Received: 18 December 2020 | Revised: 22 December 2021 | Accepted: 9 January 2022

DOI: 10.1002/jts.22812

ISTSS International Society for Traumatic Stress Studies WILEY

RESEARCH ARTICLE

Evidence-based posttraumatic stress disorder treatment in a community sample: Military-affiliated versus civilian patient outcomes

Vanessa M. Jacoby[1] | **Casey L. Straud**[1,2,3] | **Jenna M. Bagley**[4] | **Hannah Tyler**[1] | **Shelby N. Baker**[5] | **Anna Denejkina**[6] | **Lauren M. Sippel**[7,8] | **Robert Kaya**[1] | **David C. Rozek**[5] | **Brooke A. Fina**[1] | **Katherine A. Dondanville**[1] | **for the STRONG STAR Training Initiative**[1]

[1]Department of Psychiatry and Behavioral Sciences, University of Texas Health Science Center at San Antonio, San Antonio, Texas, USA

[2]Department of Psychology, University of Texas at San Antonio, San Antonio, Texas, USA

[3]Research and Development Service, South Texas Veterans Health Care System, San Antonio, Texas, USA

[4]Department of Psychological Sciences, Case Western Reserve University, Cleveland, Ohio, USA

[5]UCF RESTORES & Department of Psychology, University of Central Florida, Florida, Orlando, USA

[6]Graduate Research School, Western Sydney University, South Penrith, Australia

[7]National Center for Posttraumatic Stress Disorder, White River Junction, Vermont, USA

[8]Geisel School of Medicine at Dartmouth, Department of Psychiatry, Hanover, New Hampshire, USA

Correspondence
Vanessa Jacoby, Department of Psychiatry, University of Texas Health Science Center at San Antonio, 7550 Interstate 10 West, Suite 1325, San Antonio, TX 78229.
Email: JacobyV@uthscsa.edu

The authors report no conflicts of interest. The views expressed herein are solely those of the authors and do not reflect an endorsement by or the official policy or position of the Department of Veterans Affairs or the U.S. Government. Funding for this work was made possible by the Bob Woodruff Foundation.

We would like to thank the mental health providers and their organizations for their enthusiastic engagement in this project and the important care they provide every day to veteran and non-veteran trauma survivors. We would also like to thank Margaret Harrell, Samuel Holmes, and Emily Bader of the Bob Woodruff Foundation for their support, mentorship, and vision. The authors additionally thank Julie Collins and Joel Williams, who provided editorial support for this

Abstract

Posttraumatic stress disorder (PTSD) is a significant mental health issue among military service members and veterans. Although the U.S. Department of Veterans Affairs (VA) provides crucial resources for behavioral health care, many veterans seek mental health services through community clinics. Previous research illustrates that military and veteran patients benefit less from evidence-based treatments (EBTs) for PTSD than civilians. However, most PTSD treatment outcome research on military and veteran populations is conducted in VA or military settings. Little is known about outcomes among military-affiliated patients in community settings. The primary aim of this study was to directly compare civilian versus military-affiliated patient outcomes on PTSD and depression symptoms using the PTSD Checklist for *DSM-5* (PCL-5) and the nine-item Patient Health Questionnaire (PHQ-9) in a community setting. Participants (N = 502) included military-affiliated (veteran, Guard/Reservist, active duty) and civilian patients who engaged in cognitive processing therapy (CPT) or prolonged exposure (PE) for PTSD in community clinics. Both groups demonstrated significant reductions on the PCL-5, military-affiliated: d = −0.91, civilian: d = -1.18; and PHQ-9, military-affiliated: d = -0.65, civilian: d = -0.88, following treatment. However, military-affiliated patients demonstrated smaller posttreatment reductions on the PCL-5, M_{diff} = 5.75, p = .003, and PHQ-9, M_{diff} = 1.71, p = .011,

manuscript, and Crystal Mendoza, Jeremy Karp, and Arthur Marsden, who provided project management support.

compared to civilians. Results demonstrate that military-affiliated patients benefit from EBTs for PTSD, albeit to a lesser degree than civilians, even in community settings. These findings also highlight the importance of future research on improving EBTs for military personnel with PTSD.

Approximately 13% of U.S. veterans have a diagnosis of posttraumatic stress disorder (PTSD; Dursa et al., 2014; Eber et al., 2013), and the prevalence of PTSD among active duty service members has increased significantly since the initiation of wars and military operations in and around Iraq and Afghanistan following the September 11, 2001, terrorist attacks (9/11). Cameron et al. (2019) found a 43% average annual increase in the incidence rate of PTSD diagnoses from 2003 to 2008 after the start of these conflicts. High prevalence rates of PTSD necessitate the availability of a range of behavioral health treatment options to help support military personnel and veterans.

The U.S. Veterans Health Administration (VA) offers effective and evidence-based comprehensive behavioral health care to veterans who qualify. In 2017, 49% of all veterans used at least one VA benefit or service, and 45% of users utilized multiple benefits (National Center for Veterans Analysis and Statistics, 2020). Although many veterans use VA health care, many use other options. Barriers to VA care include distance to the nearest facility, difficulty scheduling after-hours appointments (Cheney et al., 2018), or a preference for outside care (Finley et al., 2017). In a national survey, Elbogen et al. (2013) found that 61% of post-9/11 veterans who screened positive for probable PTSD received VA outpatient mental health care; of those who utilized VA mental health care, less than half used the VA exclusively.

A higher proportion of military-affiliated individuals are seeking trauma-related treatment in community settings (Currier et al., 2017). The U.S. government recently implemented legislation (Veterans Choice Program and MISSION Act, 2018) providing financial coverage for eligible military-affiliated individuals to engage in mental health services outside the VA. However, because most PTSD outcome research among military-affiliated populations is conducted in VA or military hospitals, little is known about PTSD treatment outcomes among military-affiliated patients (i.e., service members and veterans) who are served in community settings.

Cognitive processing therapy (CPT; Resick et al., 2017) and prolonged exposure (PE; Foa et al., 2019) are two gold-standard evidence-based treatments (EBTs) for PTSD (American Psychological Association [APA], 2017; VA/U.S. Department of Defense [DoD], 2017) that have been shown to be effective across a wide range of populations, trauma types, and settings (e.g., Asmundson et al., 2019; Cusack et al., 2016; Lewis et al., 2020). Although military-affiliated individuals have been shown to respond to EBTs for PTSD (Kitchiner et al., 2019), research suggests a lower degree of response compared with civilians (Straud et al., 2019; Watts, Schnurr, et al., 2013). Kitchener et al. (2019) found a standard mean difference of -1.22 when comparing military-affiliated patients' response to CPT and PE versus waitlist or usual care. In a meta-analysis comparing military-affiliated and civilian patients' responses to EBTs for PTSDs, Straud et al. (2019) found a larger effect (Hedges' $g = 1.55$) for civilian patients compared with military-affiliated patients (Hedges' $g = 1.22$). Similarly, Watts et al. (2013) found that among psychotherapy studies for PTSD, samples that contained fewer veterans had larger effects. In contrast, Kline et al. (2018) found no differences in PTSD treatment outcomes between military and civilian samples at 6-month follow-up. Notably, Watts et al. (2013) and Kline et al. (2018) included non–frontline treatments in their comparative analyses. Overall, the findings suggest that EBTs for PTSD are effective for both military-affiliated individuals and civilians, although the former may benefit to a lesser extent.

Previous research has also suggested that dropout from EBTs for PTSD is of concern for military-affiliated patients (Steenkamp et al., 2020). However, findings in this area have been mixed. In a recent meta-analysis comparing trauma-focused EBTs for PTSD with non–trauma-focused, nonfrontline PTSD treatments, Edwards-Stewart et al. (2021) found a dropout rate of 27% for trauma-focused EBTs in military-affiliated populations. Comparatively, Imel et al. (2013) found no differences in dropout rates between trauma-focused and non–trauma-focused PTSD treatments in the general population, with an overall dropout rate of 18.3%. Effectiveness studies for veterans show higher dropout rates. In a study of veteran dropout from PE following a large VA rollout of PE training, Eftekhari et al. (2020) found a dropout rate of 30%, and archival VA data show dropout rates ranging from 38% (Kehle-Forbes et al. 2016) to 66% (Garcia et al., 2011). Recent meta-analyses comparing EBT for PTSD treatment outcomes for civilian and military populations showed similar attrition rates between military-affiliated and civilian samples (Lewis et al., 2020; Straud et al., 2019). Based on the mixed results in the existing research, it is important

to further evaluate dropout in military-affiliated individuals as compared with civilians among those engaging in an EBT for PTSD, especially in community settings.

