study.

[b] Percent female reported across all conditions.

Table 2 *Baseline Means and Standard Deviations for Interpersonal Functioning and PTSD Measures*

Study	Intimate Relationship Functioning Measure	Intimate Relationship Functioning *M (SD)*		PTSD Measure	PCL, PCL-CO *M (SD)*		CAPS *M*
		IP	CO		IP	CO	
Couple Treatment Studies							
Cahoon, 1984	MSI	24 (14.81)	22 (12.83)	Counselor Rated PTSD	N/A	N/A	5.33 (1.22)
Fredman et al., 2020	CSI	110.17 (32.07)	104.5 (35.11)	CAPS-5, PCL-5	48.79 (12.27)	42.39 (17.57)	34.25 (6.7)
Monson et al., 2011	DAS	102.4 (14.9)	104.3 (11.6)	CAPS, PCL	43.8 (8.8)	46 (19.2)	57.7 (8.3)
Monson et al., 2012	DAS	101.3 (22.2)	104.0 (21.0)	CAPS, PCL	50.3 (11.0)	44.5 (11.8)	69.5 (12.7)
Monson et al., 2004	DAS	108 (6.9)	104 (7.39)	CAPS, PCL, PCL-CO	51.29 (11.16)	57.43 (13.96)	74.57 (20.77)
Pukay-Martin et al., 2015	CSI	110.13 (39.28)	106.97 (19.24)	CAPS, PCL	55 (12.61)	58.86 (9.92)	72.43 (16.36)
Sautter et al., 2009	N/A	N/A	N/A	CAPS, PCL	65.3 (7.7)	58.3 (14.7)	90.8 (15.5)
Sautter et al., 2014	DAS	93.71 (17.6)	96.14 (25)	CAPS, PCL	67.71 (8.2)	N/A	94.14 (9.4)
Sautter et al., 2015 (SAT)	DAS	93.34 (19.01)	100.86 (19.12)	CAPS, PCL-M	60.84 (11.42)	N/A	85.93 (17.82)
Sautter et al., 2015 (PFE)	DAS	101.82 (19.00)	110.43 (19.10)	CAPS, PCL-M	60.81 (11.49)	N/A	82.93 (17.83)
Schumm et al., 2013	DAS	105.16 (17.53)	90.67 (17.39)	CAPS, PCL	58.5 (13.13	46.17 (14.88)	69 (29.22)
Schumm et al., 2015	DAS	96.12 (25.04)	92.85 (30.08)	CAPS, PCL, PCL-CO	57.72 (13.18)	54.89 (14.31)	58.89 (17.57)
Weissman et al., 2018	DAS	89.9 (13.8)	94.1 (9.2)	CAPS, PCL	69.3 (11.4)	N/A	75.2 (20)
Individual Treatment							

Studies							
Campanini et al., 2010	SAS - spouse subscale	2.57 (1.21)	N/A	CAPS	N/A	N/A	72.30 (24.09)
Creamer et al., 2006	FAD	30.5 (6.14)	N/A	PCL	67.31 (9.72)	N/A	N/A
Evans et al., 2009	FAD	2.5 (0.53)	N/A	PCL	65.55 (10.46)	N/A	N/A
Flanagan et al., 2017	DAS	107.36 (20.83)	N/A	CAPS; PCL	55.80 (8.81)	N/A	75.84 (14.75)
Forbes et al., 2012 (CPT)	DAS	25.84 (6.95)	N/A	CAPS; PCL	61.63 (11.50)	N/A	75.53 (16.35)
Forbes et al., 2012 (TAU)	DAS	28.73 (5.13)	N/A	CAPS; PCL	57.45 (12.55)	N/A	64.55 (19.46)
Galovski et al., 2005 (CPT)	SAS - family unit subscale	2.75 (0.90)	N/A	N/A	N/A	N/A	N/A
Galovski et al., 2005 (PE)	SAS - family unit subscale	2.68 (0.70)	N/A	N/A	N/A	N/A	N/A
Monson et al., 2012	SAS - spouse subscale	2.29 (0.47)	N/A	CAPS	N/A	N/A	78.25 (12.66)

