

# A Home-Based Telehealth Randomized Controlled Trial of Skills Training in Affective and Interpersonal Regulation Versus Present-Centered Therapy for Women Veterans Who Have Experienced Military Sexual Trauma

Marylene Cloitre<sup>1, 2</sup>, Danielle Morabito<sup>1, 3</sup>, Kathryn Macia<sup>1, 2</sup>, Sarah Speicher<sup>1</sup>,  
Jessilyn Froelich<sup>1</sup>, Katelyn Webster<sup>4</sup>, Annabel Prins<sup>1</sup>, Diana Villasenor<sup>1</sup>, Asha Bauer<sup>1</sup>,  
Christie Jackson<sup>1</sup>, Laura Fabricant<sup>5</sup>, Shannon Wiltsey-Stirman<sup>1, 2</sup>, and Leslie Morland<sup>4, 6</sup>

<sup>1</sup> National Center for PTSD, Division of Dissemination and Training,  
Veterans Affairs Palo Alto Health Care System, Menlo Park, California, United States

<sup>2</sup> Department of Psychiatry and Behavioral Sciences, Stanford University

<sup>3</sup> Department of Psychology, Florida State University

<sup>4</sup> VA San Diego Healthcare System, San Diego, California, United States

<sup>5</sup> Department of Psychiatry and Human Behavior, Brown University

<sup>6</sup> Department of Psychiatry, University of California, San Diego

**Objective:** This randomized trial tested the effectiveness of Skills Training in Affective and Interpersonal Regulation (STAIR) compared to present-centered therapy (PCT) delivered virtually to women veterans who had experienced military sexual trauma (MST) and screened positive for posttraumatic stress disorder (PTSD). **Method:** One hundred sixty-one eligible women veterans were randomized into the study. The primary outcome was clinician-assessed PTSD severity (Clinician-Administered PTSD Scale–5), while secondary outcomes included social support and several other symptom measures at posttreatment through 2- and 4-month follow-up. **Results:** PTSD severity decreased in both conditions by posttreatment but significantly more ( $p = .028$ ,  $d = 0.39$ ) in STAIR ( $d = 1.12$  [0.87, 1.37]) than PCT ( $d = .78$  [0.54, 1.02]). STAIR was also superior in improving social support and emotion regulation and reducing depression and negative cognitions. Improvement in psychosocial functioning was moderate and did not differ between conditions. All changes were maintained through 2- and 4-month follow-ups. Dropout rates were low and did not differ (19.0% and 12.2%, respectively). **Conclusion:** STAIR provided superior outcomes compared to PCT regarding PTSD, social support, and multiple types of mental health problems among women veterans with MST. The application of STAIR to other populations with social support and related concerns warrants investigation. The substantial effect sizes for PTSD symptoms in both treatments suggest that they are practical alternatives for individuals who do not wish to participate in trauma-focused therapy and may increase engagement in mental health services.

## What is the public health significance of this article?

Skills Training in Affective and Interpersonal Regulation (STAIR), a transdiagnostic intervention, provides effective relief from a range of social–emotional difficulties that have been identified by women who have experienced military sexual trauma. The availability of evidence-based mental health programs that address patient-identified concerns other than diagnostic-specific symptoms is an important and integral component to mental health services for trauma-exposed populations.

**Keywords:** Skills Training in Affective and Interpersonal Regulation, present-centered therapy, military sexual trauma, social support, posttraumatic stress disorder

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Marylene Cloitre  <https://orcid.org/0000-0001-8029-1570>

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*continued*

Women represent a minority population in military service. While many women veterans describe significant benefits and personal rewards from their military service, a commonly reported negative event is military sexual trauma (MST), defined as experiencing repeated sexual harassment or sexual assault while in the military (Veterans Affairs, 2022). Although other groups with low societal and institutional power are also at increased risk, MST occurs at substantially high rates among women (Galovski et al., 2022). A recent meta-analysis found that proportionally more active-duty and veteran women (38%) than men (3.9%) have experienced sexual assault or harassment while in the military (Wilson, 2018). From a diagnostic perspective, posttraumatic stress disorder (PTSD) is the most common mental health consequence of MST (Maguen et al., 2012). Additionally, compared to other veterans, those who have experienced MST are at increased risk for depression and exhibit a risk of higher suicidality and poorer psychosocial functioning (Nichter et al., 2022). Studies specific to women veterans indicate that those who have experienced MST report greater social isolation and lower social support, fear of stigmatization, and negative beliefs about themselves, others, and the world (Runnals et al., 2014; Suris & Lind, 2008).

The expressed concern about poor social support has significant mental health consequences. Substantial research indicates that social support and mental health problems, including PTSD, have a dynamic and reciprocal relationship with one another (Charuvastra & Cloitre, 2008). Longitudinal studies have indicated that social support mediates the risk for and severity of PTSD particularly in the early months posttrauma. Low or limited social support has a particularly strong negative effect on the risk for PTSD following traumatic exposure (Brewin et al., 2000). Over time, the presence of PTSD negatively influences both perceived and actual support (Kaniasty & Norris, 2008). This may be in part due to PTSD symptoms themselves, such as feelings of estrangement from others and diminished interest in activities. In addition, negative social and self-appraisals may make it hard for individuals with PTSD to be responsive to the supportive efforts of others (Woodward et al., 2015). Conversely, members of an individual's social support system (e.g., family, friends, partners, coworkers) may begin to distance themselves from distressed individuals in response to symptoms such as depression, anger, and hostile behaviors (Kaniasty & Norris, 2008). Reductions in social support create additional risk for continued PTSD and related symptoms, leading to a cycle of chronic PTSD and social isolation. Interventions that address social and emotional management difficulties may disrupt this cycle, leading to both improved social support and PTSD symptom reduction.

Skills Training in Affective and Interpersonal Regulation (STAIR) is a time-limited, manualized treatment that focuses on improving emotion management skills, interpersonal skills, and social cognition. The treatment provides emotion regulation skills to help clients better manage a range of emotions and their impact on

social functioning; it also includes reappraisal of beliefs about social and interpersonal dynamics and training in social skills (Cloitre et al., 2020). STAIR was developed to be transdiagnostic in that it is responsive to multiple problems that result from trauma exposure. However, research to date indicates that STAIR has consistently been effective in reducing PTSD symptoms among veterans as demonstrated in a pilot randomized controlled trial of male and female veterans in primary care (Jain et al., 2020), an open trial of women veterans with MST who received STAIR via telemental health (B. J. Weiss et al., 2018) and an open trial group format for male and female veterans (Jackson et al., 2019). STAIR is a good fit to the needs of women veterans with MST as the treatment provides cognitive and behavioral interventions that directly address social support difficulties, which have been explicitly identified by women veterans with MST in needs assessment surveys as a key concern (Runnals et al., 2014; Suris & Lind, 2008). In addition, a recent summary of the state of the science identified the need for research on non-trauma-focused interventions that addressed MST-related difficulties (Galovski et al., 2022).