Of the 70 PTSD psychotherapy studies of military-affiliated individuals included in recent systematic reviews or meta-analyses of PTSD treatment outcomes (Asmundson et al., 2019; Belsher et al., 2019; Cusack et al., 2016; Coventry et al., 2020; Haagen et al., 2015; Kitchiner et al., 2019; Kline et al., 2018; Lewis et al., 2020; Mavranezouli et al., 2020; Straud et al. 2019; Watts et al., 2013), none were conducted in non-VA–connected community settings, and only one compared veterans with civilians. Morland et al. (2015) compared CPT delivered in person versus via telehealth among civilian ($n = 105$) and veteran ($n = 21$) women. Symptom severity differences between veteran and civilian women were significant at posttreatment ($d = -0.14$, $p = .05$) and 3-month follow-up ($d = -0.25$, $p = .03$) but not 6-month follow-up ($d = -0.22$, $p = .27$).

Research on the implementation and effectiveness of EBT for PTSD in military-affiliated populations (e.g., Chard et al., 2012; Eftekari et al., 2013; Forbes et al., 2012; Lloyd et al., 2015) follows the same trend. To our knowledge, only one study has evaluated military-affiliated patient outcomes for CPT in a community setting and compared civilian and military-affiliated patients in the same setting. Dillon and colleagues (2019) evaluated outcomes of a CPT learning collaborative wherein community providers attended three learning sessions of 1–2 days duration each and participated in weekly consultations. Patients were from existing provider caseloads and referrals as part of routine clinical care. Military-affiliated patients demonstrated significant reductions in PTSD and depressive symptoms, although these symptom reductions were smaller than those experienced by civilians, and retention rates were comparable for military-affiliated and civilian patients.

The primary aims of the present study were to compare treatment outcome and dropout rates among military-affiliated ($n = 188$) and civilian ($n = 314$) patients receiving PE or CPT for PTSD in community settings. The current study uses evaluation data from the STRONG STAR Training Initiative (see Dondanville et al., 2020) and expands upon Dillon et al. (2019) in several important ways. First, providers were trained in either CPT or PE, and the present evaluation includes PE outcomes in addition to CPT outcomes. Second, the STRONG STAR Training Initiative Learning Community model used to train providers in the present study is less time- and resource-intensive than the CPT learning collaborative used by Dillon and colleagues. While the learning collaborative described by Dillon et al. (2019) consisted of three 1–2-day training sessions, the providers in the present study required only one 2-day training, with several self-paced 1-hr, on-demand webinars. The learning collaborative also required formal organizational consultation with agency leadership, whereas the STRONG STAR Training Initiative offered this as needed. Third, unlike the learning collaborative, the STRONG STAR Training Initiative focused specifically on providers who served military-affiliated patients and included training materials on military culture. Finally, the learning collaborative focused on serving local providers, whereas the STRONG STAR Training Initiative engaged a national sample of providers. The present evaluation includes outcomes from 502 patients versus the 199 included by Dillon et al. (2019).

We had three main research questions. First, we examined whether military-affiliated patients in the community would report smaller reductions in PTSD and depressive symptoms compared with civilian patients from pre- to posttreatment, similar to previous findings. We assessed PTSD and depressive symptoms using the PTSD Checklist for the *Diagnostic and Statistical Manual of Mental Disorders* (fifth. ed. [*DSM-5*]; PCL-5; Weathers, Litz, et al., 2013) and the nine-item Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), respectively. Second, we investigated whether, in line with the extant literature, a smaller proportion of military-affiliated patients in the community would report PTSD symptom reductions that qualified as clinically significant improvement compared to civilians. Finally, given mixed findings in previous research, we examined whether military-affiliated and civilian patients receiving PTSD treatment in the community would differ in overall drop rate and timing to dropout. We also explored differences in treatment outcomes and attrition rates between VA- and non–VA-connected veteran patients; this analysis was exploratory given that no studies of which we are aware have investigated PTSD treatment outcomes as related to non-VA connectedness.

METHOD

Participants

This study included military-affiliated and civilian patients who engaged in an EBT for PTSD as part of routine clinical care with a community-based mental health provider. Mental health providers completed training in CPT or PE through the STRONG STAR Training Initiative (Dondanville et al., 2020) and offered EBTs for PTSD as part of routine clinical care. The evaluation data for these analyses were collected from August 2017 to August 2019. A total of 502 patients ($n = 188$ military-affiliated, $n = 314$ civilians) completed at least one treatment session and are included in these analyses. Civilian patients were mostly female (75.5%), whereas military-affiliated patients were mostly male (71.8%). Civilian patients were slightly younger (41.2% under 29 years of age vs. 84.2% aged 30–64 years), less

racially diverse (67.0% vs. 77.7% White), less likely to be married (35.4% vs. 57.4%), and less likely to have a college education (63.7% vs.75.0%). Military-affiliated patients were more likely to be in a community inpatient setting than civilian patients (18.6% vs. 1.0%). These demographic comparisons are similar to those reported by Dillon et al. (2019) except they found differences with regard to age or racial diversity differences. In addition, all treatments described by Dillon et al. were conducted in outpatient settings. Detailed demographic information for the total sample and stratified by military status are presented in Table 1.

Procedure

Inclusion and exclusion criteria

Providers were trained to screen patients for PTSD and identify appropriate patients. Patients were eligible for inclusion if they experienced a *DSM-5* Criterion A traumatic event (APA, 2013); had a baseline PCL-5 total score of 33 or higher, indicating probable PTSD (Bovin et al., 2016); and were willing to engage in the EBT for PTSD the provider was offering. As part of good clinical practice, a shared decision model (Agency for Healthcare Research and Quality, 2017) was encouraged. Consistent with Dillon et al. (2019), clinical recommendations for exclusion were limited to conditions warranting an immediate higher level of care, including current suicidal or homicidal ideation warranting hospitalization (i.e., imminent threat), uncontrolled mania or psychosis, or substance abuse or dependence requiring immediate detoxification. However, it was recommended that providers follow their individual organizations' policies and procedures. Other comorbidities were not exclusionary. In line with VA guidelines (VA/DoD, 2017), recommendations for the concurrent treatment of common comorbidities were made, if available (e.g., substance use disorders). If hospitalization was not warranted and concurrent substance abuse treatment was not available for patients with comorbid substance abuse disorders, the provider was guided, through weekly consultation, on how to discuss substance use as trauma-related avoidance and assist the patient in breaking cycles of avoidance, including substance abuse, within the CPT and PE frameworks.

Provider procedures and EBT training and implementation

The STRONG STAR Training Initiative Institutional Review Board determined this project as exempt from further oversight. Providers were trained in CPT or PE for PTSD as part of a STRONG STAR Training Initiative Learning Community. Each training cohort consisted of an application process; preworkshop learning assignments; 2-day, in-person workshop in the relevant EBT for PTSD; treatment resources; demonstration videos; advanced training webinars; weekly consultations; and optional organizational consultation STRONG STAR Training Initiative. Providers implemented the EBT in their practice with new or existing patients. In the initial assessment, providers gathered demographic characteristics and self-report measures to determine eligibility. Providers entered patient demographic and symptom data into a password-protected database, the Provider Portal, throughout treatment.

Data were collected only for patients who initiated an EBT for PTSD. Participants were considered completers if (a) the provider reported treatment completion; (b) the participant scored below 20 on the PCL-5, which is considered a "good end state" in studies of EBTs for PTSD (Wachen et al., 2019); or (c) they completed the standard recommended number of sessions for CPT (12) or PE (10).

EBTs for PTSD

CPT

CPT is a 12-session, cognitive behavioral PTSD treatment that can be personalized to include fewer or additional sessions (Resick et al., 2017). In CPT, patients learn about PTSD and the connection between trauma-based thoughts and feelings. Next, patients learn to recognize and challenge unhelpful cognitions about their traumatic experiences, themselves, and others, referred to as "stuck points." Additionally, themes of safety, trust, power and control, esteem, and intimacy are explored as areas possibly affected by trauma.