Note. CAPS = Clinician-Administered PTSD Scale; CPT = Cognitive Processing Therapy; CBCT = Cognitive Behavioral Conjoint Therapy for PTSD; CSI = Couple Satisfaction Index; DAS = Dyadic Adjustment Scale; FAD = The McMaster Family Assessment Device; MSI = Marital Satisfaction Inventory; N/A = Not applicable; PCL (CO) = PTSD Checklist (Self and Close Other versions); PE = Prolonged Exposure; PFE = PTSD Family Education; SAS = Social Adjustment Scale; SAT = Structured Approach Therapy; TAU = Treatment as Usual.

Table 3 *Tests of Heterogeneity, Funnel Plot Asymmetry, and Trim-Fill Corrected Estimates for Meta-Analyses*

						Rank test		Egger's test	
Outcome	*k*	Hedge's *g* Estimate	Trim-fill Estimate	Test for Heterogeneity	I^2	τ	*p*-value	*z*	*p-value*
Couple Treatment Studies									
PTSD Symptoms									

Clinician and Self-report (Pre-Post)	13	1.08***[0.74, 1.42]	0.95 [0.58, 1.32]	$QE(12) = 23.27$, $p = .026$	48.43	0.54	.010	1.84	.065
Clinician and Self-report (Pre-FU)	3	1.22***[0.49, 1.95]	-	$QE(2) = 9.39$, $p = .009$	78.69	1.00	.333	1.94	.053
Clinician-rated (Pre-Post)	13	1.14***[0.75, 1.53]	1.04 [0.63, 1.46]	$QE(12) = 29.41$ $p = .003$	59.20	0.31	.163	1.72	.086
Clinician-rated (Pre-FU)	3	1.23**[0.33, 2.12]	-	$QE(2) = 13.92$, $p < .001$	85.63	1.00	.333	2.83	.005
Self-report (Pre-Post)	12	1.06***[0.73, 1.39]	0.93 [0.56, 1.30]	$QE(11) = 19.26$, $p = .057$	42.89	0.58	.009	2.17	.030
Self-report (Pre-FU)	3	1.21***[0.64, 1.78]	-	$QE(2) = 5.85$, $p = .054$	65.84	0.33	1.000	1.34	.180
Partner-rated (Pre-Post)	8	0.97***[0.57, 1.37]	0.71 [0.27, 1.14]	$QE(7) = 10.41$, $p = .167$	32.72	0.64	.031	2.89	.004
Intimate Relationship Functioning									
Self-report (Pre-Post)	12	0.29**[0.07, 0.50]	-	$QE(11) = 6.09$, $p = .867$	0.00	0.29	.192	0.47	.640
Self-report (Pre-FU)	3	0.26[-0.16, 0.67]	-	$QE(2) = 3.64$, $p = .162$	45.02	0.33	1.000	-0.32	.747
Partner-rated (Pre-Post)	12	0.30**[0.09, 0.52]	0.17 [-0.03, 0.37]	$QE(11) = 8.56$, $p = .662$	0.00	0.84	< .001	2.51	.012
Partner-rated (Pre-FU)	3	0.22[-0.09, 0.52]	-	$QE(2) = 0.66$, $p = .718$	0.00	0.33	1.000	0.76	.447
Individual Treatment Studies									
PTSD Symptoms									
Clinician and Self-report (Pre-Post)	7	0.89***[0.61, 1.17]	0.69 [0.39, 0.98]	$QE(6) = 36.90$, $p < .001$	83.74	0.62	.069	3.43	<.001
Clinician and Self-report (Pre-FU)	4	0.70***[0.57, 0.83]	-	$QE(3) = 4.82$, $p = .186$	37.72	1.00	.083	1.25	.212
Intimate Relationship Functioning									
Self-report (Pre-Post)	9	0.33**[0.08, 0.58]	-	$QE(8) = 48.55$, $p < .001$	83.52	0.03	.917	0.45	.652
Self-report (Pre-FU)	6	0.47***[0.16, 0.78]	-	$QE(5) = 42.88$, $p < .001$	88.34	0.20	.719	1.24	.214
Couple vs Individual Treatment		*B* (difference in *g*)							
PTSD Symptoms									
Clinician and Self-report (Pre-Post)	20	-0.16[-0.58, 0.27]	-	$QE(18) = 60.17$, $p < .001$	70.09	0.32	.055	3.76	<.001
Clinician and Self-report (Pre-FU)	7	-0.45[-0.89, 0.00]	-	$QE(5) = 14.20$, $p = .014$	64.80	0.91	.003	1.30	.194

