

## BRIEF REPORT

# Secondary individual outcomes following multicouple group therapy for posttraumatic stress disorder: An uncontrolled pilot study with military dyads

Alexandra Macdonald<sup>1</sup>  | Steffany J. Fredman<sup>2</sup>  | Daniel J. Taylor<sup>3</sup>  |  
 Kristi E. Pruiksma<sup>4</sup>  | Tabatha H. Blount<sup>4</sup>  | Brittany N. Hall-Clark<sup>4</sup>  |  
 Brooke A. Fina<sup>4</sup>  | Katherine A. Dondanville<sup>4</sup>  | Jim Mintz<sup>4</sup>  |  
 Brett T. Litz<sup>5,6</sup>  | Stacey Young-McCaughan<sup>4</sup>  | Yunying Le<sup>2,7</sup>  |  
 August I. C. Jenkins<sup>2</sup>  | Candice M. Monson<sup>8</sup>  | Jeffrey S. Yarvis<sup>9,13</sup>  |  
 Terence M. Keane<sup>10,6</sup>  | Alan L. Peterson<sup>4,11,12</sup>  | for the Consortium to Alleviate  
 PTSD

<sup>1</sup> Department of Psychology, The Citadel Military College of South Carolina, Charleston, South Carolina, USA

<sup>2</sup> Department of Human Development and Family Studies, The Pennsylvania State University, University Park, Pennsylvania, USA

<sup>3</sup> Department of Psychology, University of Arizona, Tucson, Arizona, USA

<sup>4</sup> Department of Psychiatry and Behavioral Sciences, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, USA

<sup>5</sup> Massachusetts Veterans Epidemiology Research and Information Center, VA Boston Healthcare System, Boston, Massachusetts, USA

<sup>6</sup> Department of Psychiatry, Boston University School of Medicine, Boston, Massachusetts, USA

<sup>7</sup> Department of Psychology, University of Miami, Coral Gables, Florida, USA

<sup>8</sup> Department of Psychology, Ryerson University, Toronto, Canada

<sup>9</sup> Department of Behavioral Health, Carl R. Darnall Army Medical Center, Fort Hood, Texas, USA

<sup>10</sup> Behavioral Science Division, National Center for PTSD, VA Boston Healthcare System, Boston, Massachusetts, USA

<sup>11</sup> Research and Development Service, South Texas Veterans Health Care System, San Antonio, Texas, USA

<sup>12</sup> Department of Psychology, The University of Texas at San Antonio, San Antonio, Texas, USA

<sup>13</sup> Jeffrey S. Yarvis is now at Department of Social Work, Texas A&M University – Central Texas, Killeen, Texas, USA

## Correspondence

Steffany J. Fredman, Department of Human Development and Family Studies, The Pennsylvania State University, 115 Health and Human Development, University Park, PA 16802, USA.  
 E-mail: [sjf23@psu.edu](mailto:sjf23@psu.edu)

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## Abstract

Cognitive-behavioral conjoint therapy (CBCT) for posttraumatic stress disorder (PTSD) has demonstrated efficacy for improving PTSD and comorbid symptoms and relationship adjustment. To enhance treatment efficiency and scalability, we developed a 2-day, abbreviated, intensive, multicouple group version of CBCT for PTSD (AIM-CBCT for PTSD). Prior work demonstrated that AIM-CBCT for PTSD was associated with reductions in PTSD and comorbid symptoms in a sample of 24 post-9/11 active duty military or veteran couples who received the treatment in a retreat format over a single weekend. The current study investigated secondary outcomes regarding trauma-related cognitions, psychosocial impairment, and insomnia. For trauma-related cognitions, reductions were non-significant and small at 1-month follow-up,  $d_s = -0.14$  to  $-0.32$ . However, by

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3-month follow-up, there were significant, medium effect size reductions in total trauma-related cognitions,  $d = -0.68$ , and negative views of self and others,  $ds = -0.64$  and  $-0.57$ , respectively, relative to baseline. There was also a nonsignificant, small-to-medium effect-size reduction in self-blame,  $d = -0.43$ ,  $p = .053$ , by 3-month follow-up. For psychosocial impairment, there were significant and medium-to-large and large effect size reductions by 1- and 3-month follow-ups,  $ds = -0.73$  and  $-0.81$ , respectively. There were nonsignificant, small effect size reductions in insomnia at both 1- and 3-month follow-ups relative to baseline,  $ds = -0.30$  and  $-0.34$ , respectively. These findings suggest that AIM-CBCT for PTSD is associated with reductions in maladaptive posttraumatic cognitions and psychosocial impairment but that adjunctive interventions may be needed to address insomnia.