PE

PE for PTSD is a cognitive behavioral therapy administered over eight to 15 sessions (Foa, et al., 2019). Key treatment components include psychoeducation regarding the rationale for treatment procedures, the impact of trauma, and avoidance; repeated in vivo exposure to situations the patient is avoiding due to trauma-related fear; and prolonged (i.e., repeated) revisiting of trauma memories followed by emotional processing, during which the provider and patient discuss new learning and changed beliefs about the traumatic event and related symptoms. Through these processes, patients learn that they can tolerate previously feared situations and thoughts.

TABLE 1 Participant demographic characteristics

Variable	Total sample ($N = 502$)		Military affiliated ($n = 188$)		Civilian ($n = 314$)		χ^2 [a]
	n	%	*n*	%	*n*	%	
Age (years)							37.42*
14–17	20	4.0	—	—	20	6.5	
18–29	140	27.9	31	16.5	109	34.7	
30–49	234	46.6	120	63.8	133	42.4	
50–64	82	16.3	39	20.8	51	16.2	
65–79	26	5.2	13	6.9	17	5.4	
Gender							119.41*
Female	288	57.4	51	27.1	237	75.5	
Male	205	40.8	135	71.8	70	22.3	
Transgender or nonbinary	9	1.8	2	1.1	7	2.2	
Marital status							46.51*
Single	183	36.5	33	17.6	150	47.8	
Married	219	43.6	108	57.4	111	35.4	
Formerly married	100	19.9	47	25.0	53	16.9	
Race							12.44*
White	370	73.7	126	67.0	244	77.7	
Black	71	14.1	39	20.7	32	10.2	
Other	61	12.2	23	12.2	38	12.1	
Ethnicity							12.58*
Non-Hispanic/Latinx	355	70.7	150	79.8	205	65.3	
Hispanic/Latinx	133	26.5	33	17.6	100	31.8	
Educational attainment							6.90*
High school or less	161	32.1	47	25.0	114	36.3	
Some college/associate degree	215	42.8	89	47.3	126	40.1	
College/graduate degree	126	25.1	52	27.7	74	23.6	
Cognitive processing therapy	426	84.9	157	83.5	269	85.7	0.43
Treatment setting							52.90*
Outpatient	420	83.7	139	73.9	281	89.5	
Residential inpatient	38	7.6	35	18.6	3	1.0	

(Continues)

TABLE 1 (Continued)

Variable	Total sample ($N = 502$)		Military affiliated ($n = 188$)		Civilian ($n = 314$)		χ^2 [a]
	n	%	*n*	%	*n*	%	
Telehealth	9	1.8	2	1.1	7	2.2	
Other	35	7.0	12	6.4	23	7.3	
Military status							
Active duty	46	9.2	46	24.5			
Guard/Reserve	8	1.6	8	4.3			
Veteran	134	26.7	134	71.3			
Military affiliation							
Air Force	33	6.6	33	17.6			
Army	84	16.7	84	44.7			
Marine	23	4.6	23	12.2			
Navy	25	5.0	25	13.3			
Other/multiple branches	23	4.6	23	12.2			
Military era							
Korea	4	<1.0	4	2.1			
Vietnam	17	3.4	17	9.0			
Persian Gulf	42	8.4	42	22.3			
Post-9/11	115	2.3	115	61.2			
Multiple eras	10	2.0	10	5.3			

Note: Proportion and frequency statistics vary based on missing data. 9/11 = September 11, 2001, terrorist attacks.

[a]χ^2 $df = 2$ for all demographics, except for Age = 4; Ethnicity = 1; Treatment setting = 3; χ^2 $N = 502$ for all demographics except Ethnicity $N = 488$.

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Measures

Lifetime trauma history

The Life Events Checklist for *DSM-5* (LEC-5; Weathers, Blake, et al., 2013) was used to assess traumatic event exposure. Patients were given a list of 16 events and asked to indicate which they had experienced in their lifetime. The LEC-5 was administered before initiating an EBT for PTSD, and the event identified as most bothersome was the focus of treatment.

PTSD symptoms

The PCL-5 (Weathers, Litz, et al., 2013) is a 20-item, self-report measure of *DSM-5* PTSD symptoms. Respondents rate items using a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*). Higher scores indicate higher levels of PTSD symptom severity (range: 0–80). A PCL-5 total score of 33 or higher suggests a provisional PTSD diagnosis (Bovin et al., 2016), whereas scores of 19 or below can be considered indicative of good end-state symptom levels following treatment (Wachen et al., 2019). Clinical recommendations to providers were for the PCL-5 to be used with past-month symptoms as a reference at baseline and past-week symptoms as a reference during treatment. The PCL-5 has demonstrated good internal consistency (Cronbach's $\alpha = .96$), test–retest reliability (.84), and convergent and divergent validity (Bovin et al., 2016). Our data were derived from reports of total PCL-5 scores from providers; thus, we did not have item-level data and could not perform Cronbach's alpha calculations.

Depressive symptoms

The PHQ-9 (Kroenke et al., 2001) is a nine-item, self-report measure of depressive symptoms. Participants were asked to rate items using a 4-point scale ranging from 0 (*not at all*) to 3 (*nearly every day*), with higher scores indicative of more severe depressive symptoms (range: 0–27). Scores of 0–4 indicate minimal depression, 5–9 mild depression, 10–14 moderate depression, 15–19 moderately severe depression, and above 19 severe depression. The PHQ-9 has demonstrated good internal consistency (Cronbach's αs = .83–.92) and has been shown to correlate with other measures of depression (Cameron et al., 2008; Kroenke et al., 2001). Clinical recommendations to providers were for depressive symptoms over the past 2 weeks to be used as a reference for PHQ-9 completion at baseline and past-week symptoms to serve as the reference weekly throughout treatment. Our data were derived from reports of total PHQ-9 scores from providers; thus, we did not have item-level data and could not perform Cronbach's alpha calculations.

Demographic and military service characteristics

The Demographics and Military Service Characteristics Form included items for gender, race, ethnicity, educational attainment, marital status, and employment status. Patients with military service answered additional questions regarding branch of service, rank, military operations, military status, number of post-9/11 deployments, and use of VA resources.

Data analysis

Before addressing our planned hypotheses, we completed preliminary analyses to identify potential differences in baseline demographic characteristics and treatment settings between military-affiliated and civilian patients using chi-square tests of independence. If a significant baseline effect was observed, it was included as a covariate in general linear mixed-effects and generalized linear models. Baseline effects were found for all demographic and treatment-setting variables, which were, therefore, added as covariates in subsequent analyses. These variables included age, gender, marital status, race, ethnicity, educational attainment, and treatment setting (see Table 1). All participants who completed a baseline assessment and at least one treatment session were included in the analyses. Therefore, all participants completed the PCL-5 at two or more assessment points (i.e., baseline and final session [posttreatment]). Because providers were inconsistent in their reporting of intermediate-session assessment scores, the present analyses only include baseline and posttreatment (i.e., final session). There were 11 missing cases on PHQ-9 at baseline, which were excluded from depression analyses. To investigate our first and second research questions (i.e., whether military-affiliated patients would demonstrate smaller symptom reductions and rates of clinical improvement compared to civilians), general linear mixed-effects regression models with repeated measures were used to evaluate reductions in PTSD and depressive symptom severity, with fixed effects of group (military status), time (baseline to posttreatment), and the Group x Time interaction. Repeated measures were modeled using an unstructured covariance matrix, which was selected because it permits all terms to be different and resulted in the best-fitting Akaike information criterion and Bayesian

information criterion estimates compared to other considered covariance structures (i.e., autoregressive and compound symmetry). A restricted maximum likelihood estimation was used for all mixed models. The primary effect of interest across mixed-effects models was the Group x Time interaction. To further evaluate differences in treatment outcomes, we used generalized linear models for binary data to examine the proportion of participants in each group who showed clinically meaningful reductions at the last session. Clinically meaningful reductions were defined using three dichotomous classification methods: (a) a 10-point reduction on the PCL-5, (b) probable remission (i.e., PCL-5 score less than 33), and (c) achieved good end state (i.e., PCL-5 score less than 20). We further deconstructed significant effects via post hoc pairwise analyses using a Sidak adjustment for multiple comparisons to examine group differences in severity means scores and classification proportions. Cohen's *d* effect sizes were calculated to describe the nature of significant effects, with values of 0.20, 0.50, and 0.80 interpreted as small, medium, and large effects, respectively (Cohen, 1988).