Intimate Relationship Functioning								
Self-report (Pre-Post)	21	0.03[-0.33, 0.39]	-	$QE(19) = 54.64$, $p < .001$	65.23	0.14	.364	0.76	.446
Self-report (Pre-FU)	9	0.21[-0.36, 0.79]	-	$QE(7) = 46.52$, $p < .001$	84.95	0.09	.753	1.24	.214

Note. 95% confidence intervals around estimates. Rank and Egger's tests are tests of publication bias as evidenced via funnel plot asymmetry.
FU = Follow-up
** $p < .01$. *** $p < .001$.

Figure 1 *PRISMA Flow Diagram of Literature Search for Couple/Family Treatment Studies*

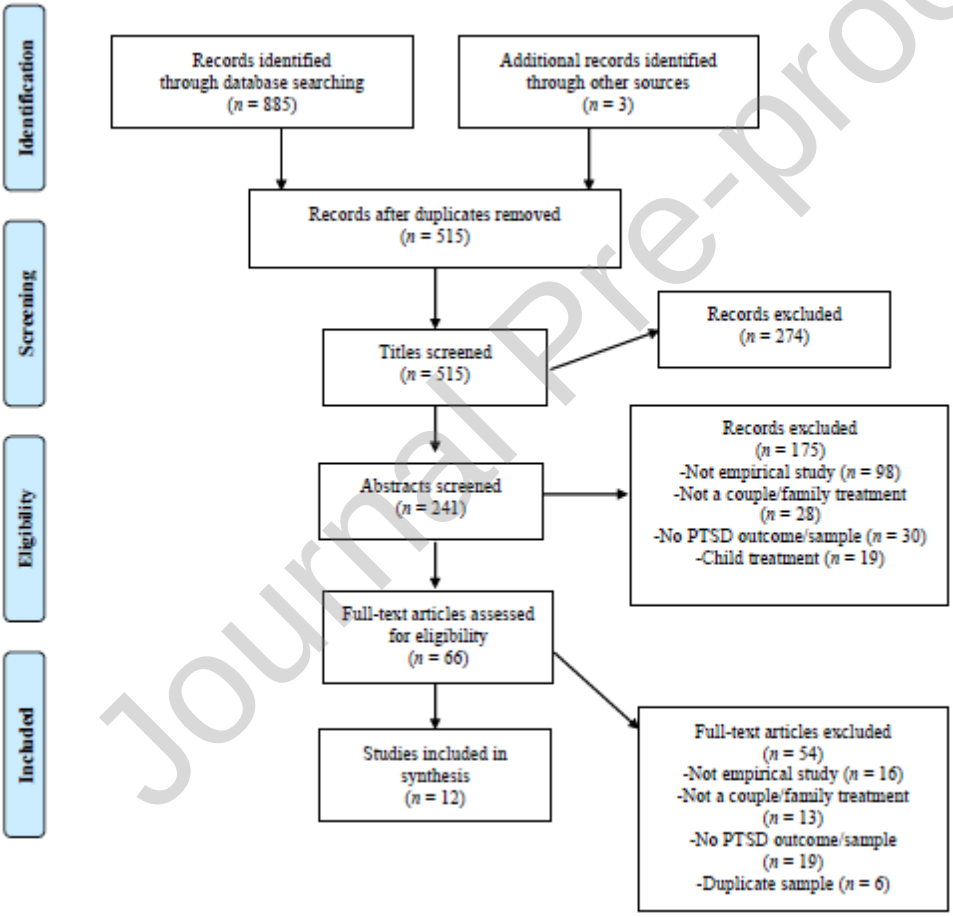


Figure 2 *PRISMA Flow Diagram of Literature Search for Individual Treatment Studies*