Posttraumatic stress disorder (PTSD; American Psychiatric Association [APA], 2013) is common among service members and veterans who have been deployed to locations in or near Iraq and Afghanistan since September 11, 2001 (9/11). Approximately 15% of post-9/11 service members and 23% of veterans have experienced PTSD following deployment (Fulton et al., 2015; Thomas et al., 2010). Symptoms of PTSD are strongly associated with psychosocial impairment (Kleiman et al., 2018). Moreover, they are associated with intimate relationship discord, and romantic relationship dysfunction can contribute to the

maintenance of PTSD (see Campbell & Renshaw, 2018, for a review). Evidence-based conjoint interventions that efficiently address PTSD symptoms and related difficulties can reduce the burden of PTSD for trauma survivors and their loved ones.

Cognitive behavioral conjoint therapy (CBCT) for PTSD (Monson & Fredman, 2012) is a 15-session, disorder-specific couple therapy designed to simultaneously reduce PTSD symptoms and enhance intimate relationship functioning. Treatment includes (a) psychoeducation about PTSD and intimate relationships; (b) behavioral

interventions to improve conflict management, enhance communication and problem-solving skills, and reduce avoidance of trauma-related cues, and (c) dyadic cognitive interventions aimed at identifying and challenging maladaptive beliefs hypothesized to contribute to the development and maintenance of PTSD and relationship distress. Across multiple studies of community and veteran samples, CBCT for PTSD has been associated with significant, large reductions in patients' PTSD as well as significant improvements in patients' comorbid symptoms, partners' mental health, and couples' relationship functioning (see Liebman et al., 2020, for a review). However, it can be difficult for couples to attend the 15 weekly sessions during typical clinic hours. Challenges in completing treatment are not unique to couple therapy for PTSD; indeed, approximately one third of service members and veterans who begin individually oriented psychosocial treatment for PTSD drop out (e.g., Berke et al., 2019; Goetter et al., 2015).

To improve treatment efficiency, retention, and scalability, we piloted an abbreviated, intensive, multicouple group format of CBCT for PTSD (AIM-CBCT for PTSD; Fredman et al., 2020). Session content was delivered in a 2-day retreat format to a sample of post-9/11 service members and veterans with PTSD and their intimate partners. The results from this uncontrolled study indicated that at 1-month and 3-month follow-up, there were significant reductions in clinician-rated PTSD symptoms ( $d_s = -0.77$  and  $-0.98$ , respectively) and patients' self-reported symptoms of PTSD ( $d_s = -0.73$  and  $-1.17$ , respectively), depression ( $d_s = -0.60$  and  $-0.75$ , respectively), anxiety ( $d_s = -0.63$  to  $-0.73$ , respectively), and anger ( $d_s = -0.45$  and  $-0.60$ , respectively), relative to baseline (Fredman et al., 2020). There were also significant improvements in partners' ratings of mental health and relationship satisfaction (Fredman et al., 2020) and patients' ratings of perceptions of couples' conflict communication and feeling supported by partners (Fredman et al., 2021). In addition, all couples completed treatment (i.e., 0% dropout). The current study aimed to extend the field's understanding of the potential benefits of AIM-CBCT for PTSD beyond PTSD and comorbid symptoms by examining commonly co-occurring, individually oriented factors associated with PTSD, namely maladaptive cognitions, psychosocial impairment, and insomnia.