To address our third research question (i.e., whether military-affiliated and civilian patients receiving PTSD treatment in the community would differ in the overall dropout rate and dropout timing), we conducted a Kaplan-Meier survival analysis to evaluate group differences in the proportion and timing of attrition across sessions. The between-subjects factor was military status, and time to event was defined as the number of sessions completed before attrition. The median time to attrition was calculated for each group, and the log-rank chi-square test pooled over strata was used to analyze group differences in the survival distribution.

The final analyses were exploratory and focused on evaluating treatment outcomes and attrition differences among veterans based on VA use. VA user analyses were restricted to veterans, as active duty service members receive health care services through the Military Health System. Analyses used the same models as previously described, but the between-subject variable was VA use (i.e., yes or no). All analyses were completed using SPSS (Version 26).

RESULTS

PTSD and depressive symptom severity

As shown in Table 2, there was a significant Group x Time interaction effect with regard to symptom severity for both the PCL-5, $F(1, 500) = 8.71$, $p = .003$, and the PHQ-9, $F(1, 498) = 6.57$, $p = .011$, after controlling for significant baseline demographic variables (i.e., age, gender, marital status, race, ethnicity, educational attainment, and treatment setting). Specifically, following treatment, military-affiliated patients demonstrated smaller reductions in severity of PTSD ($M_{diff} = 5.75$, $SE = 1.95$), $d = 0.26$, and depression ($M_{diff} = 1.71$, $SE = 0.67$), $d = 0.23$, compared to civilians. However, simple main effects of time indicated that both groups demonstrated significant reductions, with large effects, in PTSD, military-affiliated: $d = -0.91$, civilian: $d = -1.18$, and depressive symptom severity, military-affiliated: $d = -0.65$, civilian d = -0.88, from pre- to posttreatment, ps $< .001$.

Posttreatment PTSD classification

There were significant group differences in the estimated proportion of patients who achieved probable PTSD remission, $\chi^2(1, N = 502) = 16.64$, $p < .001$, and good end state (i.e., PCL-score below 20) following treatment, $\chi^2(1, N = 502) = 16.36$, $p < .001$. Overall, 60.2% ($SE = 0.03$) of civilians versus 41.2% ($SE = 0.04$) of military-affiliated patients achieved probable PTSD remission at posttreatment. Additionally, 38.3% ($SE = 0.03$) of civilians versus 21.5% ($SE = 0.03$) of military-affiliated patients achieved good end state at posttreatment. A large proportion of civilians (73.4%, $SE = 0.03$) and military-affiliated patients (66.7%, $SE = 0.04$) reported a 10-point reduction on the PCL-5, with no significant group difference, $\chi^2(1, N = 502) = 2.37$, $p = .124$.

Attrition

There was no difference in time to attrition between civilians and military-affiliated patients, $\chi^2(1, N = 502) = 0.31$, $p = .577$. The dropout rate was 56.5% in the total sample, and participants completed a mean of 7.34 ($SD = 4.09$) and median of 8 ($SE = 0.65$) sessions. On average, treatment completers engaged in 10.85 ($SE = 0.18$) sessions before treatment termination, whereas patients who dropped out completed 4.64 ($SE = 0.16$) sessions prior to attrition.

Treatment response and dropout as a function of VA use

There were 125 veterans with a valid response on VA use, with nine responses missing. Over two thirds (67.2%) of veterans also received VA care. We did not observe any VA Use x Time interactions for PTSD, $F(1, 123) = 0.61$, $p = .435$, or depressive symptoms severity, $F(1, 123) = 0.02$, $p = .878$, after controlling for significant baseline variables (i.e., age, gender, marital status, race, ethnicity, educational attainment, and treatment setting).

TABLE 2 Military versus civilian pretreatment to posttreatment changes in posttraumatic stress disorder (PTSD) and depression scores

Variable	Military group (n = 188)		Civilian group (n = 314)		Interaction effect	
PCL-5	***M***[a]	***SE***	***M***[a]	***SE***	***F*(1, 500)**	***p***
Pretreatment	55.82	0.86	53.77	0.67		
Posttreatment	36.62	1.48	28.82	1.14		
M Δ*d*[b]	−19.20[c]	−0.91	−24.95[c]	−1.18	8.71	.003
PHQ-9						
Pretreatment	16.09	0.44	16.27	0.34		
Posttreatment	11.40	0.50	9.87	0.39		
M Δ*d*[b]	−4.70[c]	−0.65	−6.40[c]	−0.88	6.57	.011

Note: PCL-5 = PTSD Checklist for *DSM-5*; PHQ-9 = nine-item Patient Health Questionnaire; Mean Δ = pre–post mean change.
[a]Estimated model means and standard errors after controlling for significant baseline demographic variables (i.e., age, gender, marital status, race, ethnicity, educational attainment, and treatment setting).[b]Pre–post mean change. [c]Mean change was significant at $p < .001$.

TABLE 3 Veterans Affairs (VA) and non-VA users' pretreatment to posttreatment changes in posttraumatic stress disorder (PTSD) and depression scores

Variable	VA users (n = 84)		Non-VA users (n = 41)		Simple main effects of group	
PCL-5	***M***[a]	***SE***	***M***[a]	***SE***	***t* (121)**	***p***
Pretreatment	58.62	1.14	49.46	1.63	4.60	< .001
Posttreatment	40.98	1.96	29.06	2.84	3.45	.004
M Δ*d*[b]	−17.64[b]	0.96	−20.40[c]	−1.10		
PHQ-9						
Pretreatment	17.14	0.58	14.07	0.83	3.02	.003
Posttreatment	13.06	0.69	9.81	0.99	2.69	.008
M Δ*d*[b]	−4.08[b]	0.67	−4.26c	−0.66		

Note: PCL-5 = PTSD Checklist for *DSM-5*; PHQ-9 = nine-item Patient Health Questionnaire.
[a]Estimated model means and standard errors after controlling for significant baseline demographic variables (i.e., age, gender, marital status, race, ethnicity, educational attainment, and treatment setting). [b]Pre–post mean change.[c]Mean change was significant at p < .001.

There were, however, significant main effects of group, $F(1, 123) = 22.98$, $p < .001$, and time, $F(1, 123) = 116.70$, $p < .001$, on PTSD severity. VA users reported more severe PTSD symptoms at baseline ($M_{diff} = 9.16$, $SE = 1.99$), $d = 0.41$, and posttreatment ($M_{diff} = 11.92$, $SE = 3.45$), $d = 0.31$, compared with non-VA users. There were also significant main effects of group, $F(1, 123) = 11.35$, $p = .001$, and time, $F(1, 123) = 47.62$, $p < .001$, on depressive symptom severity. VA users had higher levels of depressive symptoms at baseline ($M_{diff} = 3.06$, $SE = 1.01$), $d = 0.27$, and posttreatment ($M_{diff} = 3.25$, $SE = 1.21$), $d = 0.24$, compared with non-VA users (see Table 3). Posttreatment PTSD classification analyses were not completed because there were significant baseline symptom severity differences observed among veteran patients who did and did not use the VA. There was not a significant difference in time to attrition between VA users and non-VA users, $\chi^2(1, N = 125) = 0.14$, $p = .708$. The total attrition rate was 60.5% among veterans, and the median time to dropout was eight sessions ($SE = 0.83$).

DISCUSSION

To date, information about PTSD treatment outcomes among military-affiliated populations engaged in community health care is sparse. In this community-based examination of routine care, both military-affiliated and civilian participants treated with CPT or PE had significant reductions in PTSD symptoms with large effect sizes, consistent with meta-analytic findings (Kitchiner et al., 2019; Straud et al., 2019) and other evaluations of community-based routine clinical care following EBT training (Dillon et al., 2019). Also similar to meta-analytic (Straud et al., 2019) and EBT implementation evaluation findings (Dillon et al., 2019), military-affiliated patients had a less

robust treatment response compared with civilians, and a higher proportion of civilians experienced a loss of PTSD diagnosis and good end state, defined as a PCL-5 score below 20, when directly compared in a community setting. Addressing this gap in knowledge is important because service members and veterans, for whom treatment outcomes have been poorer than among civilians (Steenkamp et al., 2020), are increasingly accessing care in community settings.

