A Randomized Clinical Trial of Cognitive Processing Therapy for Veterans With PTSD Related to Military Sexual Trauma

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In this randomized controlled clinical trial, the authors evaluated the effectiveness of cognitive processing therapy (CPT) in the treatment of self-reported and clinician-assessed posttraumatic stress disorder (PTSD) related to military sexual trauma (MST), along with depressive symptoms. Eighty-six veterans (73 female, 13 male) randomly assigned to receive 12 individual sessions of either CPT or present-centered therapy (PCT) were included in analyses. Blinded assessments occurred at baseline, posttreatment, and 2, 4, and 6 months posttreatment. Mixed-effects model analysis revealed a significant interaction between groups ($p = .05$, $d = -0.85$): At posttreatment, veterans who received CPT had a significantly greater reduction in self-reported, but not clinician-assessed, PTSD symptom severity compared to veterans who received PCT. All three primary outcome measures improved significantly, both clinically and statistically, across time in both treatment groups. Pre- and posttreatment effect sizes were mostly moderate to large ($d = 0.30$–1.02) and trended larger in the CPT group. Although the study was impacted by treatment fidelity issues, results provide preliminary evidence for the effectiveness of CPT in reducing self-reported PTSD symptoms in a population of veterans with MST, expanding on established literature that has demonstrated the effectiveness of CPT in treating PTSD related to sexual assault in civilian populations.

Sexual violence within the U.S. armed forces has received increased attention from the Department of Defense (DoD) and Veterans Health Administration (VHA). Sexual assault and threatening acts of sexual harassment occurring during a survivor's military service are classified as military sexual trauma (MST). In response to a growing awareness of the problem, the VHA initiated mandatory screening for MST in 1999, and provision of sexual trauma services was made a permanent VHA benefit in 2004 via Public Law 108–422. Based on MST support team data between fiscal years 2002 and 2010 (U.S. Department of Veterans Affairs [VA], 2011), the national MST screening rate for veterans accessing care at VHA facilities was 97.3%. Military sexual trauma was endorsed by 2.4% of the >4.5 million veterans screened (>100,000 veterans). Specifically, 22% of women ($n = 58,733$) and 1% of men ($n = 49,388$) endorsed MST. These rates have remained relatively stable over the years

(Frayne et al., 1999; Kimerling, Gima, Smith, Street, & Frayne, 2007). Even though reported MST rates are lower for male compared to female veterans, the actual number of positive screens is similar between the genders due to the disproportionate ratio of male to female veterans.

An ever-growing body of research literature has identified strong associations between MST and psychiatric conditions. Veterans who report MST are significantly more likely than others to have a psychiatric disorder, most commonly PTSD (Kimerling et al., 2007, 2010). In a sample of female veterans, it was found that those with MST had a 9 times higher risk for PTSD compared to those without a history of sexual trauma, and in those with a history of sexual trauma, MST remained associated with a fourfold PTSD risk with demographics and additive effects of civilian sexual assault histories in the model (Surís, Lind, Kashner, Borman, & Petty, 2004). Himmelfarb, Yaeger, and Mintz (2006) likewise reported that sexual assault incurred during military service presents a higher risk for PTSD than civilian sexual assault. Furthermore, women with MST have higher rates of PTSD than women with other military-related traumas, even after partialling demographic variables and prior trauma (Yaeger, Himmelfarb, Cammack, & Mintz, 2006). For both female and male veterans, the risk of developing PTSD from sexual assault in the military is similar in magnitude to the risk imparted by substantial combat trauma (Kang, Dalager, Mahan, & Ishii, 2005).

In addition to the strong association of PTSD with MST, female and male veterans with a history of MST are significantly more likely to meet criteria for depression (Chang, Skinner, & Boehmer, 2001; Hankin et al., 1999; Kimerling et al., 2007, 2010; Skinner et al., 2000; Surís et al., 2011).