STAIR is a strengths-based, skills-focused rather than a trauma-focused treatment. Trauma-focused cognitive behavioral therapies (TF-CBT) have been identified as the most effective treatments for PTSD to date (VA/DoD Clinical Practice Guideline, 2023). Yet, despite U.S. Department of Veterans Affairs (VA) efforts to expand the provision of TF-CBTs, only a minority of returning Operation Enduring Freedom/Operation Iraqi Freedom veterans have ever initiated a TF-CBT, and many did not initiate it until several years after they returned from deployment (Holder et al., 2020). Initiating treatment can be difficult (Kehle-Forbes et al., 2016), and some clients are afraid or unwilling to engage in treatments that focus on trauma (Hundt et al., 2018). Others identify problems other than PTSD as their primary concern, such as social and interpersonal difficulties (Levitt & Cloitre, 2005). Patient dropout is relatively high among veterans in trauma-focused treatment compared to non-trauma-focused treatment (Belsher et al., 2019; Edwards-Stewart et al., 2021). Attrition from trauma-focused treatments among veterans is estimated to be between 27% to 35% (Kehle-Forbes et al., 2016), and there is some but mixed evidence that dropout is higher among women who have experienced MST, ranging as high as 40%–50% (Acierno et al., 2021; Eftekhari et al., 2013; but see Maguen et al., 2019). This suggests there is room for expanding treatment options.

TF-CBTs are powerful, and as interventions for a specific disorder, perform as well as those for other related diagnoses (Norton & Price, 2007). However, non-trauma-focused interventions attend to day-to-day problems that are of concern to veterans (Rosen et al., 2013), have lower attrition rates (Edwards-Stewart et al., 2021), and have been shown to provide substantial clinical benefits (Shea et al., 2020). The availability of alternative therapies that address concerns relevant to trauma-exposed populations may increase treatment engagement among individuals who otherwise

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Correspondence concerning this article should be addressed to Marylene Cloitre, National Center for PTSD, Division of Dissemination and Training, Veterans Affairs Palo Alto Health Care System, 795 Willow Road, Menlo Park, CA 94025, United States. Email: [marylene.cloitre@va.gov](mailto:marylene.cloitre@va.gov)

would not seek care and provide clinically meaningful benefits for a range of difficulties, including PTSD symptoms. Development and testing of these types of interventions is a critical and integral part of creating a complete range of mental health services for trauma-exposed populations.

The application of STAIR to women veterans who have experienced MST is of relevance, given that it is responsive to specific concerns identified by them such as social support (Runnals et al., 2014), is a transdiagnostic intervention that may address the varied and substantial psychological burdens they experience (Calhoun et al., 2018), and is skills focused (Galovski et al., 2022) which adds a treatment option or alternative to trauma-focused interventions that may increase engagement into care. Last, women veterans who have experienced MST are a minoritized patient population for whom intervention research has been modest relative to the accumulated research about identified needs. To date, despite 2 decades of research documenting the effects of MST on women, there have been only three randomized controlled trials that have been dedicated to investigating the effectiveness of psychosocial interventions specific to women veterans who have experienced MST (Acierno et al., 2021; Kelly et al., 2021; Surís et al., 2013).

The current randomized controlled trial had the primary aim of evaluating the efficacy of STAIR compared to present-centered therapy (PCT), the only evidence-based non-trauma-focused treatment for PTSD identified in VA/DoD Clinical Practice Guideline (2023). PCT was selected as a comparator because, like STAIR, it is a non-trauma-focused treatment that has been successful in reducing PTSD symptoms as well as associated with low-dropout rates (Belsher et al., 2019). Unlike STAIR, PCT does not specifically focus on social support concerns or social-emotional problems nor does it provide skills training specific to these concerns, the proposed “active ingredients” of STAIR. PCT provides support and guidance via nonspecific therapeutic interventions such as active listening and reflection to help clients find solutions to problems they wish to discuss in the treatment.

The study hypothesized that STAIR would be superior to PCT in improving (a) clinician-assessed PTSD total symptom severity; (b) social support; and (c) trauma-related problems of emotion regulation, depression, maladaptive cognitions, and functional impairment. Given the importance of alcohol misuse and suicide risk among veterans, particularly among women veterans who have experienced MST, the study included reports on these outcomes.

It was expected that STAIR would not differ from PCT in treatment dropout, therapeutic alliance, and patient satisfaction. Both treatments were provided virtually via video conferencing at the client’s home (i.e., home-based telehealth [HBT]). HBT studies of VA patients with PTSD thus far have indicated that HBT is safe, noninferior to face-to-face delivery, and cost-efficient (Morland et al., 2020); it may also have unique benefits for some women accessing mental health care in VA such as availability of therapists well informed about MST and having a treatment environment that is psychologically and physically comfortable (Morland et al., 2019). Delivery via HBT supports the eventual scalability of effective mental health treatments. In addition, as the COVID-19 pandemic has highlighted, virtual treatment delivery can extend or maintain care under conditions where face-to-face services are not

possible. We report on client treatment delivery preferences as well as posttreatment level of satisfaction with the interventions.

## Method

### Participants

Women veterans were eligible for the study if they had (a) an age of 18 or older, (b) a positive screen for MST, and (c) a positive PTSD screen defined as a cutoff of  $\geq 3$  on the Primary Care PTSD Screen for *Diagnostic and Statistical Manual of Mental Disorders* (5th edition; *DSM-5*; PC-PTSD-5; Prins et al., 2016). Enrollment of participants with positive screens rather than positive for the PTSD diagnosis was selected because subsyndromal PTSD is associated with significant psychosocial impairment as well as an increased risk for developing full-blown PTSD (Bergman et al., 2017). Furthermore, the treatment of patients with significant PTSD symptoms and other trauma-related symptoms is supported in VA (e.g., diagnosed with “other specified trauma and stress-related disorder”), indicating the importance of investigating the effectiveness of treatments among patients both below and above a PTSD diagnostic cutoff. Criteria for exclusion assessed during the screen and confirmed by the patient chart were (a) prominent current suicidality as indicated by the presence of intent, a plan, and means; (b) substance dependence not in remission for at least 3 months; (c) current psychotic symptoms or unmedicated mania or bipolar disorder; (d) cognitive impairment; (e) current involvement in a violent relationship defined as more than casual contact (e.g., dating or living with an abusive partner); and (f) currently enrolled in a TF-CBT program.

### Procedure

This study was a two-site pragmatic randomized clinical trial. Participants were recruited from October 2018 to August 2021. Participants were recruited via social media and via self and clinician referrals within the VA’s integrated network (i.e., Veterans Integrated Service Network) in which the two sites were located. Verbal consent was obtained before beginning the study phone screen. Eligible candidates were invited to complete a clinical interview. Preceding the interview, candidates were provided a copy of informed consent for study participation and reviewed the documents with a member of the study. Consent was obtained verbally, electronically, or with a physical signature in accordance with the protocols approved by the institution’s Institutional Review Board. Randomization was stratified by site and followed a computer-generated program that was managed by an off-site staff who was not part of the study. The treatment condition assignment was revealed to the participant at the beginning of the first session of treatment. All measures were clinician administered by assessors blinded to treatment condition and not otherwise involved in the study. Assessments were conducted at five time points (pretreatment, midtreatment, posttreatment, 2-month follow-up, and 4-month follow-up) except for the PTSD diagnostic interview (Clinician-Administered PTSD Scale for *DSM-5* [CAPS-5]), which was not assessed at midtreatment. The study protocol was approved by the VA Institutional Review Board or the University associated with each VA site: VA Palo Alto Health Care System and VA San

Diego Health Care System. The study's design and hypotheses were preregistered (see Trial Registration: NCT03429166).

## Measures

### Life Events

The baseline assessment included an inquiry about the frequency of traumatic events using the Life Events Checklist for the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (LEC-5; Weathers et al., 2013) as well as adverse events in childhood which were measured by the Adverse Childhood Experiences (ACEs; Felitti et al., 1998) Questionnaire. The ACE contains 10 *yes* (1) or *no* (0) items that measure exposure to traumatic (e.g., sexual abuse, physical abuse) and adverse (e.g., parental divorce) events.