Several hypotheses have been raised to explain these findings, some of which were accounted for in these analyses. One theory is that military-affiliated patients are harder to treat due to more severe baseline symptoms. Although the present findings revealed no differences in baseline PTSD or depression symptoms between military-affiliated and civilian patients (consistent with Dillon et al., 2019), military-affiliated patients were more likely to be in inpatient care than civilians, and those in inpatient care had higher baseline PTSD severity scores compared with those in outpatient care. However, military-affiliated outcomes remained less robust than for civilian patients even after controlling for treatment setting. Second, military-affiliated patients were older and more likely to be men than their civilian counterparts. Women have demonstrated moderately larger PTSD treatment-related symptom reductions compared with men (Kimerling et al., 2018), and younger military personnel have shown a stronger response to CPT than older military personnel (Resick et al., 2021). However, a differential treatment response was found even after controlling for age and gender. Morland et al. (2015) suggest that military-affiliated versus civilian PTSD treatment outcome differences may hold, even among women, at least for initial outcomes. In their study, the authors found that civilian women responded better to CPT compared with veteran women, although no differences were found by the 6-month follow-up.

Over half of military-affiliated patients in the present sample were married, whereas almost half of the civilians were single. Although family encouragement is associated with PTSD treatment retention (Meis et al., 2019), PTSD is associated with relationship distress ($\rho = .38$; Taft et al., 2011) and, reciprocally, poorer family functioning has been shown to predict reduced PTSD treatment response among veterans (Evans et al., 2010). Marital difficulties may have played a role in the outcomes. However, our findings held even after controlling for marital status.

Some research suggests combat-related PTSD may be more difficult to treat than PTSD resulting from other traumatic events (Bradley et al., 2005; Steenkamp et al., 2020) due to the unique culture and context of military trauma and service members' and veterans' lived experience (Litz et al., 2016). Our data were limited to routine clinical care measures (i.e., PCL-5, PHQ-9) and patient demographic characteristics. Although it is likely that at least some military-affiliated patients experienced combat, whereas civilians did not, without details of trauma history, we were unable to assess whether specific types of trauma exposure explained differences in treatment response.

Consistent with findings reported by Dillon et al. (2019), there were no differences in dropout rates between civilian and military-affiliated patients, with an overall dropout rate of 56.5%. Though this dropout rate is higher than those found in RCTs (Edwards-Stewart et al., 2021; Imel et al., 2013), it is consistent with community mental health settings (e.g., Dillon et al., 2019). This adds to a growing body of research showing no differences in dropout rates among military-affiliated and civilian patients (Lewis et al., 2020; Straud et al., 2019). Whereas Dillon et al. (2019) found that military-affiliated noncompleters completed more sessions ($M = 5.77$) than civilian noncompleters ($M = 3.53$), the present evaluation found no differences in time to dropout between civilian and military-affiliated patients ($M = 4.64$ sessions). Overall, patients attended a median of eight sessions. Although eight sessions of treatment is considered to be an "adequate dose" for improvement (Spoont et al., 2010), Holmes et al. (2019) found that patients who completed 12 sessions of CPT tended to have the largest symptom reductions.

Dropout from EBTs for PTSD has been linked to various patient-, clinician-, and treatment-related factors (see Najavits, 2015). There is also some evidence that patients sometimes terminate treatment when they have improved (Szafranski et al., 2017), potentially rendering dropout less of a concern than previously considered. Variable-length–designed PTSD studies have supported this, finding that some patients reach good end state and meet their treatment goals before the protocol is completed (Galovski et al., 2012; Resick et al., 2021). Indeed, the present results show that a portion of noncompleters also showed clinically significant improvement.

Although treatment resulted in significant, large reductions in PTSD symptoms for both groups, some patients were symptomatic at posttreatment. Consistent with Dillon et al. (2019), on average, military-affiliated clients just exceeded the threshold for a likely PTSD diagnosis (i.e., PCL-5 score above 32) at posttreatment. Though many patients experience improvement and even remission following PTSD treatment, some show residual symptoms, and others do not show adequate response (Larsen et al., 2019). Among veterans, hyperarousal symptoms are most likely to persist after treatment (Schnurr & Lunney, 2019; Tripp et al., 2020), while civilians more often report residual distress related to trauma reminders and emotional detachment (Larsen et al., 2019). Future studies can directly compare residual symptoms between

military-affiliated and civilian patients to examine whether unique adjunctive interventions may be warranted. Researchers and clinicians must prioritize continuing to improve the effectiveness of PTSD treatment for military populations.

There are several clinical implications to be noted. First, even with limitations in effectiveness, trauma-focused EBTs like CPT and PE are still the most effective options for service members and veterans (Kitchiner et al., 2019) in VA settings and, as evidenced here, community settings. CPT and PE have been shown to outperform non–trauma-focused psychotherapies and medications (Lee et al., 2016), and current clinical practice guidelines (e.g., APA, 2017; VA/DoD, 2017) recommend providers offer them as first-line treatments. Second, given that dropout rates for PTSD treatment are high in community outpatient settings, as evidenced by the current sample and Dillon et al. (2019), providers are encouraged to use a variable-length approach in which treatment length is dependent on weekly PTSD scores and progress toward ideographic treatment goals. This may reduce disinterest in completing treatment due to patient improvement (Szafranski et al., 2017). Finally, it is recommended that as community providers increase the provision of services to veterans, they seek training in military cultural attunement. Since 2008, several reports have called attention to the need for military cultural competence among providers (e.g., Tanielian et al., 2014). A lack of military cultural competence in providers may lead to misdiagnosis and treatment dropout (e.g., Zwiebach et al., 2019). In a survey of combat veterans, 88% of participants agreed that community providers must be familiar with military culture, with 37% of participants reporting concern that their provider did not understand their experience (Stewart, 2012). Training programs like the STRONG STAR Training Initiative must not only focus on EBTs but also on cultural competency in the populations providers are serving. The STRONG STAR Training Initiative model included preworkshop assignments in military culture through the PsychArmor Institute, used military case examples during the workshops, offered advanced training webinars on military-related topics (e.g., moral injury), and discussed military cases during consultation calls. Fortunately, military cultural competence is improving as a response to the large number of returning post-9/11 veterans who require care from a civilian population (Atuel & Castro, 2018).

There were several limitations of the present study. Data for this evaluation were collected as an extra step to routine clinical care. This led to several data collection limitations. First, outcomes were limited to total PCL-5 and PHQ-9 scores and the number of sessions attended. Details such as patient trauma history, item-by-item symptom severity, and time between sessions were not collected. Second, the analyses were limited to the PCL and PHQ-9 data that providers entered into the Provider Portal. Although STRONG STAR Training Initiative encouraged providers to update the portal weekly, there was a substantial amount of missing session-by-session information. As such, although we were able to evaluate pre- to posttreatment reductions in PTSD and depressive symptoms, we were not able to evaluate nonlinear symptom change over the course of treatment. It is possible that outcomes were impacted because providers either did not administer the PCL-5 or PHQ-9 at every session or administered the assessments but did not take the extra step of entering all data into the portal. Information on providers' protocol adherence is also limited. Clinical recommendations for appropriate patients, treatment and assessment frequency (i.e., at least weekly), and treatment fidelity were given on weekly PE and CPT consultation calls led by expert consultants. However, this was monitored via provider self-report. An additional limitation is the somewhat limited racial/ethnic diversity of patients in the sample. Although Black and Latinx patients made up a meaningful proportion of the sample, 73.7% identified as White. This may impact outcomes, as some research suggests that Black patients may benefit less (Resick et al., 2021) or drop out more (Lester et al., 2010) from EBTs for PTSD, as compared to White patients. Also, as with all program evaluation research, a control condition or group was not available, and no randomization occurred. Therefore, although we assessed and statistically controlled for multiple demographic variables in our analysis, other unexamined demographic variables (e.g., service-connected disability) may have influenced these findings.