Unique aspects of the military environment may serve to intensify psychiatric symptom severity and negatively impact the survivor's ability to cope following a military sexual assault (Frayne et al., 1999; Surís & Lind, 2008). Service members work and live together in a relatively closed environment. A sexual assault survivor may be subjected to repeated, unavoidable contact with a perpetrator in such a setting. In cases where the perpetrator is a superior, he or she has the power to drastically influence the survivor's military career. Regardless of relative rank, if the perpetrator is a member of the same unit, the unit cohesion that usually provides a protective barrier in the military setting (Norwood, Ursano, & Gabbay, 1997) may not be available to the survivor. Obstacles to reporting MST may include concerns about retaliation, having to face the military legal system, and fear of social ostracism within the interconnected social networks in the military environment (Turchik & Wilson, 2010). Although similar challenges are experienced in nonmilitary sexual assault contexts, they are in many ways magnified in the military milieu (Suris & Smith, 2011).

Best-practice guidelines endorse cognitive–behavioral techniques for the treatment of PTSD (Foa, Keane, Friedman & Cohen, 2009; Institute of Medicine, 2008; U.S. Department of Veterans Affairs & Department of Defense, 2010). Cognitive processing therapy (CPT; Resick & Schnicke, 1992, 1993) focuses on cognitive restructuring and is efficacy for female civilians with PTSD related to sexual assault histories. In randomized controlled studies, CPT was as effective as prolonged-exposure therapy in reducing posttraumatic symptoms in women with sexual assault and sexual abuse histories (Resick, Nishith, & Griffin, 2003; Resick, Nishith, Weaver, Astin, & Feuer, 2002). In a noncivilian population, one randomized controlled trial (Monson et al., 2006) demonstrated the effectiveness of CPT versus waitlist control in the reduction of PTSD symptoms in a primarily male, Vietnam-era veteran sample with primarily combat-related PTSD. No known published randomized controlled trials have specifically examined the effectiveness of CPT for MST. Surís, Lind, Kashner, and Borman (2007) have suggested that MST differs clinically from civilian adult or childhood sexual trauma, bringing into question whether conventional civilian-based treatment is equally as effective with veterans with MST-related PTSD.

The goal of the current study was to evaluate the effectiveness of individual CPT in the treatment of posttraumatic and depressive symptoms related to MST in a randomized, controlled trial comparing CPT to present-centered therapy (PCT), an active comparison therapy. We hypothesized that compared to treatment with PCT, treatment with CPT would result in less severe self-reported and clinician-reported posttraumatic symptoms over time, as well as fewer depressive symptoms.

Method

Participants and Procedures

All study-related procedures were conducted on an outpatient basis in compliance with the Institutional Review Board of the VA North Texas Health Care System, Dallas VA Medical Center. Participants were recruited via letters describing the study that were sent to all women enrolled in VA services within the study site catchment area. Originally, the study was to include only women. Additional funding became available, however, at which point it was decided to expand the participant sample to include men. Both male and female participants were recruited via posted advertisements and promotion of the study in therapy groups, staff meetings, and at veterans' centers. Potential participants were screened for preliminary eligibility and provided with a complete description of the study, after which written informed consent was obtained and participants were enrolled.

Inclusion criteria were (a) veteran status with a current diagnosis of PTSD related to MST; (b) the MST event occurred ≥ 3 months prior to study entry; (c) MST was the veteran's lifetime trauma associated with the most severe current distress; (d) the veteran had more than one clear memory of the trauma; and (e) any psychiatric medication regimen was stable for ≥ 6 weeks. Exclusion criteria were (a) active substance dependence within the last 3 months, (b) current psychotic symptoms, (c) current unstable bipolar disorder, (d) current prominent suicidal or homicidal intent, (e) severe cognitive impairment, (f) currently receiving other psychotherapy specifically for PTSD, and (g) current involvement in a violent relationship.

Of 481 individuals screened for the study, 320 were excluded from participation following preliminary screening, and 161 were enrolled. Of those who were enrolled, 32 were withdrawn prior to randomization (see Figure 1 for reasons for withdrawal), and 129 were randomized to receive either CPT or PCT. Original sample size was estimated based on the primary hypothesis that total clinician-reported PTSD score would be significantly lower following CPT treatment compared to PCT treatment. We estimated that 128 participants would be needed to ensure sufficient power (i.e., .80) to detect a difference between groups in a two-tailed test with Type-I error of 5%, assuming a moderate effect size of $d = 0.50$.