### Outcome Measures

The primary outcome was clinician-rated PTSD symptom severity as measured with the CAPS-5 (Weathers et al., 2018) as a test of Hypothesis 1. Following Schnurr et al. (2022), the CAPS-5 was also used to compute additional measures of clinical outcomes: response, loss of diagnosis, and remission. Secondary outcomes for PTSD included the PTSD Checklist for *DSM-5* (PCL-5; Weathers et al., 2018) and the International Trauma Questionnaire for *International Classification of Diseases* (11th rev.; *ICD-11*; ITQ; Cloitre et al., 2018). Additional secondary outcomes related to Hypotheses 2 and 3. The Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983) assessed social support (Hypothesis 2). The Difficulties With Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) assessed emotion regulation problems, the Posttraumatic Maladaptive Beliefs Scale (PMBS; Vogt et al., 2012) maladaptive cognitions, the Beck Depression Inventory–Revised (BDI-II; Beck et al., 1996) depression, and the eight-item Life Activities subscale of the World Health Organization Disability Assessment Schedule (WHODAS-2.0; Üstün et al., 2010) functional impairment (Hypothesis 3). Given their general importance, outcomes regarding alcohol misuse (Alcohol Use Disorders Identification Test [AUDIT-C]; Bradley et al., 2003) and suicidal ideation (Suicidal Behaviors Questionnaire–Revised [SBQ-R]; Osman et al., 2001) were included as exploratory outcomes. Details concerning each measure are provided below.

**CAPS-5 (Weathers et al., 2018).** This is a 20-item clinician-administered interview used to assess *DSM-5* PTSD symptom severity and diagnosis. It is rated on a 5-point Likert scale ranging from 0 = *absent* to 4 = *extreme/incapacitating*. Total PTSD severity scores were determined by summing scores on all 20 items and can range from 0 to 80. Following criteria used in recent PTSD studies (e.g., Schnurr et al., 2022), treatment responder status was defined as a decrease of 10 or more points on the CAPS-5 severity score. Loss of diagnosis was defined as being a treatment responder plus no longer meeting diagnostic criteria for PTSD and a CAPS-5 severity score of less than 25. Remission was defined as loss of diagnosis plus a posttreatment severity score of less than 12 points. CAPS-5 diagnosis and severity scores have shown good reliability and validity in treatment-seeking samples (Weathers et al., 2018).

**PCL-5 (Weathers et al., 2013).** This 20-item self-report measure asks participants to rate items on a scale of 0 (*not at all*) to 4 (*extremely*) how much they have been bothered by each symptom in the past month. Responses were summed to create a total score, with higher scores indicating more severe PTSD symptoms. Cronbach's  $\alpha$  for this sample was 0.92 at baseline and ranged from 0.95 to 0.96 across subsequent assessments.

**ITQ (Cloitre et al., 2018).** This is a reliable and validated 18-item self-report questionnaire that assesses symptoms of *ICD-11* PTSD and complex PTSD. The items are summed and scores range from 0 to 80 with higher scores indicating more severe symptoms. Cronbach's  $\alpha$  for this sample was 0.87 at baseline and ranged from 0.92 to 0.94 across subsequent assessments.

**ISEL (Cohen & Hoberman, 1983).** This 40-item self-report identifies the kinds of social support available to individuals using a Likert scale ranging from 0 = *definitely false* to 3 = *definitely true*. Possible total scores range from 0 to 120, with higher scores representing greater perceived social support. Cronbach's  $\alpha$  for this sample was 0.94 at baseline and ranged from 0.95 to 0.96 across subsequent assessments.

**DERS (Gratz & Roemer, 2004).** This 36-item self-report measure asks participants to rate the frequency of emotion regulation difficulties on a scale of 0 (*almost never*) to 5 (*almost always*). Responses were summed to create a total score with higher scores indicating greater difficulties. Cronbach's  $\alpha$  for this sample was 0.92 at baseline and ranged from 0.82 to 0.87 across subsequent assessments.

**PMBS (Vogt et al., 2012).** This 15-item measure of maladaptive beliefs assesses perceptions related to threat of harm, self-worth and judgment, and reliability and trustworthiness of others. Responses are measured on a 7-point scale from 0 = *not at all* to 6 = *completely true for you*. Higher scores indicate stronger negative beliefs. Cronbach's  $\alpha$  for this sample was 0.83 at baseline and ranged from 0.88 to 0.90 across subsequent assessments.

**BDI-II (Beck et al., 1996).** This widely used measure of depression provides scores ranging from 0 to 63 with 0–13 indicating minimal depression, 14–19 mild, 20–28 moderate, and 29–63 severe depression. Cronbach's  $\alpha$  for this sample was 0.89 and ranged from 0.93 to 0.94 across subsequent assessments.

**WHODAS-2.0 (Üstün et al., 2010).** The eight-item Life Activities subscale (getting household job or schoolwork tasks done) of this measure was used to assess difficulty in completing daily tasks with items rated on a scale of 0 (*none*) to 4 (*extreme or cannot do*). Responses were summed to create a total score, with higher scores indicating greater difficulties. Cronbach's  $\alpha$  for this sample was 0.92 and ranged from 0.93 to 0.95 across subsequent assessments.

**AUDIT-C (Bradley et al., 2003).** This is a three-item screening questionnaire for detecting alcohol misuse that has been validated in veteran samples. Scores on the AUDIT-C range from 0 to 12, with higher scores indicating greater alcohol misuse severity. Among women, scores of 3 or more indicate unhealthy alcohol use and moderate risk for alcohol use disorder.

**SBQ-R (Osman et al., 2001).** The frequency of suicidal ideation was assessed using Item 2 of this measure, which asks in the past year "How often have you thought about killing yourself?" where responses on a 4-point Likert scale ranging from 0 (*never*) to 4 (*very often, almost every day*). The presence of suicidal ideation was defined as a score of 1 or more.

### **Therapist Alliance**

The Working Alliance Inventory–Patient Version (WAI-P; Horvath & Greenberg, 1989) is a 12-item measure that assesses the patient's views regarding three dimensions of the treatment working toward shared goals (goals), attending to appropriate tasks to meet those goals (tasks), and rapport and bond between therapist and client (bond). The WAI-P was collected midtreatment (after Session 5) and at posttreatment. Participants were asked to rate items on a scale of 1 (*never*) to 7 (*always*). Responses were averaged to create a mean score with higher ratings indicating greater working alliance.

### **Treatment Satisfaction**

The Client Satisfaction Questionnaire–8 (CSQ-8; Larsen et al., 1979) is a sum with scores ranging from 8 to 32, with higher scores indicating greater satisfaction. Scores between 8 and 20, 21 and 26, and 27 and 32 can be interpreted as low, medium, and high satisfaction, respectively. Cronbach's  $\alpha$  for this sample was .91.

## **Treatments**

### **STAIR**

STAIR was delivered in this study as a weekly 12-session individual treatment with the first five sessions focused on enhancing emotional awareness, management of emotion, acceptance of positive feelings, and tolerance of negative feelings. The following seven sessions focused on interpersonal problems with goals of identifying maladaptive relationship patterns (e.g., power dynamics, respect for self and others) revising relationship patterns for more effective engagement and positive experiences with others, learning strategies for resolving conflict, identifying opportunities for increasing intimacy and closeness, and a final session assessing achievements and next steps and providing exercises to support compassion for self and others (Cloitre et al., 2020). STAIR included between-session work consisting of daily practice of skills related to session work and monitoring of life events in worksheets.