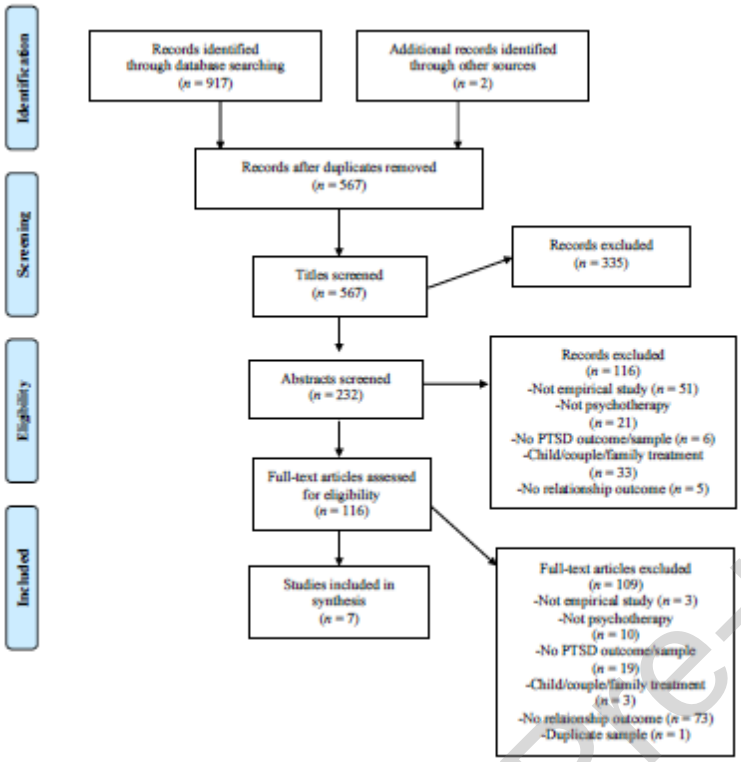


Figure 3 *Forest Plots of PTSD Pretreatment to Posttreatment and Pretreatment to Follow-Up Effect Sizes*

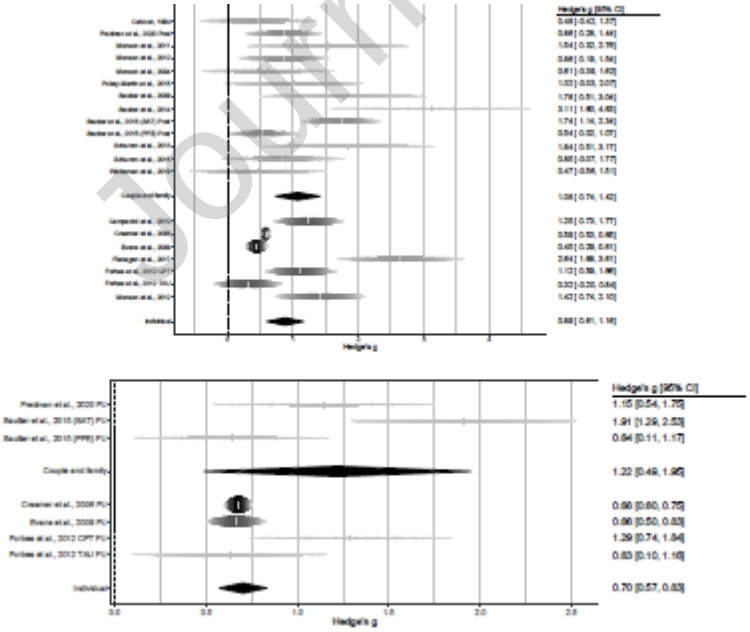
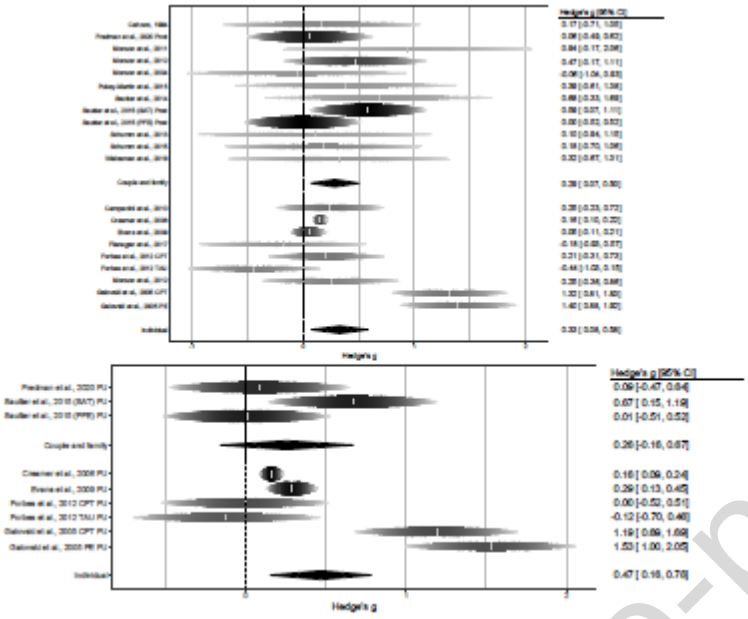