For the purpose of randomization, participants were assigned sequential PIN numbers as they entered the study. Blocks of random numbers were generated for each therapist, and were allocated to either CPT or PCT using a conditional statement. The random number sequence was maintained on an Excel spreadsheet, and as subjects' PINs were entered into the spreadsheet, the preassigned condition was revealed. Assignment to therapist was based on therapist availability.

Due to treatment fidelity issues described in the Treatment Conditions subsection below, data were analyzed for $N = 86$ participants. There were no significant differences between the original sample of 129 and the final sample of 86 on demographic or baseline measures. Only data from the
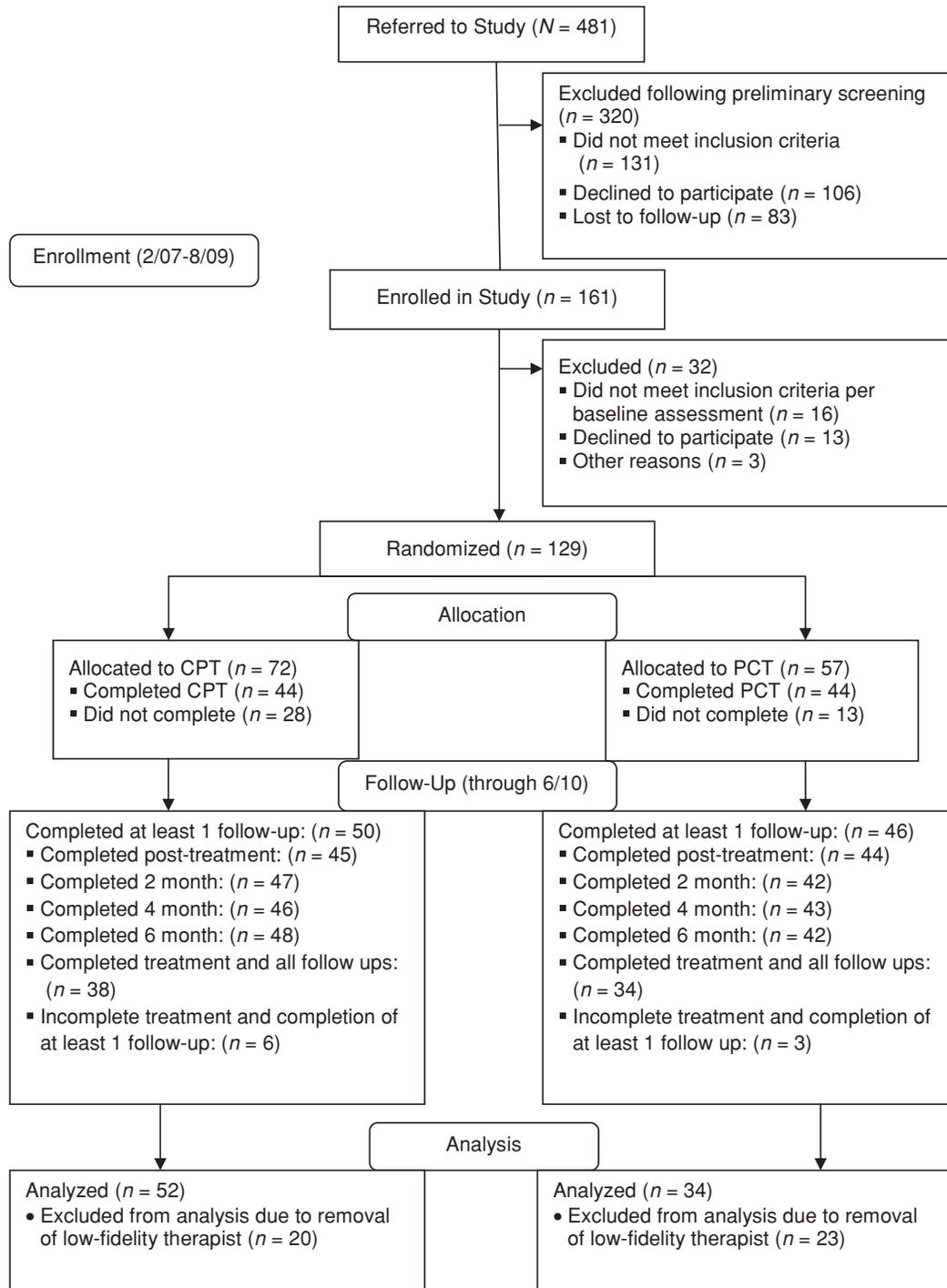
Figure 1. CONSORT flow chart.