### **PCT**

PCT highlights common factors of treatment (e.g., a supportive and confiding relationship with the therapist) and includes components of psychoeducation about PTSD and associated features (Sessions 1 and 2) followed by sessions discussing topics initiated by the client with the clinician utilizing active listening, reflection, and informal problem solving (Shea et al., 2020). The number and length of the sessions are adapted to be compatible with the treatment being studied. The treatment included between-session work consisting of completing a daily diary to track day-to-day activities.

### **Supervision, Therapists, and Treatment Fidelity**

Therapists delivered both treatments. They received weekly supervision by clinicians who were experts in STAIR ( ) and PCT ( ) but who were not otherwise involved in the study. Treatment therapists in this study (three master's-level and five doctoral-level clinicians) had not previously received formal training in either

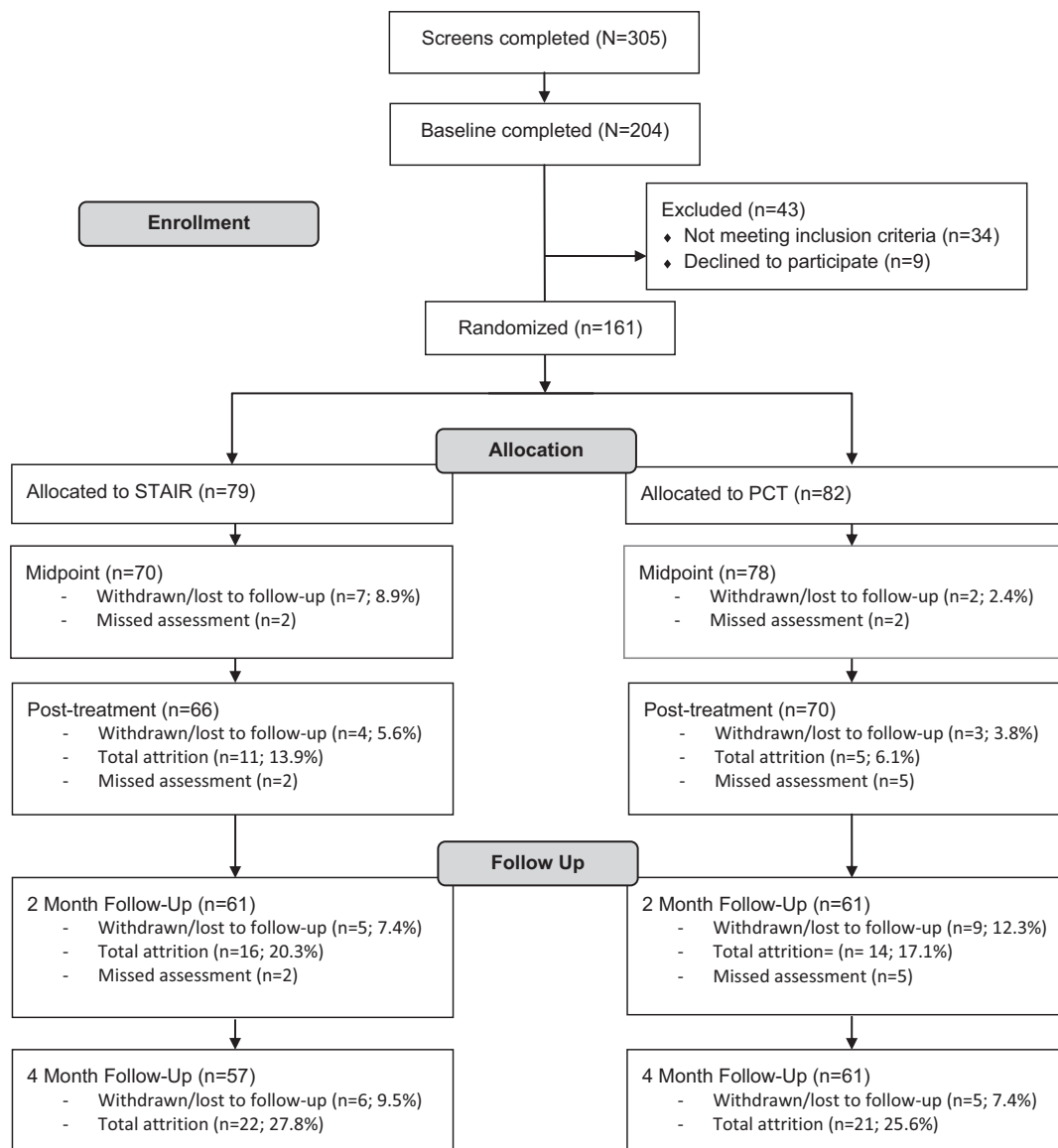
treatment and were trained to fidelity in both STAIR and PCT. All STAIR and PCT sessions were digitally recorded, encrypted, and stored at a secure AudioShare site. A random subset of 10% of tapes from each treatment condition was selected for adherence review. Each tape was rated by two master's-level clinicians trained in the rating protocols for STAIR and PCT. Therapists were adherent to the treatment manuals across the two treatment conditions as measured by the total number of required elements delivered across all sessions (STAIR = 95.04%; PCT = 99.8%). Furthermore, the avoidance of proscribed elements (e.g., processing of trauma memories) in each treatment condition was successful with 99.1% adherence in STAIR and 97.8% in PCT.

### **Data Analysis**

Preliminary analyses included screening for normality, missingness, and equivalence of random assignment. Skewness (–0.49 to 1.03) and kurtosis (–0.88 to 0.32) were within acceptable ranges for all outcome variables. There were no missing data at baseline. Rates of missing data on one or more assessments for postbaseline time points ranged from 14% at midpoint to 30% at 4-month follow-up, with no significant differences between treatment groups. See Figure 1 (Consolidated Standards of Reporting Trials chart) for additional details. The study sample consisted of 161 eligible women veterans randomized into STAIR ( $n = 79$ ) or PCT ( $n = 82$ ). Independent-samples  $t$  tests and chi-square tests of independence were conducted to determine the presence of any significant baseline differences for individuals assigned to STAIR versus PCT. Key baseline characteristics were also examined as predictors of missingness. Baseline characteristics that differed by treatment condition or were associated with missingness were used as covariates in the primary analyses. Missing data were handled using restricted maximum likelihood estimation, which uses the available information from all participants to estimate model parameters and assumes data are missing at random. Analyses were performed according to intention-to-treat principles. The analyses were conducted on all participants, and individuals who did not complete treatment were still contacted to complete subsequent assessments.

To examine whether treatment condition predicted change in outcome variables, piecewise mixed-effects regression models were estimated in R using package lme4. One slope estimated change during the treatment period, and a second slope estimated change from posttreatment through 4-month follow-up in order to assess maintenance of treatment gains. In addition, each model included fixed effects for site and the covariates identified through preliminary analyses (i.e., age, ethnicity, sexual orientation, and COVID-19 pandemic status), and a random intercept was used to account for variability in outcome severity across participants. The COVID-19 pandemic status covariate was created by cross-referencing the date of each assessment with the date that the state of emergency was declared (March 4, 2020). Interactions between time and treatment condition were the main parameters of interest to test our hypotheses. All available assessments were used in these models. Between-group effect sizes for each outcome were calculated by dividing fixed effect coefficients for the Condition  $\times$  Time interactions by the raw baseline standard deviation, and within-group effect sizes were calculated for each outcome and condition by dividing the main effects for time by the baseline standard deviation under alternative

**Figure 1**  
CONSORT Chart: Participant Flow



*Note.* STAIR = Skills Training in Affective and Interpersonal Regulation; PCT = present-centered therapy; CONSORT = Consolidated Standards of Reporting Trials.

codings for the condition variable. A similar model using logistic mixed-effects regression was specified to examine change in odds of suicidal ideation and alcohol misuse (present vs. absent) between baseline and each follow-up time point by treatment condition.