Figure 4 *Forest Plots of Intimate Relationship Functioning Pretreatment to Posttreatment and Pretreatment to Follow-Up Effect Sizes*



Appendix

Table A1 *Literature Search Terms*

	PsycINFO	Pubmed/Medline	SCOPUS
Couple and Family Treatment Studies	ti(“trauma*” OR “posttraumatic stress” OR “post-traumatic stress” OR “post traumatic stress” OR “PTSD”) AND ti(“couple*” OR “conjoint” OR “marital” OR “marriage” OR “partner” OR “close other” OR “significant other” OR “family” OR “families” OR “spouse” OR “caregiver” OR "dyad") AND ti(“therap*” OR “psychotherap*” OR “counsel*” OR “treatment” OR “intervention”)	((“trauma*”[Title] OR “posttraumatic stress”[Title] OR “post-traumatic stress”[Title] OR “post traumatic stress”[Title] OR “PTSD”[Title]) AND (“couple*”[Title] OR “conjoint”[Title] OR “marital”[Title] OR “marriage”[Title] OR “partner”[Title] OR “close other”[Title] OR “significant other”[Title] OR “family”[Title] OR “families”[Title] OR “spouse”[Title] OR “caregiver”[Title] OR “dyad”[Title])) AND (“therap*”[Title] OR “psychotherap*”[Title] OR “counsel*”[Title] OR “treatment”[Title] OR “intervention”[Title])	TITLE ("trauma*" OR "posttraumatic stress" OR "post-traumatic stress" OR "post traumatic stress" OR "PTSD") AND TITLE ("couple*" OR "conjoint" OR "marital" OR "marriage" OR "partner" OR "close other" OR "significant other" OR "family" OR "families" OR "spouse" OR "caregiver" OR “dyad”) AND TITLE ("therap*" OR "psychotherap*" OR "counsel*" OR "treatment" OR "intervention")