Providers were encouraged to use shared decision-making (Agency for Healthcare Research and Quality, 2017) in their clinical practice. Although this practice is recommended by the U.S. Department of Health and Human Services, it leaves the possibility for idiosyncratic decision-making and biases, and treatment options will inevitably depend on the resources of the agencies and the expertise, apart from PTSD treatment, of the providers. However, the providers in the present study are representative of PTSD EBT providers in community clinical care. Finally, most patients in the sample engaged in CPT rather than equal numbers of CPT and PE patients, which may have impacted outcomes. However, most research shows CPT and PE to be generally equivalent in outcome (Resick et al., 2012). Finally, these data do not include long-term follow-ups. Thus, the long-term impact of treatment in this sample cannot be determined.

With the expectation that more veterans will seek mental health care in the community due to the MISSION Act (VA MISSION Act of 2018, 2019) that is intended to

increase timely access to care, it is essential for providers to be trained in culturally attuned EBTs for PTSD. The current findings contribute additional evidence that military-affiliated patients benefit from CPT and PE in a range of settings, albeit less than civilians. The investigation of mechanisms explaining this poorer treatment response in military personnel is imperative to adapting treatments to better serve the military community across health care settings. Avenues in detangling these mechanisms for poorer response include the severity of comorbid depression (Resick et al., 2020), trauma dose or trauma type (Currier et al., 2014), disability and service-connection status, or PTSD chronicity. Because studies examining predictors of treatment response have shown mixed findings or non-modifiable predictors, such as age (Resick et al., 2020), qualitative research is needed regarding military-affiliated patients' experiences with EBTs and perceptions regarding benefit versus ineffectiveness.

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 should be sent via email to the lead author at jacobyv@uthscsa.edu.

ORCID

Vanessa M. Jacoby https://orcid.org/0000-0002-1704-7847
Casey L. Straud https://orcid.org/0000-0001-8875-1906
Shelby N. Baker https://orcid.org/0000-0001-8561-1289
David C. Rozek https://orcid.org/0000-0002-0919-4919
Katherine A. Dondanville https://orcid.org/0000-0003-4204-7926

REFERENCES

Agency for Healthcare Research and Quality. (2017). The CAHPS ambulatory care improvement guide, Section 6: Strategies for improving patient experience with ambulatory care. Section 6.i: Shared decision-making. https://www.ahrq.gov/sites/default/files/wysiwyg/cahps/quality-improvement/improvement-guide/6-strategies-for-improving/communication/cahps-strategy-section-6-i.pdf

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Author. https://doi.org/10.1176/appi.books.9780890425596

American Psychological Association. (2017). Clinical practice guideline for the treatment of posttraumatic stress disorder. https://www.apa.org/ptsd-guideline/ptsd.pdf

Asmundson, G., Thorisdottir, A. S., Roden-Foreman, J. W., Baird, S. O., Witcraft, S. M., Stein, A. T., Smits, J., & Powers, M. B. (2019). A meta-analytic review of cognitive processing therapy for adults with posttraumatic stress disorder. *Cognitive Behaviour Therapy*, *48*(1), 1–14. https://doi.org/10.1080/16506073.2018.1522371

Atuel, H. R., & Castro, C A., (2018). Military cultural competence. *Clinical Social Work Journal*, *46*(2), 74–82. https://doi.org/10.1007/s10615-018-0651-z

Belsher, B. E., Beech, E., Evatt, D., Smolenski, D. J., Shea, M. T., Otto, J. L., Rosen, C. S., & Schnurr, P. P. (2019). Present-centered therapy (PCT) for post-traumatic stress disorder (PTSD) in adults. *Cochrane Database of Systematic Reviews*, *11*, Article CD012898. https://doi.org/10.1002/14651858.CD012898.pub2.

Bovin, M. J., Marx, B. P., Weathers, F. W., Gallagher, M. W., Rodriguez, P., Schnurr, P. P., & Keane, T. M. (2016). Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders–Fifth edition (PCL-5) in veterans. *Psychological Assessment*, *28*(11), 1379–1391. https://doi.org/10.1037/pas0000254

Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry*, *162*(2), 214–227. https://doi.org/10.1176/appi.ajp.162.2.214

Cameron, I. M., Crawford, J. R., Lawton, K., & Reid, I. C. (2008). Psychometric comparison of PHQ-9 and HADS for measuring depression severity in primary care. *British Journal of General Practice*, *58*(546), 32–36. https://doi.org/10.3399/bjgp08X263794

Cameron, K. L., Sturdivant, R. X., & Baker, S. P. (2019). Trends in the incidence of physician-diagnosed posttraumatic stress disorder among active duty U.S. military personnel between 1999 and 2008. *Military Medical Research*, *6*(1), 8. https://doi.org/10.1186/s40779-019-0198-5

Chard, K. M., Ricksecker, E. G., Healy, E. T., Karlin, B. E., & Resick, P. A. (2012). Dissemination and experience with cognitive processing therapy. *Journal of Rehabilitation Research and Development*, *49*(5), 667–678. https://doi.org/10.1682/JRRD.2011.10.0198

Cheney, A. M., Koenig, C. J., Miller, C. J., Zamora, K., Wright, P., Stanley, R., Fortney, J., Burgess, J. F., & Pyne, J. M. (2018). Veteran-centered barriers to VA mental healthcare services use. *BMC Health Services Research*, *18*(1), 591. https://doi.org/10.1186/s12913-018-3346-9

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Erlbaum.

Coventry, P. A., Meader, N., Melton, H., Temple, M., Dale, H., Wright K, Cloitre, M., Karatzias, T., Bisson, J., Roberts, N. P., Brown, J. V. E., Barbui, C., Churchill, R., Lovell, K, McMillan, D., & Gilbody, S. (2020). Psychological and pharmacological interventions for posttraumatic stress disorder and comorbid mental health problems following complex traumatic events: Systematic review and component network meta-analysis. *Public Library of Science, Medicine*, *17*(8), e1003262. https://doi.org/10.1371/journal.

Currier, J. M., Holland, J. M., & Drescher, K. D. (2014). Residential treatment for combat-related posttraumatic stress disorder: Identifying trajectories of change and predictors of treatment response. *PLOS ONE*, *9*(7), e101741. https://doi.org/10.1371/journal.pone.0101741

Currier, J. M., Stefurak, T., Carroll, T. D., & Shatto, E. H. (2017). Applying trauma-informed care to community-based mental health services for military veterans. *Best Practices in Mental Health*, *13*(1), 47–65.

Cusack, K., Jonas, D. E., Forneris, C. A., Wines, C., Sonis, J., Middleton, J. C., Feltner, C., Brownley, K. A., Olmsted, K. R., Greenblatt, A., Weil, A., & Gaynes, B. N. (2016). Psychological

treatments for adults with posttraumatic stress disorder: A systematic review and meta-analysis. *Clinical Psychology Review*, *43*, 128–141. https://doi.org/10.1016/j.cpr.2015.10.003

Dillon, K. H., LoSavio, S. T., Henry, T. R., Murphy, R. A., & Resick, P. A. (2019). The impact of military status on cognitive processing therapy outcomes in the community. *Journal of Traumatic Stress*, *32*(2), 330–336. https://doi.org/10.1002/jts.22396

Dondanville, K. A., Fina, B. A., Straud, C. L., Finley, E. P., Tyler, H., Jacoby, V. M., Blount, T. H., Moring, J. C., Pruiksma, K. E., Blankenship, A. E., Evans, W. R., & Zaturenskaya, M., for the STRONG STAR Training Initiative. (2020). Launching a competency-based training program in evidence-based treatments for PTSD: Supporting veteran-serving mental health providers in Texas. *Community Mental Health Journal*, *57*, 910–919. https://doi.org/10.1007/s10597-020-00676-7

Dursa, E., Reinhard, M., Barth, S., & Schneiderman, A. (2014). Prevalence of a positive screen for PTSD among OEF/OIF and OEF/OIF-era veterans in a large population-based cohort. *Journal of Traumatic Stress*, *27*(5), 542–549. https://doi.org/10.1002/jts.21956

Eber, S., Barth, S., & Kang, H. (2013). The national health study for a new generation of United States veterans: Methods for a large-scale study on the health of recent veterans. *Military Medicine*, *178*(9), 966–969. https://doi.org/10.7205/MILMED-D-13-00175