To examine differences in treatment response, loss of diagnosis, and remission across treatment groups, repeated measures logistic regressions were fitted with restricted maximum likelihood estimation using the MASS package in R with time, treatment group, and the interaction specified as fixed effects. These models included site as a covariate, a random intercept, and an autoregressive (AR1) error term. In these models, the main effect of treatment condition reflected the overall effect of treatment across all outcome assessments (see Schnurr et al., 2022), posttreatment

2-month and 4-month follow-ups with PCT as the reference category. The benefits of this approach include increased statistical power and reduced bias. Finally, differences between treatment groups on process variables (i.e., working alliance and client satisfaction), treatment completion, and engagement in external treatments were examined using independent-samples *t* tests and chi-square tests of independence.

### Data Transparency Statement

The material has not been published in whole or in part elsewhere. The article is not currently being considered for publication elsewhere. The data set for the present study is not

publicly available. Study data and materials (e.g., manuals) are available from Marylene Cloitre.

## Results

### Baseline Comparisons

Table 1 shows the demographic and clinical characteristics of the sample along with baseline study variables. There was a significant difference in the distribution of sexual orientation and ethnicity between treatment groups. No other significant baseline

differences were found. The sample reported 8.50 lifetime traumatic events on average based on the LEC-5 with the most frequently endorsed events after MST being physical assault (85.7%), transportation accident (80.1%), and sudden unexpected death of someone close to them (72.7%). Combat or exposure to a war zone was reported by 28.0% of the sample. The average number of ACEs was 4.81. The most common ACE was emotional abuse (70.8%) followed by physical abuse (58.4%) and living with someone who was a problem drinker/alcoholic (55.9%). The frequency of childhood sexual abuse was 54.7%. The percentage of participants with a *DSM-5* diagnosis was 85.7%. There were

**Table 1**  
*Sociodemographics, Clinical Characteristics, and Baseline Measures by Treatment Condition*

Variable	STAIR ( <i>n</i> = 79)	PCT ( <i>n</i> = 82)	<i>p</i> value
Age	44.84 (12.97)	44.22 (12.94)	.763
Gender, <i>N</i> (%)			
Woman	78 (98.7%)	82 (100%)	.307
Transgender male to female	1 (1.3%)	0 (0%)	
Sexual orientation, <i>N</i> (%)			
Straight/heterosexual	69 (87.3%)	65 (79.3%)	.017
Bisexual	1 (1.3%)	11 (13.4%)	
Gay/lesbian	7 (8.9%)	3 (3.7%)	
Other	2 (2.5%)	3 (3.7%)	
Race, <i>N</i> (%)			
American Indian or Alaskan Native	9 (11.4%)	6 (7.3%)	.374
Asian	5 (6.3%)	7 (8.5%)	.594
Black/African American	17 (21.5%)	17 (20.7%)	.903
Native Hawaiian or Pacific Islander	2 (2.5%)	4 (4.9%)	.432
Latino(a)	16 (20.3%)	9 (11.0%)	.104
White/Caucasian	45 (57.0%)	49 (59.8%)	.719
Middle Eastern or North African	1 (1.3%)	1 (1.2%)	.979
Other	3 (3.8%)	3 (3.7%)	.963
Ethnicity, <i>N</i> (%)			
Hispanic	26 (32.9%)	14 (17.1%)	.020
Non-Hispanic	53 (67.1%)	68 (82.9%)	
	Sample characteristics		
Childhood trauma (ACEs)	4.89 (2.82)	4.74 (2.43)	.732
Lifetime trauma (LEC-5)	8.27 (2.69)	8.74 (2.95)	.294
Psychotropic medication	37 (46.8%)	32 (39.0%)	.317
Other psychotherapy	15 (19.0%)	21 (25.6%)	.313
	Baseline outcomes		
PTSD symptoms			
CAPS-5	41.74 (11.88)	43.06 (11.43)	.476
Met criteria for <i>DSM-5</i> PTSD, <i>N</i> (%)	66 (85.7%)	72 (87.8%)	.697
PCL-5	51.75 (15.12)	52.52 (15.29)	.746
ICD-11 ITQ	31.37 (8.60)	31.51 (8.78)	.916
Social support (ISEL)	63.80 (22.96)	60.73 (21.26)	.380
Emotion regulation (DERS)	104.91 (22.10)	106.72 (21.45)	.599
Depression (BDI-II)	33.27 (10.59)	33.28 (10.83)	.993
Negative cognitions trauma beliefs (PMBS)	46.73 (13.15)	48.44 (14.56)	.438
WHODAS Life Activities	17.70 (8.15)	17.83 (8.05)	.917
Alcohol use (AUDIT-C) $\geq 3$	26 (32.9%)	20 (24.4%)	.232
Suicidal ideation, <i>N</i> (%)	35 (44.3%)	40 (48.8%)	.631

*Note.* All descriptive statistics are formatted (*M*, *SD*) unless otherwise specified. All *p* values are from *t* tests (*M*, *SD*) or chi-squared tests (*N*, %). STAIR = Skills Training in Affective and Interpersonal Regulation; PCT = present-centered therapy; ACEs = Adverse Childhood Experiences; LEC-5 = Life Events Checklist for the *DSM-5*; *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition; PTSD = posttraumatic stress disorder; CAPS-5 = Clinician-Administered PTSD Scale for *DSM-5*; PCL-5 = Posttraumatic Stress Checklist for *DSM-5*; ICD-11 ITQ = *International Classification of Diseases* International Trauma Questionnaire; ISEL = Interpersonal Support Evaluation List; DERS = Difficulties With Emotion Regulation Scale; BDI-II = Beck Depression Inventory revised; PMBS = Posttraumatic Maladaptive Beliefs Scale; WHODAS = World Health Organization Disability Assessment Schedule; AUDIT-C = Alcohol Use Disorders Identification Test.

no differences in the percentage of participants who were currently receiving psychotropic medication or engaged in other psychotherapies (e.g., supportive therapy, cognitive behavioral therapy for insomnia).

## PTSD Outcomes

### CAPS-5 Symptom Severity

For the primary outcome of CAPS-5 symptom severity (see Table 2 and Supplemental Figure S2), individuals in both treatment conditions showed significant improvement throughout the treatment period, and there was a significant interaction effect of condition and time ( $estimate = -4.50$ ,  $SE = 2.04$ ,  $p = .028$ ,  $d = 0.39$ ), indicating significantly greater reductions in PTSD symptoms among individuals in the STAIR condition. There was no evidence of significant change from posttreatment to 4-month follow-up for individuals in either treatment condition.

### Response, Loss of Diagnosis, and Remission

Among individuals meeting the criteria for a DSM-5 PTSD diagnosis, those in the STAIR condition showed significantly better treatment response. Those in STAIR also received greater benefits regarding loss of diagnosis defined two ways: (a) response plus no longer meeting DSM-5, as well as the more stringent definition of (b) response plus no longer meeting DSM-5 symptom criteria diagnosis and severity less than 25. The percentage of participants experiencing remission was small and did not differ between the two conditions (see Table 3).

### PCL-5 and ITQ

Significant change was observed in both conditions across the treatment period on the PCL-5. However, the interaction between time and condition was not significant ( $estimate = -4.22$ ,  $SE = 2.27$ ,  $p = .063$ ,  $d = 0.28$ ). Of note, there was a significant increase in PTSD symptoms as measured by the PCL-5 during the follow-up period for individuals in the PCT condition ( $estimate = 3.85$ ,  $SE = 1.26$ ,  $p = .021$ ,  $d = 0.25$ ), but not the STAIR condition. Finally, the ITQ model showed overall improvement in both conditions across the treatment period with a significant interaction effect ( $estimate = -3.26$ ,  $SE = 1.26$ ,  $p = .010$ ,  $d = 0.38$ ) indicating greater symptom reduction for individuals in the STAIR condition. There was no evidence of significant change over the follow-up period for individuals in either condition.