Maladaptive cognitions have long been recognized as contributing factors in the development and maintenance of PTSD (Ehlers & Clark, 2000; Foa et al., 1999). To address these cognitions, AIM-CBCT for PTSD, like the 15-session CBCT for PTSD protocol, includes psychoeducation about PTSD and relationships, behavioral interventions, and an introduction to a dyadic cognitive intervention designed to identify and challenge trauma-related maladaptive thoughts that can maintain PTSD and rela-

tionship distress (e.g., "My partner can never understand or accept what I feel"). These exercises are expected to potentiate cognitive flexibility because engaging in dyadic skill use can provide real-time "evidence" for new, more balanced beliefs about oneself and close others (e.g., "My partner doesn't think I'm damaged, so maybe I'm not," "My partner *can* handle my expressions of emotion"). In addition, the multicouple group modality may provide corrective feedback regarding trauma-related appraisals of interpersonal risk from strangers (e.g., "Other people are inherently dangerous," "I have to be on high alert at all times"). Reductions in PTSD-related maladaptive cognitions were found for the 15-session version of CBCT for PTSD (Macdonald et al., 2016). Thus, the current study aimed to evaluate whether this abbreviated, condensed format of CBCT for PTSD would also be associated with changes in trauma-related cognitions.

Given the emphasis on addressing behavioral and cognitive impairments in an interpersonal context, there are also reasons to explore whether a brief, intensive conjoint intervention, such as AIM-CBCT for PTSD, would be associated with reductions in more generalized PTSD-related psychosocial impairment. There are well-documented impairments in couple and family relationships, friendships, occupational functioning, and education among veterans with PTSD (e.g., Kleiman et al., 2018). A small study of CBCT for PTSD conducted with Vietnam veterans documented some improvements in veterans' psychosocial functioning (Monson et al., 2005), and several cognitive behavioral therapies for PTSD delivered individually have been shown to be associated with reductions in multiple domains of impairment in veterans (Reich et al., 2019). However, these treatments are typically delivered in 10–15 sessions conducted over a period of months. Ehlers and colleagues (2014) found that an intensive, 7-day cognitive therapy for PTSD significantly reduced PTSD-related disability and that these reductions were similar in magnitude to those observed in the 12-week intervention, providing evidence that a massed treatment approach may address psychosocial impairments. Although AIM-CBCT for PTSD is briefer than Ehlers and colleagues' treatment, patients are provided with opportunities to reinforce new ways of thinking and behaving in multiple psychosocial domains (e.g., relationships with children and extended family, friendships) as couples jointly address the role of PTSD in their relationship and apply skills in their everyday lives after the retreat. The current study aimed to determine whether AIM-CBCT for PTSD was associated with reductions in overall psychosocial impairment.

Finally, insomnia has been shown to be pervasive (i.e., 92%; Pruiksma et al., 2016) among service members seeking treatment for PTSD (e.g., Taylor et al., 2020). Evidence-based PTSD interventions can reduce some aspects of

insomnia, although these reductions tend to be small, with many individuals continuing to exhibit impairment or distress (e.g., Pruiksma et al., 2016; Taylor et al., 2020). Improvement in marital adjustment during couple therapy has been associated with decreased sleep problems (Troxel et al., 2017), but this has not been investigated among individuals with PTSD. Although no prior studies of CBCT for PTSD have examined insomnia as an outcome, we expected that AIM-CBCT for PTSD may result in reductions in insomnia given observed reductions in PTSD symptoms and enhancement of relationship adjustment (Fredman et al., 2020; Fredman et al., 2021).

In sum, the goals of the current study were to investigate secondary individual outcomes for AIM-CBCT for PTSD with respect to patients' maladaptive trauma-related cognitions, psychosocial impairment, and insomnia. Based on prior research, we hypothesized that AIM-CBCT for PTSD would be associated with significant reductions in all three domains.

## METHOD

### Participants

Participants included 24 mixed-gender couples enrolled in an uncontrolled pilot study of AIM-CBCT for PTSD (Fredman et al., 2020) as part of the work of the Consortium to Alleviate PTSD. As described by Fredman et al. (2020), active duty military and veteran couples were included if they were married or cohabiting for at least 3 months, both members were between 18 and 65 years of age, and both members were fluent in English. In addition, the service member or veteran must have met the diagnostic criteria for PTSD according to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; APA, 2013) as assessed by the Clinician-Administered PTSD Scale for DSM-5 (Weathers et al., 2013) and had a total CAPS severity score of 25 or higher. The service member or veteran with PTSD must have experienced a Criterion A traumatic event during deployment in support of combat operations following 9/11. Couples were excluded if the patient's partner met the diagnostic criteria for PTSD, the couple planned to end their relationship, or either partner had a recent manic episode (i.e., past 12 months), psychotic disorder, engaged in current and severe alcohol use, had evidence of a moderate or severe traumatic brain injury, endorsed current suicidal ideation severe enough to warrant immediate attention, or endorsed severe intimate aggression. Couples were also excluded if the patient was receiving cognitive processing therapy (Resick et al., 2016) or prolonged exposure therapy (Foa et al., 2019) or if the couple had received CBCT for PTSD (Monson & Fredman, 2012).