Individual Treatment Studies	ti("trauma*" OR "posttraumatic stress" OR "post-traumatic stress" OR "post traumatic stress" OR "PTSD") AND (“relation* satisfaction” OR “marital satisfaction” OR “family satisfaction” OR “relation* distress” OR “interpersonal distress” OR “interpersonal function*” OR “relationship quality” OR “family relation*” OR “social adjustment” OR “interpersonal problems” OR “social function*” OR “family function*” OR “relationship function*” OR “marital distress” OR “marital adjustment” OR “relation* adjustment” OR “dyad* adjustment”) AND ti("therap*" OR "psychotherap*" OR "counsel*" OR "treatment" OR "intervention")	((“trauma*”[Title] OR “posttraumatic stress”[Title] OR “post-traumatic stress”[Title] OR “post traumatic stress”[Title] OR “PTSD”[Title]) AND (“relation* satisfaction” OR “marital satisfaction” OR “family satisfaction” OR “relation* distress” OR “interpersonal distress” OR “interpersonal function*” OR “relationship quality” OR “family relation*” OR “social adjustment” OR “interpersonal problems” OR “social function*” OR “family function*” OR “relationship function*” OR “marital distress” OR “marital adjustment” OR “relation* adjustment” OR “dyad* adjustment”)) AND (“therap*”[Title] OR “psychotherap*”[Title] OR “counsel*”[Title] OR “treatment”[Title] OR “intervention”[Title])	TITLE ("trauma*" OR "posttraumatic stress" OR "post-traumatic stress" OR "post traumatic stress" OR "PTSD") AND TITLE-ABS-KEY ("relation* satisfaction" OR "marital satisfaction" OR "family satisfaction" OR "relation* distress" OR "interpersonal distress" OR "interpersonal function*" OR "relationship quality" OR "family relation*" OR "social adjustment" OR "interpersonal problems" OR "social function*" OR "family function*" OR "relationship function*" OR "marital distress" OR "marital adjustment" OR "relation* adjustment" OR "dyad* adjustment") AND TITLE ("therap*" OR "psychotherap*" OR "counsel*" OR "treatment" OR "intervention")

Table B1 *Sensitivity and SAMD Analyses*

Study	Leave One Out (Pre-Post)	SAMD (Pre-Post)	Leave One Out (Pre-Follow-Up)	SAMD (Pre-Follow-Up)
Couple Treatment Studies				
PTSD Symptoms				
Cahoon, 1984	1.13 [0.77, 1.49]	-0.77		
Fredman et al., 2020	1.11 [0.73, 1.50]	-0.51	1.27 [0.02, 2.51]	-0.22
Monson et al., 2011	1.05 [0.70, 1.41]	0.43		
Monson et al., 2012	1.11 [0.73, 1.49]	-0.45		
Monson et al., 2004	1.11 [0.75, 1.48]	-0.49		
Pukay-Martin et al., 2015	1.09 [0.72, 1.45]	-0.07		
Sautter et al., 2009	1.04 [0.69, 1.39]	0.65		
Sautter et al., 2014	0.98 [0.69, 1.27]	2.14		
Sautter et al., 2015 (SAT)	0.96 [0.64, 1.29]	1.74	0.87 [0.38, 1.37]	2.21
Sautter et al., 2015 (PFE)	1.15 [0.79, 1.51]	-1.31	1.53 [0.78, 2.27]	-1.71
Schumm et al., 2013	1.04 [0.69, 1.38]	0.71		
Schumm et al., 2015	1.10 [0.73, 1.47]	-0.29		
Weissman et al., 2018	1.12 [0.76, 1.48]	-0.64		
Intimate Relationship Functioning				
Cahoon, 1984	0.30 [0.07, 0.52]	-0.16		
Fredman et al., 2020	0.33 [0.09, 0.56]	-0.56	0.34 [-0.31, 0.98]	-0.51
Monson et al., 2011	0.26 [0.04, 0.48]	0.64		
Monson et al., 2012	0.26 [0.03, 0.49]	0.41		
Monson et al., 2004	0.30 [0.08, 0.53]	0.38		
Pukay-Martin et al., 2015	0.28 [0.06, 0.50]	0.11		
Sautter et al., 2014	0.27 [0.05, 0.49]	0.44		
Sautter et al., 2015 (SAT)	0.22 [-0.01, 0.46]	0.86	0.04 [-0.34, 0.42]	1.39
Sautter et al., 2015 (PFE)	0.35 [0.11, 0.59]	-0.81	0.39 [-0.18, 0.95]	-0.82
Schumm et al., 2013	0.30 [0.08, 0.52]	-0.18		
Schumm et al., 2015	0.29 [0.07, 0.52]	-0.14		
Weissman et al., 2018	0.29 [0.06, 0.51]	0.04		
Individual Treatment Studies				
PTSD Symptoms				
Campanini et al., 2010	0.82 [0.53, 1.11]	1.14		
Creamer et al., 2006	1.10 [0.57, 1.63]	-8.34	0.81 [0.45, 1.16]	-1.78
Evans et al., 2009	1.11 [0.63, 1.59]	-5.09	0.80 [0.47, 1.14]	-1.09
Flanagan et al., 2017	0.72 [0.50, 0.94]	3.33		
Forbes et al., 2012 (CPT)	0.85 [0.55, 1.14]	0.70	0.67 [0.61, 0.74]	1.58
Forbes et al., 2012 (TAU)	0.98 [0.67, 1.29]	-1.57	0.72 [0.56, 0.88]	-0.22
Monson et al., 2012	0.81 [0.53, 1.10]	1.23		
Intimate Relationship Functioning				
Campanini et al., 2010	0.34 [0.06, 0.62]	-0.26		
Creamer et al., 2006	0.37 [-0.05, 0.78]	-3.57	0.57 [0.02, 1.12]	-5.61
Evans et al., 2009	0.38 [0.00, 0.76]	-2.74	0.54 [-0.03, 1.11]	-2.01
Flanagan et al., 2017	0.37 [0.10, 0.64]	-0.90		
Forbes et al., 2012 (CPT)	0.35 [0.07, 0.62]	-0.34	0.55 [0.20, 0.90]	-1.38
Forbes et al., 2012 (TAU)	0.41 [0.14, 0.67]	-1.86	0.56 [0.22, 0.90]	-1.48
Galovski et al., 2005	0.21 [-0.01, 0.43]	3.15	0.34 [0.04, 0.63]	2.40