**Social Support (ISEL).** During the treatment period, there was a significant interaction effect ( $estimate = 5.43$ ,  $SE = 2.68$ ,  $p = .043$ ,  $d = 0.25$ ) indicating greater increases in social support among individuals in the STAIR condition relative to the PCT condition. Improvement in social support during treatment was statistically significant for the STAIR condition ( $estimate = 8.28$ ,  $SE = 1.96$ ,  $p < .001$ ,  $d = 0.36$ ) but not the PCT condition ( $estimate = 2.85$ ,  $SE = 1.87$ ,  $p = .127$ ,  $d = 0.13$ ). There was no evidence of significant change over the follow-up period.

**Emotion Regulation Problems (DERS).** Significant improvements in emotion regulation were observed in both conditions during the treatment period. STAIR outperformed PCT as evidenced by the interaction effect ( $estimate = -8.99$ ,  $SE = 3.20$ ,  $p = .005$ ,

$d = 0.41$ ). There was no evidence of significant change over the follow-up period.

**Depression (BDI-II).** Significant improvements in depression were seen in both conditions during the treatment period. STAIR outperformed PCT as evidenced by the Time  $\times$  Condition interaction effect ( $estimate = -4.38$ ,  $SE = 1.60$ ,  $p = .006$ ,  $d = 0.41$ ). There was no evidence of significant change over the follow-up period.

**Maladaptive Cognitions (PMBS).** Significant improvements in maladaptive cognitions were observed for both conditions during the treatment period. There was a significant interaction effect ( $estimate = -4.15$ ,  $SE = 1.73$ ,  $p = .017$ ,  $d = 0.30$ ), indicating greater decreases in maladaptive cognitions among individuals in the STAIR condition. There was no evidence of significant change over the follow-up period.

**Functional Impairment (WHODAS-2.0 Life Activities).** Significant decreases in functional impairment were seen in both conditions during the treatment period. There was no significant interaction effect ( $estimate = -0.37$ ,  $SE = 1.14$ ,  $p = .748$ ,  $d = 0.05$ ), indicating comparable improvement across groups. There were no significant changes across the follow-up period.

**Alcohol Misuse (AUDIT-C).** Changes in alcohol misuse were examined as part of the exploratory analyses. Significant interactions between time and condition occurred at midpoint ( $OR = 0.03$ ,  $p = .004$ ), posttreatment ( $OR = 0.06$ ,  $p = .034$ ), and 2-month follow-up ( $OR = 0.06$ ,  $p = .047$ ), but not at 4-month follow-up. All significant interaction effects reflected that individuals in the STAIR condition experienced significantly greater reductions in the odds of alcohol misuse compared to those in PCT.

**Suicidal Ideation (SBQ-R).** Significantly reduced odds of endorsing suicidal ideation were seen across both conditions. Interactions between time and condition were not statistically significant. The time course of change in suicidality for each treatment was explored. In the STAIR condition, participants showed significantly reduced odds of suicidal ideation starting at midpoint (25.8%;  $OR = 0.22$ ,  $p = .004$ ), continued through posttreatment (27.9%;  $OR = 0.32$ ,  $p = .028$ ), 2-month follow-up (23.2%;  $OR = 0.17$ ,  $p = .002$ ), and 4-month follow-up (23.1%;  $OR = 0.21$ ,  $p = .006$ ). In the PCT condition, the odds of suicidal ideation significantly decreased at the 2-month follow-up (28.1%;  $OR = 0.26$ ,  $p = .019$ ) and 4-month follow-up (31.7%;  $OR = 0.32$ ,  $p = .037$ ).

## Treatment Characteristics and Process Measures

See Table 4 for treatment characteristics by condition. Preferences for the type of treatment delivery were assessed and indicated that a substantial majority of participants in both treatment conditions endorsed home-based virtually delivered treatment. Overall, treatment dropout was low with no differences between the treatments (STAIR 19.0%, PCT 12.2%,  $\chi^2 = 1.42$ ,  $p = .234$ ). The veterans' perception of the working alliance as measured by the WAI-P was high and equally so in both conditions, at midtreatment (STAIR  $M = 6.27$ , PCT  $M = 6.15$ ,  $t = -1.00$ ,  $p = .320$ ) and at posttreatment (STAIR  $M = 6.43$ , PCT  $M = 6.36$ ,  $t = -0.56$ ,  $p = .577$ ). Satisfaction, as measured by the CSQ-8, was also high and did not differ by treatment condition (STAIR  $M = 28.90$ , PCT  $M = 28.65$ ,  $t = -0.38$ ,  $p = .703$ ). Participants were allowed to engage in additional interventions during the course of treatment as long as the



**Table 2**  
*Outcomes as a Function of Treatment Group*

Measure	Condition	Pre- to posttreatment				Posttreatment to 4-month follow-up							
		Time slope		Condition × Time Slope		Time slope		Condition × Time Slope					
		Estimate	SE	d [95% CI]	Estimate	SE	Estimate	SE	Estimate	SE	d [95% CI]		
CAPS-5	STAIR	-13.34	1.49	1.12 [0.87, 1.37]***	-4.50	2.04	0.39 [0.05, 0.73]*	2.20	1.68	0.19 [0.00, 0.47]	2.11	2.31	0.18 [0.00, 0.57]
	PCT	-8.93	1.42	0.78 [0.54, 1.02]***				0.10	1.58	0.01 [0.00, 0.28]			
PCL-5	STAIR	-18.70	1.66	1.24 [1.02, 1.46]***	-4.22	2.27	0.28 [0.00, 0.57]	3.08	1.77	0.20 [0.00, 0.43]	-0.77	2.43	0.05 [0.00, 0.36]
	PCT	-14.48	1.57	0.95 [0.75, 1.15]***				3.85	1.66	0.25 [0.04, 0.46]*			
ITQ	STAIR	-11.50	0.92	1.34 [1.13, 1.55]***	-3.26	1.26	0.38 [0.10, 0.66]*	1.53	1.03	0.18 [0.00, 0.41]	0.42	1.41	0.05 [0.00, 0.37]
	PCT	-8.24	0.88	0.94 [0.74, 1.14]***				1.10	0.97	0.22 [0.00, 0.35]			
ISEL	STAIR	8.28	1.96	0.36 [0.19, 0.53]***	5.43	2.68	0.25 [0.01, 0.49]*	-3.58	2.09	0.16 [0.00, 0.34]	-2.91	2.87	0.13 [0.00, 0.38]
	PCT	2.85	1.87	0.13 [0.00, 0.29]				-0.67	1.97	0.03 [0.00, 0.21]			
DERS	STAIR	-21.05	2.33	0.95 [0.74, 1.16]***	-8.99	3.20	0.41 [0.12, 0.70]**	-1.19	2.52	0.05 [0.00, 0.27]	-1.54	3.47	0.07 [0.00, 0.38]
	PCT	-12.06	2.24	0.56 [0.36, 0.76]***				0.35	2.39	0.02 [0.00, 0.24]			
BDI-II	STAIR	-12.46	1.17	1.18 [0.96, 1.40]***	-4.38	1.60	0.41 [0.12, 0.70]**	1.47	1.27	0.14 [0.00, 0.37]	0.86	1.74	0.08 [0.00, 0.40]
	PCT	-8.07	1.11	0.75 [0.55, 0.95]***				0.61	1.19	0.06 [0.00, 0.28]			
PMBS	STAIR	-10.10	1.27	0.77 [0.58, 0.96]***	-4.15	1.73	0.30 [0.06, 0.54]*	1.45	1.35	0.11 [0.00, 0.31]	1.73	1.85	0.12 [0.00, 0.38]
	PCT	-5.95	1.21	0.41 [0.25, 0.57]***				-0.28	1.27	0.02 [0.00, 0.19]			
WHODAS	STAIR	-3.62	0.83	0.44 [0.24, 0.64]***	-0.37	1.14	0.05 [0.00, 0.33]	0.70	0.89	0.09 [0.00, 0.30]	-0.25	1.22	0.03 [0.00, 0.33]
	PCT	-3.26	0.79	0.40 [0.21, 0.59]***				0.96	0.84	0.12 [0.00, 0.32]			