Written informed consent was obtained from both members of the couple. Assessments were repeated by independent evaluators 1 and 3 months after the retreat. The Institutional Review Board (IRB) at the University of Texas Health Science Center at San Antonio (UT Health San Antonio) and the Research Ethics Board at Ryerson University approved all study procedures. All other IRBs deferred their review to the IRB at UT Health San Antonio or were considered exempt. Regulatory reviews and approvals were overseen by the U.S. Army Medical Research and Materiel Command Human Research Protections Office (now the U.S. Army Medical Research and Development Command) at Fort Detrick, Maryland.

The majority of patients identified as White ( $n = 11$ , 45.0%) and male ( $n = 23$ , 95.8%). The mean participant age was 40.49 years ( $SD = 7.12$ ). Most participants were on active duty during the study ( $n = 17$ , 71.0%), were or had been enlisted ( $n = 21$ , 87.5%), and had been deployed an average of 2.75 deployments over 15.5 years of service. A more complete description of baseline characteristics of patients and partners and study procedures can be found in Fredman and colleagues (2020).

### Procedure

The intervention was an abbreviated, intensive, multicouple group version of CBCT for PTSD (Monson & Fredman, 2012) delivered during a single weekend retreat. Couples also participated in two individual couples' meetings: The first meeting took place approximately 1 week before the retreat and focused on orienting couples to the retreat, and the second meeting took place approximately 2 weeks after the retreat and focused on reinforcing ongoing skill use. The retreat component of AIM-CBCT for PTSD (Fredman et al., 2020) consisted of approximately 12 hr of CBCT for PTSD content delivered consecutively over 2 days across eight modules that lasted 60–90 min each. Each group was co-led by two group therapists. As in the parent protocol, the content included (a) psychoeducation about PTSD and relationship functioning, (b) instruction in behavioral conflict management and communication and problem-solving skills to enhance relationship functioning and reduce PTSD-related avoidance and partner accommodation of symptoms, and (c) dyadic cognitive interventions to increase flexibility regarding PTSD-related thoughts and maladaptive relationship cognitions. On the Saturday evening of the retreat, couples were instructed to go on a date that doubled as a conjoint approach activity. Seven retreats were completed and ranged in size from two to six couples (see Fredman et al., 2020 for more details regarding the intervention).

## Measures

### Trauma-related cognitions

The Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999) is a 36-item questionnaire used to assess trauma-related thoughts and beliefs. The PTCI yields a total score and three subscale scores: Negative Cognitions about the Self, Negative Cognitions about the World, and Self-Blame. Items are rated on a 7-point scale ranging from 1 (*totally disagree*) to 7 (*totally agree*), with higher scores indicating more distortions. The PTCI total score is calculated by summing the 33 nonexperimental items, with a possible range of 33–231. Subscales items are summed and then divided by the number of items in that subscale to produce a mean subscale score. In the present sample, internal consistency was adequate to good, with Cronbach's alpha values ranging from .91 to .96 across assessments for the total scale and from .75 to .95 across subscales and assessments.

### Psychosocial impairment

The Brief Inventory of Psychosocial Functioning (B-IPF; Kleiman et al., 2018) is a seven-item, self-report measure that is used to assess respondents' level of impairment in seven PTSD-relevant domains: romantic relationships, relationships with children, family relationships, friendships and socializing, work, training and education, and activities of daily living. For each relevant domain, respondents indicate their degree of trouble in the last 30 days, rating responses on a 7-point scale ranging from 0 (*not at all*) to 6 (*very much*). Items are summed, divided by the total possible score for all relevant domains, and multiplied by 100. Higher scores reflect higher levels of overall psychosocial impairment. In the present sample, internal consistency was adequate to good across assessments, Cronbach's  $\alpha$ s = .69–.90.