Edwards-Stewart, A., Smolenski, D. J., Bush, N. E., Cyr, B. A., Beech, E. H., Skopp, N. A., & Belsher, B. E. (2021). Posttraumatic stress disorder treatment dropout among military and veteran populations: A systematic review and meta-analysis. *Journal of Traumatic Stress*, *34*(4), 808–818. https://doi.org/10.1002/jts.22653

Eftekhari, A., Crowley, J. J., Mackintosh, M. A., & Rosen, C. S. (2020). Predicting treatment dropout among veterans receiving prolonged exposure therapy. *Psychological Trauma: Theory, Research, Practice, and Policy*, *12*(4), 205–412. https://doi.org/10.1037/tra0000484

Eftekhari, A., Ruzek, J. I, Crowley, J. J., Rosen, C. S., Greenbaum, M. A., & Karlin, B. E. (2013). Effectiveness of national implementation of prolonged exposure therapy in Veterans Affairs care. *JAMA Psychiatry*, *70*(9), 949–955. https://doi.org/10.1001/jamapsychiatry.2013.36

Elbogen, E. B., Johnson, S. C., Newton, V. M., Fuller, S., Wagner, H. R., & Beckham, J. C. (2013). Self-report and longitudinal predictors of violence in Iraq and Afghanistan war era veterans. *Journal of Nervous and Mental Disease*, *201*(10), 872–876. https://doi.org/10.1097/NMD.0b013e3182a6e76b

Evans, L., Cowlishaw, S., Forbes, D., Parslow, R., & Lewis, V. (2010). Longitudinal analyses of family functioning in veterans and their partners across treatment. *Journal of Consulting and Clinical Psychology*, *78*(5), 611–622. https://doi.org/10.1037/a0020457

Finley, E. P., Mader, M., Bollinger, M. J., Haro, E. K., Garcia, H. A., Huynh, A. K., Pugh, J. A., & Pugh, M. J. (2017). Characteristics associated with utilization of VA and non-VA care among Iraq and Afghanistan veterans with post-traumatic stress disorder. *Military Medicine*, *182*(11), e1892–e1903. https://doi.org/10.7205/MILMED-D-17-00074

Foa, E., Hembree, E., Rothbaum, B. O., & Rauch, S. A. M. (2019). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences therapist guide* (2nd ed.). Oxford University Press.

Forbes, D., Lloyd, D., Nixon, R. D. V., Elliot, P., Varker, T., Perry, D., Bryant, R. A., & Creamer, M. (2012). A multisite randomized controlled effectiveness trial of cognitive processing therapy for military-related posttraumatic stress disorder. *Journal of Anxiety Disorders*, *26*(3), 442–452. https://doi.org/10.1016/j.janxdis.2012.01.006

Galovski, T. E., Blain, L. M., Mott, J. M., Elwood, L., & Houle, T. (2012). Manualized therapy for PTSD: Flexing the structure of cognitive processing therapy. *Journal of Consulting and Clinical Psychology*, *80*(6), 968–981. https://doi.org/10.1037/a0030600

Garcia, H., Kelley, L., Rentz, T., & Lee, S. (2011). Pretreatment predictors of dropout from cognitive behavioral therapy for PTSD in Iraq and Afghanistan war veterans. *Psychological Services*, *8*(1), 1–11. https://doi.org/10.1037/a0022705

Haagen, J. F.G., Smid, G. E., Knipscheer, J. W., Kleber, R. J. (2015). The efficacy of recommended treatments for veterans with PTSD: A metaregression analysis. *Clinical Psychology Review*, *40*, 184–194. https://doi.org/10.1016/j.cpr.2015.06.008

Holmes, S. C., Johnson, C. M., Suvak, M. K., Sijercic, I., Monson, C. M., & Stirman, S. W. (2019). Examining patterns of dose-response for clients who do and do not complete cognitive processing therapy. *Journal of Anxiety Disorders*, *68*, 102120. https://doi.org/10.1016/j.janxdis.2019.102120

Imel, Z. E., Laska, K., Jakupcak, M., & Simpson, T. L. (2013). Meta-analysis of dropout in treatments for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, *81*(3), 394–404. https://doi.org/10.1037/a0031474

Kehle-Forbes, S. M., Meis, L. A., Spoont, M. R., & Polusny, M. A. (2016). Treatment initiation and dropout from prolonged exposure and cognitive processing therapy in a VA outpatient clinic. *Psychological Trauma: Theory, Research, Practice, and Policy*, *8*(1), 107–114. https://doi.org/10.1037/tra0000065

Kimerling, R., Allen, M. C., & Duncan, L. E. (2018). Chromosomes to social contexts: Sex and gender differences in PTSD. *Current Psychiatry Reports*, *20*(12), 114. https://doi.org/10.1007/s11920-018-0981-0

Kitchiner, N. J., Lewis, C., Roberts, N. P., & Bisson, J. I. (2019). Active duty and ex-serving military personnel with post-traumatic stress disorder treated with psychological therapies: Systematic review and meta-analysis. *European Journal of Psychotraumatology*, *10*(1), 1684226. https://doi.org/10.1080/20008198.2019.1684226

Kline, A. C., Cooper, A. A., Rytwinksi, N. K., & Feeny, N. C. (2018). Long-term efficacy of psychotherapy for posttraumatic stress disorder: A meta-analysis of randomized controlled trials. *Clinical Psychology Review*, *59*, 30–40. https://doi.org/10.1016/j.cpr.2017.10.009

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Larsen, S. E., Fleming, C. J. E., & Resick, P. A. (2019). Residual symptoms following empirically supported treatment for PTSD. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*(2), 207–215. https://doi.org/10.1037/tra0000384

Lee, D. J., Schnitzlein, C. W., Wolf, J. P., Vythilingam, M., Rasmusson, A. M., & Hoge, C. W. (2016). Psychotherapy versus pharmacotherapy for posttraumatic stress disorder: Systemic review and meta-analyses to determine first-line treatments.

Depression and Anxiety, *33*(9), 792–806. https://doi.org/10.1002/da.22511

Lester, K., Resick, P., Young-Xu, Y., & Artz, C. (2010). Impact of race on early treatment termination and outcomes in posttraumatic stress disorder treatment. *Journal of Consulting and Clinical Psychology*, *78*(4), 480–489. https://doi.org/10.1037/a0019551

Lewis, C., Roberts, N. P., Andrew, M., Starling, E., & Bisson, J. I. (2020). Psychological therapies for post-traumatic stress disorder in adults: Systematic review and meta-analysis. *European journal of Psychotraumatology*, *11*(1), 1729633. https://doi.org/10.1080/20008198.2020.1729633

Lewis, C., Roberts, N. P., Gibson, S. & Bisson, J. I. (2020). Dropout from psychological therapies for post-traumatic stress disorder (PTSD) in adults: Systematic review and meta-analysis. *European Journal of Psychotraumatology*, *11*(1), 1709709. https://doi.org/10.1080/20008198.2019.1709709

Litz, B. T., Lebowitz, L., Gray, M. J., & Nash, W. P. (2016). *Adaptive disclosure: A new treatment for military trauma, loss, and moral injury*. Guilford Press.