*Note.* Condition × Time interaction effects are based on coding PCT as the reference group (PCT = 0; STAIR = 1). SE = standard error; CI = confidence interval; STAIR = Skills Training in Affective and Interpersonal Regulation; PCT = present-centered therapy; CAPS-5 = Clinician-Administered PTSD Scale for DSM-5; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition; PCL-5 = Posttraumatic Stress Checklist for DSM-5; ITQ = International Trauma Questionnaire; ISEL = Interpersonal Support Evaluation List; DERS = Difficulties With Emotion Regulation Scale; PMBS = Posttraumatic Maladaptive Beliefs Scale; BDI-II = Beck Depression Inventory-Revised; WHODAS = World Health Organization Disability Assessment Schedule Life Activities subscale; PTSD = posttraumatic stress disorder.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 3**  
**Recovery, Loss of Diagnoses, and Remission Among Participants With DSM-5 Diagnosis**

Outcome	Overall treatment effect, OR [95% CI]	n (%)					
		Posttreatment		2-month		4-month	
		STAIR (n = 52)	PCT (n = 57)	STAIR (n = 51)	PCT (n = 49)	STAIR (n = 45)	PCT (n = 49)
Response	2.11 [1.13, 3.92]*	33 (63.5%)	27 (47.4%)	31 (60.8%)	20 (40.8%)	29 (64.4%)	23 (46.9%)
Loss of diagnosis <sup>a</sup>	3.86 [1.48, 10.06]*	24 (46.2%)	14 (24.6%)	21 (41.2%)	10 (20.4%)	19 (42.2%)	14 (28.6%)
Loss of diagnosis <sup>b</sup>	4.61 [1.23, 17.28]*	22 (42.3%)	12 (21.1%)	19 (37.3%)	12 (24.5%)	16 (35.6%)	11 (22.4%)
Remission <sup>a</sup>	2.77 [0.75, 10.14]	9 (17.3%)	5 (8.8%)	7 (13.7%)	4 (8.2%)	7 (15.6%)	4 (8.2%)

Note. ORs were calculated with PCT as the reference group and reflect the overall main effect of treatment across all outcome assessments (posttreatment, 2-month, and 4-month). Response is defined as an improvement of at least 10 points in severity for individuals who met DSM-5 symptom criteria at baseline. CI = confidence interval; OR = odds ratio; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition; STAIR = Skills Training in Affective and Interpersonal Regulation; PCT = present-centered therapy.

<sup>a</sup> Loss of diagnosis is defined as response plus no longer meeting DSM-5 criteria at baseline. <sup>b</sup> Loss of diagnosis is defined as response plus no longer meeting DSM-5 symptom criteria and severity less than 25 for individuals who met DSM-5 criteria at baseline. Remission is defined as loss of diagnosis according to DSM-5 symptom criteria plus severity less than 12 for individuals who met DSM-5 criteria at baseline.

\*  $p < .05$ .

intervention was not trauma-focused and after treatment ended if clinical need was indicated. A greater number of PCT than STAIR participants engaged in additional psychotherapies (STAIR = 6.3%, PCT = 25.6%,  $\chi^2 = 11.05$ ,  $p < .001$ ). There was no significant difference for changes in medication usage (STAIR = 11.4%, PCT = 14.6%,  $\chi^2 = 0.37$ ,  $p = .541$ ).

## Safety

There were no serious adverse events attributable or possibly attributable to treatment. There were four events of imminent suicidal behavior (one in STAIR, three in PCT) and one arrest due to disruptive behavior related to a panic attack (PCT). No participants were withdrawn from the study for reasons related to suicidality or other mental health reasons. There were three hospitalizations and four visits to the emergency department for physical health reasons, none of which led to withdrawal from the study. Worsening PTSD symptoms, defined as an increase in CAPS-5 score of 10 or more points from pre- to posttreatment, did not differ between treatment conditions, STAIR:  $n = 3$  (5.1%) vs. PCT:  $n = 3$  (4.5%).

## Discussion

Evaluation of the mental health concerns and psychosocial needs of women veterans who have experienced MST has been ongoing for almost 25 years while research on interventions addressing these needs has been extremely limited. This is the first study to assess a skills-focused, CBT dedicated to this population. Consistent with hypotheses, STAIR was superior to PCT in reducing CAPS-5 PTSD symptom severity as well as in improving social support, emotion regulation, depression, and maladaptive cognitions. As compared to PCT, a smaller number of lower number of participants in STAIR began additional therapies, suggesting that STAIR may be more efficient and economical than PCT. Dropout rates were low and did not differ significantly (STAIR = 19.0% and PCT = 12.5%). Client satisfaction with treatment was high for both treatments and equally so. Compared to PCT, individuals receiving STAIR were less likely to engage in other therapies, suggesting that STAIR may be more efficient and economical.

The pre-to-post effect size for the CAPS-5 was large for STAIR ( $d = 1.12$ ) and moderate to large for PCT ( $d = 0.78$ ). The latter effect size is similar to two previous studies in which PCT was delivered to veterans in an individual modality where pre-to-post effect sizes were reported as  $d = 0.62$  for a female sample (see Belsher et al., 2019) and  $d = 0.80$  for an MST sample consisting predominantly of women (Surís et al., 2013). As a pragmatic trial, inclusion criteria regarding PTSD followed those that are relevant to clinical operations. In VA, individuals who screen positive for PTSD are offered treatment, and hence individuals with positive screens defined our PTSD inclusion criterion. Nevertheless, the majority of participants met DSM-5 criteria at baseline. Individuals who met the criteria for PTSD were 3–4 times more likely to resolve the disorder when they received STAIR as compared to PCT.

Differences in the PCL-5 self-report symptoms were close to but did not reach significance ( $p = .06$ ). This might reflect greater individual variability in self-reported PTSD symptoms and/or the possibility that the PCL-5 incorporates a dimension of general distress associated with trauma exposure as compared to the CAPS-5. In contrast, significant differences in the ITQ were found between

**Table 4**  
*Treatment Characteristics by Condition*

Variable	STAIR ( <i>n</i> = 79)	PCT ( <i>n</i> = 82)	<i>p</i> value
Treatment preference, <i>n</i> (%)			
STAIR	43 (54.4%)	47 (57.3%)	.780
PCT	35 (44.3%)	35 (42.7%)	
Delivery preference, <i>n</i> (%)			
Traditional	13 (15.1%)	20 (22.7%)	.146
Clinic to clinic telehealth	0 (0.0%)	2 (2.3%)	
Home-based telehealth	66 (76.7%)	59 (67.0%)	
WAI-P (Session 5/mid-treatment)	6.27 (0.77)	6.15 (0.75)	.320
WAI-P (Session 10/post-treatment)	6.43 (0.73)	6.36 (0.62)	.577
CSQ-8	28.90 (3.85)	28.65 (3.66)	.703
Treatment completion, <i>n</i> (%)	64 (81.0%)	72 (87.8%)	.234
Study completion, <i>n</i> (%)	48 (60.8%)	53 (64.6%)	.611

*Note.* All descriptive statistics are formatted (*M*, *SD*) unless otherwise specified. All *p* values are from *t* tests (*M*, *SD*) or chi-squared tests (*N*, %). STAIR = Skills Training in Affective and Interpersonal Regulation; PCT = present-centered therapy; WAI-P = Working Alliance Inventory–Patient Version; CSQ-8 = Client Satisfaction Questionnaire eight-item version.

the two treatment conditions indicating STAIR might be a superior treatment for *ICD-11* formulations of PTSD and complex PTSD (Cloitre, 2020).