### Insomnia

The Insomnia Severity Index (ISI; Morin, 1993) is a seven-item, self-report measure used to assess insomnia symptoms. Each item is scored on a 5-point Likert-type scale ranging from 0 (*none/not at all*) to 4 (*very/very severe*). Items are summed to produce a total score (range: 0–28), with higher scores corresponding to more severe insomnia. In the present sample, internal consistency was good across assessments, Cronbach's  $\alpha$ s = .88–.95.

## Data analysis

To address the study aims, multilevel models were conducted using PROC MIXED with robust standard errors and restricted maximum likelihood estimation in SAS (Version 9.3). Variances and covariances were freely estimated across the repeated measures using an unstructured covariance matrix in which time was modeled as a categorical variable. Data missingness was 25% at 1-month follow-up and 21% at 3-month follow-up. As confirmed by Little's Missing Completely at Random test (Little, 1988), data were missing completely at random,  $\chi^2(32, N = 24) = 24.22, p = .836$ . Models generated least squares means (LSMs) and associated standard errors for each outcome at each assessment. Planned contrasts between pretreatment and 1-month posttreatment LSMs, as well as pretreatment and 3-month posttreatment LSMs, were conducted to determine whether there were significant improvements in patients' posttraumatic cognitions, psychosocial impairment, and insomnia for reach assessment relative to baseline. The purpose was to determine whether there were statistically significant changes in outcomes for each assessment relative to pretreatment levels. Within-group effect sizes in the form of Cohen's  $d$  ( $t/\sqrt{df}$ ) were computed to determine the magnitude of change in outcomes from pretreatment to 1- and 3-months posttreatment, respectively. Effect sizes were interpreted consistent with Cohen's (1988) recommendations for small ( $d = 0.20$ ), medium ( $d = 0.50$ ), and large ( $d = 0.80$ ) effect sizes.

## RESULTS

The LSMs and their standard errors are presented in Table 1 along with  $t$  statistics and Cohen's  $d$ s with 95% confidence intervals for planned contrasts relative to baseline levels.

### Posttraumatic cognitions

There were nonsignificant and small effect size reductions in total maladaptive trauma-related cognitions, negative views of self and others, and self-blame at 1-month follow-up relative to baseline. By 3-month follow-up, there were significant and medium effect size reductions in total posttraumatic cognitions and in negative views of self and others relative to baseline. There was also a nonsignificant and small-to-medium effect size reduction in cognitions related to self-blame relative to baseline,  $p = .053$ .

TABLE 1 Outcomes for posttraumatic cognitions, psychosocial impairment, and insomnia

Outcome	Pretreatment		1 month posttreatment		3 months posttreatment		Pretreatment/1-month follow-up			Pretreatment/3-month follow-up		
	LS	SE	LS	SE	LS	SE	t (23)	d	95% CI	t (23)	d	95% CI
	PTCI total	112.17	5.20	103.51	6.20	94.33	7.00	-1.48	-0.31	[-0.74, 0.12]	-3.24**	-0.68
Self	3.11	0.17	2.79	0.22	2.62	0.22	-1.55	-0.32	[-0.75, 0.11]	-3.07**	-0.64	[-1.07, -0.21]
Others	5.12	0.19	4.99	0.26	4.37	0.31	-0.67	-0.14	[-0.57, 0.29]	-2.71*	-0.57	[-1.00, -0.13]
Blame	2.21	0.23	2.05	0.25	1.84	0.21	-0.68	-0.14	[-0.57, 0.29]	-2.04	-0.43	[-0.86, 0.01]
B-IPF	56.42	4.45	40.63	3.65	42.29	4.64	-3.52**	-0.73	[-1.17, -0.30]	-3.89**	-0.81	[-1.24, -0.38]
ISI	18.71	1.24	17.45	1.35	16.23	1.60	-1.43	-0.30	[-0.73, 0.13]	-1.65	-0.34	[-0.78, 0.09]

Note:  $N = 24$  couples. LS  $M$  = least squares mean; PTCI = Posttraumatic Cognitions Inventory; B-IPF = Brief Inventory of Psychosocial Functioning; ISI = Insomnia Severity Index. \* $p < .05$ ; \*\* $p < .01$ .