Lloyd, D., Couineau, A.-L., Hawkins, K., Kartal, D., Nixon, R. D. V., Perry, D., & Forbes, D. (2015). Preliminary outcomes of implementing cognitive processing therapy for posttraumatic stress disorder across a national veterans' treatment service. *Journal of Clinical Psychiatry*, *76*(11), e1405–e1409. https://doi.org/10.4088/JCP.14m09139

Mavranezouli, I., Megnin-Viggars, O., Daly, C., Dias, S., Welton, N., Stockton, S., Bhutani, G., Grey, N., Leach, J., Greenberg, N., Katona, C, El-Leithy, S., & Pilling, S. (2020). Psychological treatments for post-traumatic stress disorder in adults: A network meta-analysis. *Psychological Medicine*, *50*(4), 542–555. https://doi.org/10.1017/S0033291720000070

Meis, L. A., Noorbaloochi, S., Hagel Campbell, E M., Erbes, C. R., Polusny, M. A., Velasquez, T. L., Bangerter, A., Cutting, A., Eftekhari, A., Rosen, C. S., Tuerk, P. W., Burmeister, L. B., & Spoont, M. R. (2019). Sticking it out in trauma-focused treatment for PTSD: It takes a village. *Journal of consulting and clinical psychology*, *87*(3), 246–256. https://doi.org/10.1037/ccp0000386

Morland, L. A., Mackintosh, M. A., Rosen, C. S., Willis, E., Resick, P., Chard, K., & Frueh, B. C. (2015). Telemedicine versus in-person delivery of cognitive processing therapy for women with posttraumatic stress disorder: A randomized noninferiority trial. *Depression and Anxiety*, *32*(11), 811–820. https://doi.org/10.1002/da.22397

Najavits, L. M. (2015). The problem of dropout from "gold standard" PTSD therapies. *F1000Prime Reports*, *7*(43). https://doi.org/10.12703/P7-43

National Center for Veterans Analysis and Statistics. (2020). VA utilization profile FY 2017. United States Department of Veterans Affairs. https://www.va.gov/vetdata/docs/Quickfacts/VA_Utilization_Profile_2017.pdf

Resick, P. A., LoSavio, S. T., Wachen, J. S., Dillon, K. H., Nason, E. E., Dondanville, K. A., Young-McCaughan, S., Peterson, A. L., Yarvis, J. S., & Mintz, J., for the STRONG STAR Consortium. (2020). Predictors of treatment outcome in group or individual cognitive processing therapy for posttraumatic stress disorder among active duty military. *Cognitive Therapy and Research*, *44*(3), 611–620. https://doi.org/10.1007/s10608-020-10085-5

Resick, P. A., Monson, C. M., & Chard, K. M. (2017). *Cognitive processing therapy for PTSD: A comprehensive manual*. Guilford Press.

Resick, P. A., Wachen, J. S., Dondanville, K. A., LoSavio, S. T., Young-McCaughan, S., Litz, B. T., Yarvis, J. S., Pruiksma, K. E., Blankenship, A. E., Jacoby, V. M., Peterson, A. L., & Mintz, J., for the STRONG STAR Consortium. (2021). Variable-length cognitive processing therapy for posttraumatic stress disorder in active duty military: Outcomes and predictors. *Behaviour Research and Therapy*, *141*, 103846. https://doi.org/10.1016/j.brat.2021.103846

Resick, P. A., Williams, L. F., Suvak, M. K., Monson, C. M., & Gradus, J. L. (2012). Long-term outcomes of cognitive-behavioral treatments for posttraumatic stress disorder among female rape survivors, *Journal of Consulting and Clinical Psychology*, *80*(2), 201–210. https://doi.org/10.1037/a0026602

Rutt, B. T., Oehlert, M. E., Krieshok, T. S., & Lichtenberg, J. W. (2017). Effectiveness of cognitive processing therapy and prolonged exposure in the Department of Veterans Affairs: *Psychological Reports*, *121*(2), 282–302. https://doi.org/10.1177/0033294117727746

Schnurr, P. P., & Lunney, C. A. (2019). Residual symptoms following prolonged exposure and present-centered therapy for PTSD in female veterans and soldiers. *Depression and Anxiety*, *36*(2), 162–169. https://doi.org/10.1002/da.22871

Spoont, M. R., Murdoch, M., Hodges, J., & Nugent, S. (2010). Treatment receipt by veterans after a PTSD diagnosis in PTSD, mental health, or general medical clinics. *Psychiatric Services*, *61*(1), 58–63. https://doi.org/10.1176/ps.2010.61.1.58

Steenkamp, M. M., Litz, B. T., & Marmar, C. R. (2020). First-line psychotherapies for military-related PTSD. *JAMA*, *323*(7), 656–657. https://doi.org/10.1001/jama.2019.20825

Stewart, A. T. (2012). *Developing military cultural competence in civilian clinicians: Working with returning U.S. military populations with combat-related PTSD [Doctoral dissertation*]. California Institute of Integral Studies.

Straud, C. L., Siev, J., Messer, S., & Zalta, A. K. (2019). Examining military population and trauma type as moderators of treatment outcome for first-line psychotherapies for PTSD: A meta-analysis. *Journal of Anxiety Disorders*, *67*, 102133. https://doi.org/10.1016/j.janxdis.2019.102133

Szafranski, D. D., Smith, B. N., Gros, D. F., & Resick, P. A. (2017). High rates of PTSD treatment dropout: A possible red herring? *Journal of Anxiety Disorders*, *47*, 91–98. https://doi.org/10.1016/j.janxdis.2017.01.002

Taft, C. T., Watkins, L. E., Stafford, J., Street, A. E., & Monson, C. M. (2011). Posttraumatic stress disorder and intimate relationship problems: a meta-analysis. *Journal of Consulting and Clinical Psychology*, *79*(1), 22–33. https://doi.org/10.1037/a0022196

Tanielian, T., Farris, C., Batka, C., Farmer, C. M., Robinson, E., Engel, C. C., Robbins, M. W., & Jaycox L. H. (2014). *Ready to serve: Community-based provider capacity to deliver culturally competent, quality mental health care to veterans and their families*. RAND Corporation. https://doi.org/10.7249/RR806

Tripp, J. C., Angkaw, A., Schnurr, P. P., Trim, R. S., Haller, M., Davis, B. C., & Norman, S. B. (2020). Residual symptoms of posttraumatic stress disorder and alcohol use disorder following integrated exposure treatment versus coping skills treatment. *Journal of Traumatic Stress*, *33*(4), 477–487. https://doi.org/10.1002/jts.22552

U. S. Department of Veterans Affairs & U.S. Department of Defense. (2017). VA/DoD clinical practice guideline for the management of posttraumatic stress and acute stress disorder. https://www.healthquality.va.gov/guidelines/MH/ptsd/VADoDPTSDCPGFinal.pdf

VA MISSION Act of 2018, S. 2372. (2019). https://www.congress.gov/115/bills/s2372/BILLS-115s2372enr.pdf

Wachen, J. S., Dondanville, K. A., Young-McCaughan, S., Mintz, J., Lapiz-Bluhm, M. D., Pruiksma, K. E., Yarvis, J. S., Peterson, A. L., & Resick, P. A., for the STRONG STAR Consortium. (2019). Testing a variable-length cognitive processing therapy intervention for posttraumatic stress disorder in active duty military: Design and methodology of a clinical trial. *Contemporary Clinical Trials Communications*, *15*, 100381. https://doi.org/10.1016/j.conctc.2019.100381

Watts, B. V., Schnurr, P. P., Mayo, L., Young-Xu, Y., Weeks, W. B., & Friedman, M. J. (2013). Meta-analysis of the efficacy of treatments for posttraumatic stress disorder. *Journal of Clinical Psychiatry*, *74*(06), e541–e550. https://doi.org/10.4088/JCP.12r08225

Watts, B. V., Shiner, B., Zubkoff, L., Carpenter-Song, E., Ronconi, J. M., & Coldwell, C. M. (2014). Implementation of evidence-based psychotherapies for posttraumatic stress disorder in VA specialty clinics. *Psychiatric Services*, *65*(5), 648–653. https://doi.org/10.1176/appi.ps.201300176

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013). The Life Events Checklist for DSM-5 (LEC-5). https://www.ptsd.va.gov/professional/assessment/te-measures/life_events_checklist.asp

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). The PTSD Checklist for DSM-5 (PCL-5). https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp

Zwiebach, L., Lannert, B. K., Sherrill, A. M., McSweeney, L. B., Sprang, K., Goodnight, J. R. M., Lewis, S. C., & Rauch, S. A. M. (2019). Military cultural competence in the context of cognitive behavioural therapy. *The Cognitive Behaviour Therapist*, *12*, Article e5. https://doi.org/10.1017/S1754470X18000132

How to cite this article: Jacoby, V. M., Straud, C. L., Bagley, J. M., Tyler, H., Baker, S. N., Denejkina, A., Sippel, L. M., Kaya, R., Rozek, D. C., Fina, B. A., Dondanville, K. A., for the STRONG STAR Training Initiative. (2022). Evidence-based posttraumatic stress disorder treatment in a community sample: Military-affiliated versus civilian patient outcomes. *Journal of Traumatic Stress*, *35,* 1072–1086. https://doi.org/10.1002/jts.22812