An important study goal was to evaluate the benefits of STAIR for improving social support, a key concern among women veterans with MST. In STAIR, therapist and client explore social support needs and tailor behavioral interventions to the individual with the goal of improving social engagement efforts and openness to others. Consistent with hypotheses, STAIR provided increases in social support as compared to PCT, which did not provide any improvement in social support with scores remaining the same at pre- and post-treatment. The hypothesized reciprocal relationship between PTSD and social support has been part of the motivation for the development of couples therapy for individuals with PTSD such as brief cognitive behavioral conjoint therapy, which has demonstrated effectiveness in reducing PTSD symptoms without trauma memory processing (Morland et al., 2022). STAIR provides a similar outcome but in an individual therapy format, which is of benefit to veterans who are not in committed relationships or do not want a partner as part of their treatment work. Social support has been associated with reduced risk for suicidal ideation and suicide attempts (Coppersmith et al., 2019), suggesting that enhancing social support may be an important protective factor in the management of suicide risk among MST survivors and other at-risk populations.

The greater improvement provided by STAIR regarding emotion regulation and depression may be due to the treatment's focus on improving emotion regulation that includes not only downregulation interventions (such as focused breathing and emotion surfing) but also upregulation interventions similar to behavioral activation strategies, which are known to be effective for depression. Change in trauma-related cognitions as measured by the PMBS was greater in STAIR than in PCT. The second half of STAIR includes an articulation of beliefs about relationships (e.g., power dynamics, respect for self and others), a reappraisal of these beliefs, and

behavioral exercises to explore and test proposed alternative beliefs, which may have influenced changes in cognitions.

The hypothesis that STAIR would be superior to PCT in improving psychosocial functioning was not supported. Both therapies were equally successful in improving functioning but only moderately so (STAIR = 0.44 vs. PCT = 0.40). Previous studies of STAIR have found relatively large pre-to-post effect sizes ranging from  $d = 0.81$  to  $1.41$  (Jain et al., 2020; B. J. Weiss et al., 2018), while the impact of PCT on functioning at least as measured by the quality of life has been more limited (e.g., Cohen's  $d = 0.05$ ; Schnurr et al., 2007). The current PCT protocol (Shea et al., 2020) includes a focus on problem solving in contrast to earlier versions, and this change may contribute to increasing the benefits of PCT regarding psychosocial functioning. Nevertheless, the improvements provided in both treatments were somewhat modest. These outcomes may have been influenced by the fact that much of the study occurred during the early days of the COVID-19 epidemic which could have restricted opportunities for growth and improvement in work, school, and even home functioning.

Exploratory analyses were conducted regarding alcohol misuse and suicidal ideation. Assessment of alcohol misuse at each time point relative to baseline indicated that participants in STAIR showed significantly greater reduced odds of alcohol misuse relative to PCT at most time points (i.e., all except for 4-month follow-up). Assessment of suicide ideation indicated that both treatments provided substantial and equal reduction. However, an investigation of the timeline for each condition indicated that this change occurred earlier in the STAIR (6 weeks into the treatment protocol), immediately after the emotion regulation sessions as compared to PCT (at a 2-month follow-up). While these analyses are exploratory, they are consistent with literature indicating that emotion regulation difficulties contribute to risk for substance use (N. H. Weiss et al., 2022) and suicidality (Raudales et al., 2020) and improvement in emotion regulation capacities may reduce these risks. More rigorous investigation is warranted regarding the potential benefits of STAIR in risk reduction for substance abuse and suicidality.

Both STAIR and PCT were associated with high ratings of therapeutic alliance, high ratings of client satisfaction, low-dropout rates, low adverse events, and very few people with symptom worsening. The majority of participants reported preferring HBT treatment delivery as opposed to either face-to-face or clinic-to-clinic service. The substantial preference for HBT in this sample may be biased due to participant self-selection into a telehealth trial, thus further research is needed to identify how preferences may differ among various clinical populations and match patients accordingly. Increasing the availability of HBT may lead to greater treatment engagement. In addition, women veterans have reported sexual harassment at VA facilities, which has been associated with reduced engagement in care (Morland et al., 2019); HBT eliminates this concern.

This study was a pragmatic trial and has strengths in terms of external validity. However, this approach also results in some limitations such as the absence of clinician-administered assessments of diagnoses other than PTSD. Thus, the presence of additional disorders and the heterogeneity of the additional disorders are unknown. The presence of PTSD as the only inclusion criteria generates a focus on PTSD symptoms as the primary problem and limits generalizations about the benefits of STAIR to patient populations who experience two or more equally severe comorbidities

such as PTSD and depression, PTSD and anxiety, or PTSD and substance use. Studies investigating the impact of STAIR on these comorbidities are needed. Individuals with alcohol or substance abuse disorders were excluded from the study. The inclusion of STAIR as part of programming for individuals with diagnostic level alcohol use disorder/substance use disorder needs to be tested. The study was limited to women who have experienced MST. However, attention to men who have experienced MST is critical and ongoing (e.g., Yahalom et al., 2022). The same therapists provided treatment in both conditions, which, while the preferred strategy in relatively small clinical trials (Schnurr, 2007), can still yield therapists with stronger skills and preferences for one rather than another therapy. We addressed this risk by including therapists who had not been formally trained in either STAIR or PCT previous to their participation in the study, providing weekly supervision by experts in each treatment throughout the life of the study, and rigorously assessing clinician adherence as well as participants' experience of the therapeutic alliance both of which were found to be equivalent across the treatment conditions.

The follow-up period was relatively brief (4 months), and future studies are needed to determine whether reductions in PTSD and other symptoms are maintained. There have been no studies investigating specific mechanisms of action for PCT, although some have been proposed such as a sense of mastery and interpersonal connection (Belsher et al., 2019), mechanisms similar to those considered for STAIR. Identification of the underlying mechanisms of change contributing to the success of these treatments in reducing PTSD without directly addressing trauma memories is of significant interest and an important next step.

In conclusion, the study demonstrates that STAIR, a transdiagnostic treatment, provided superior outcomes relative to PCT related to a range of key outcomes relevant to the MST population including not only PTSD symptom reduction but also improvements in social support, emotion regulation depression, and maladaptive cognitions. STAIR is directly responsive to and provides effective relief from a range of social-emotional difficulties that have been identified by women who have experienced MST. The availability of evidence-based mental health programs that address a range of identified patient needs is an important and integral component to mental health services for trauma-exposed populations. Investigations delivering STAIR to populations whose traumas incorporate concerns that extend beyond PTSD (e.g., refugees) are warranted. Last, both STAIR and PCT delivered substantial reductions in PTSD symptoms and offer alternative, accessible, and well-liked treatment options for those who do not wish to receive TF-CBT and hold the promise of increasing engagement into mental health care among those with significant need.

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