## Psychosocial impairment and insomnia

There was a significant and medium-to-large effect size reduction in psychosocial impairment by the 1-month follow-up. In addition, there was a significant and large effect size reduction by the 3-month follow-up, relative to baseline. There were nonsignificant and small effect size reductions in insomnia severity at the 1- and 3-month follow-up assessments, relative to baseline.

## DISCUSSION

The present study examined whether an abbreviated, intensive, multicouple group version of CBCT for PTSD would be associated with individually oriented benefits for patients beyond reductions in PTSD and comorbid symptoms. The results indicated that AIM-CBCT for PTSD was associated with reductions in PTSD-related cognitions and psychosocial impairment, adding support for the potential utility of this format as an efficient and scalable version of CBCT for PTSD.

The changes observed in ratings of negative views of self oneself and others are encouraging, particularly given that the brevity of AIM-CBCT for PTSD resulted in fewer opportunities for couples to apply the dyadic cognitive intervention strategies during the active phase of treatment relative to the 15-session CBCT for PTSD protocol. It is possible that PTSD-related psychoeducation and the dyadic behavioral-skills training and cognitive intervention supported changes in negative self-related cognitions (e.g., “My reactions since the event mean that I am going crazy”) by helping patients attribute their difficulties to a treatable psychological disorder and increasing their confidence in their ability to tolerate strong emotions or difficult situations. In addition, doing the treatment with one’s partner may have helped patients to think differently about the extent to which they could trust and rely on their partners. Finally, the reductions in negative cognitions regarding others more broadly (e.g., “The world is a dangerous place”) may have been potentiated by the multicouple group format of cognitive interventions to increase cognitive flexibility. That is, doing the treatment with other couples may have facilitated more balanced thinking about the trustworthiness of unfamiliar others through the combination of casual interactions over the weekend and structured activities designed to address PTSD-related hypervigilance and safety behaviors (e.g., switching seats in the groups throughout the weekend).

The pattern of reductions in negative views of the self and others (i.e., more substantial changes at 3-month follow-up relative to 1-month follow-up) has some

similarities to the pattern of changes observed in PTSD symptoms reported in the parent study, which demonstrated relatively larger reductions in PTSD and comorbid symptoms at the 3-month follow-up than the 1-month follow-up (Fredman et al., 2020). Prior studies of individual therapy for PTSD delivered weekly have found that changes in cognitions typically precede PTSD symptom changes (e.g., McLean et al., 2019; Schumm et al., 2015). In contrast, the abbreviated, massed nature of this intervention may have required additional time for patients to practice the dyadic cognitive intervention before the full magnitude of cognitive changes could be observed. In addition, as PTSD symptoms decreased (e.g., less avoidance, fewer experiences of anger and aggression), patients may have been able to gather new data about themselves (e.g., “I am not damaged forever by PTSD”) and others (e.g., “Not all people are dangerous”).

Reductions in trauma-related self-blame were nonsignificant and smaller than those for negative views of self and others. These results are similar to those found in active duty military and veteran samples who received individual trauma-focused cognitive behavioral treatments for PTSD that took place over more sessions and a longer period of time (e.g., McLean et al., 2019; Schumm et al., 2015). In those studies, patients experienced significant reductions in negative views of themselves and others, but changes in self-blame were either nonsignificant or significant but smaller than those for negative views of themselves or others. In contrast, in a secondary analysis of a randomized controlled trial of the 15-session CBCT for PTSD protocol (Monson et al., 2012), Macdonald and colleagues (2016) found a significant, medium effect-size decrease (i.e., Hedges’  $g = -0.63$ ) in trauma-related guilt cognitions (e.g., “I was responsible for what happened”), which are similar in content to the self-blame cognitions assessed in the current study (e.g., “The event happened because of the way I acted”). In contrast to the parent protocol, AIM-CBCT for PTSD does not include an explicit discussion of historical appraisals of traumatic events. Rather, it focuses primarily on present- and future-oriented cognitions. This may account for why the effects for self-blame were nonsignificant and smaller in size (i.e.,  $d = -0.43$ ) relative to those for negative views of self and others ( $ds = -0.64$  and  $-0.57$ , respectively) by the 3-month follow-up assessment.