(CPT)				
Galovski et al., 2005	0.20 [-0.01, 0.42]	3.40	0.29 [0.04, 0.53]	3.51
(PE)				
Monson et al., 2012	0.34 [0.07, 0.61]	-0.19		

Note. PTSD = posttraumatic stress disorder. PTSD symptom results are based on combined clinician and self-report ratings. Intimate relationship functioning results are based on self-report ratings for couple studies. CPT = Cognitive Processing Therapy; PE = Prolonged Exposure; PFE = PTSD Family Education; SAMD = sample-adjusted meta-analytic deviancy statistic; SAT = Structured Approach Therapy; TAU = Treatment as Usual.

Table C1 *PRISMA Checklist*

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	p. 1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	p. 2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	p. 3-6
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	p. 6
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	p. 7-8
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	p. 7
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	p. 7, 48-49
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	p. 8
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	p. 8
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	p. 8-11
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	p. 8
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	p. 8
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	p. 8
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	p. 44, 45

Section and Topic	Item #	Checklist item	Location where item is reported
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	p. 9, 11
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	p. 37-43
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	p. 9-11
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	p. 10-11
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	p. 50-51
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	p. 50-51
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	p. 44, 45
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	p. 7-8, 44, 45
Study characteristics	17	Cite each included study and present its characteristics.	p. 12-14
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	p. 14, 37-39
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	p. 42-43
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	p. 14
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	p. 14-18, 42-43, 50-51
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	p. 42-43
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	p. 50-51
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	p. 14, 42-43
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	p. 18-21
	23b	Discuss any limitations of the evidence included in the review.	p. 21-23
	23c	Discuss any limitations of the review processes used.	p. 21-22
	23d	Discuss implications of the results for practice, policy, and future research.	p. 18-23
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	N/A

Section and Topic	Item #	Checklist item	Location where item is reported
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	N/A
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	p. 1
Competing interests	26	Declare any competing interests of review authors.	COI document
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	N/A

Preferred Reporting Items for Systematic reviews and Meta-Analyses

Highlights

- Conducted systematic review and meta-analysis of individual and couple PTSD therapies
- Examined changes in PTSD and intimate relationship functioning outcomes
- 12 couple studies and 7 individual studies met inclusion criteria
- Moderate-large effects in PTSD and small improvements in relationship functioning across studies
- Trauma-focused treatments had larger effects on PTSD outcomes