The significant and medium-to-large and large reductions in psychosocial impairment are also notable given the extremely brief nature of the intervention. Delivering the intervention to couples, rather than to patients only, may have potentiated reductions in patients’ psychosocial impairment because the treatment “went home” with the patients. As with the parent CBCT for PTSD protocol, couples were taught to work together to apply socially

relevant behavioral and cognitive skills in their everyday lives and in a variety of domains. Thus, partners’ active involvement in patients’ recoveries from PTSD may have served to repeatedly reinforce patients for approaching rather than avoiding situations that elicit discomfort and for thinking and behaving more flexibly across a range of contexts (e.g., the couple’s relationship as well as parenting, extended family relationships, friendships, and the workplace).

The lack of change in insomnia in the current study is consistent with prior research in active duty military and veteran samples that has found insomnia to be relatively recalcitrant to treatment even when PTSD symptoms decrease (e.g., Pruiksma et al., 2016; Taylor et al., 2020). Previous studies of PTSD interventions delivered in an individual format for a longer period of time have demonstrated significant and medium effect size reductions in insomnia (e.g.,  $d = -0.64$ ; Taylor et al., 2020); however, most participants have continued to endorse clinically significant sleep problems at posttreatment. The effects for insomnia in the current study were nonsignificant and smaller than those reported by Taylor and colleagues (2020), which may be a function of the abbreviated delivery of AIM-CBCT for PTSD. Specifically, compared with a 2-day retreat, interventions delivered over a longer period provide additional opportunities for sleep disturbances to be experienced and addressed during the course of therapy. At the same time, the absence of significant effects for insomnia in the current study suggests that participants were not just engaging in a positive response pattern or benefiting from a “halo effect” across all outcomes.

The results of this pilot study demonstrate that a brief, intensive, multicouple group version of CBCT for PTSD may provide benefits that extend beyond PTSD and comorbid symptoms to include maladaptive posttraumatic cognitions and psychosocial impairment. However, the study also had a number of limitations. First, the uncontrolled nature of the design precludes our ability to draw causal inferences regarding the efficacy of AIM-CBCT for PTSD. For example, it is possible that changes were the result of processes unrelated to the intervention (e.g., maturation, regression to the mean). Second, the small sample size may have limited our power to detect small-to-medium-sized effects (e.g., changes in self-blame). Third, the predominately male sample with female partners limits the generalizability of our results. Future studies should consider oversampling women with PTSD and same-sex couples and utilize a randomized controlled design with a larger sample and longer follow-up period. Ongoing work to develop and test efficient and scalable interventions for PTSD and its associated impairments may offer additional hope for further decreasing the burden of the

condition on trauma survivors, their loved ones, and their communities.

## OPEN PRACTICES STATEMENT

The study reported in this article was not formally preregistered. Neither the data nor the materials have been made available on a permanent third-party archive; requests for the data or materials can be sent via email to study principal investigator Dr. Steffany J. Fredman [sjf23@psu.edu].

## ORCID

Alexandra Macdonald  <https://orcid.org/0000-0002-7559-2085>

Steffany J. Fredman  <https://orcid.org/0000-0002-2053-8700>

Daniel J. Taylor  <https://orcid.org/0000-0003-3433-2516>

Kristi E. Pruiksma  <https://orcid.org/0000-0001-6585-4670>

Tabatha H. Blount  <https://orcid.org/0000-0001-5227-313X>

Brittany N. Hall-Clark  <https://orcid.org/0000-0002-5888-836X>

Brooke A. Fina  <https://orcid.org/0000-0002-2054-5564>

Katherine A. Dondanville  <https://orcid.org/0000-0003-4204-7926>

Jim Mintz  <https://orcid.org/0000-0002-8299-5851>

Brett T. Litz  <https://orcid.org/0000-0002-0479-8887>

Stacey Young-McCaughan  <https://orcid.org/0000-0002-3327-5233>

Yunying Le  <https://orcid.org/0000-0002-4172-5943>

August I. C. Jenkins  <https://orcid.org/0000-0002-5971-9787>

Candice M. Monson  <https://orcid.org/0000-0001-6179-0788>

Jeffrey S. Yarvis  <https://orcid.org/0000-0001-6668-874X>

Terence M. Keane  <https://orcid.org/0000-0002-0482-3149>

Alan L. Peterson  <https://orcid.org/0000-0003-2947-2936>

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