$N = 86$ sample are included herein. Table 1 provides descriptive information on the 86 participants by treatment condition. The treatment groups did not significantly differ in any demographic characteristics.

The baseline assessment included the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995), the PTSD Checklist (PCL; Weathers et al., 2001), the Quick Inventory of Depressive Symptomatology (QIDS; Rush et al., 2003), and a demographic questionnaire, and was followed by 12 individual therapy sessions that occurred either once or twice per week depending on participant schedules. Treatment completers were defined as those completing all 12 sessions of therapy. Follow-up

Table 1
Descriptive Statistics for Final Sample[a]

Variable	CPT (n = 52)		PCT (n = 34)		Total (N = 86)	
	M or *n*	*SD* or *%*	*M* or *n*	*SD* or *%*	*M* or *n*	*SD* or *%*
Age in years	44.6	10.5	48.4	8.2	46.1	9.8
Sessions completed	9.7	3.5	10.7	3.1	10.1	3.3
Therapy completion						
No	18	35	6	18	24	28
Yes	34	65	28	82	62	72
Gender						
Female	43	83	30	88	73	85
Male	9	17	4	12	13	15
Education						
≤High school	9	17	9	26	18	21
College	35	67	21	62	56	65
Postcollege	8	16	4	12	12	14
Marriage						
Single, never married	10	19	2	6	12	14
Married/cohabiting	15	29	11	32	26	30
Divorced/separated	23	44	19	56	42	49
Widowed	4	8	2	6	6	7
Ethnicity						
White, non-Hispanic	23	44	15	44	38	44
Black/African American	20	39	15	44	35	41
Other	9	17	4	12	13	15
Work status						
Employed full-/parttime	23	44	11	32	34	39
Retired	6	11	4	12	10	12
Unemployed	18	35	14	41	32	37
Other	5	10	5	15	10	12
Service						
Air Force	9	17	6	18	15	17
Army	26	50	17	50	43	50
Marines	3	6	1	3	4	5
Navy	12	23	9	26	21	24
Other (>1 branch)	2	4	1	3	3	4
VA disability status[b]						
Never applied	11	21	4	12	15	18
Applied, denied	3	6	1	3	4	5
Applied, pending	6	12	7	20	13	15
Approved	31	61	22	65	53	62
VA disability status-PTSD[c]						
Never applied	27	54	12	35	39	47
Applied, denied	6	12	4	12	10	12
Applied, pending	7	14	10	29	17	20
Approved	10	20	8	24	18	21

Note. CPT = Cognitive processing therapy; PCT = present-centered therapy; VA = Veterans Administration; PTSD = posttraumatic stress disorder.
[a]N = 86, [b]For the CPT group, n = 51. [c]For the CPT group, n = 50.

assessments including the CAPS, PCL, and QIDS occurred immediately posttreatment (i.e., within 7 days of the final therapy session), and 2, 4, and 6 months after the final therapy session. Assessors were blind to treatment condition.

Measures

The CAPS (Blake et al., 1995) was used to assess current PTSD diagnosis and symptom severity. The CAPS is a semistructured

clinical interview based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association [APA], 1994). The frequency (0 = *never* to 4 = *daily or almost every day*) and intensity (0 = *none* to 4 = *extreme*) ratings for each item are summed to create a severity score for each of the three PTSD symptom clusters (i.e., reexperiencing [B], avoidance [C], and hyperarousal [D]), as well as an overall severity score. An overall severity cutoff score of 45 and the "1–2" rule of scoring (Blake et al., 1990) were utilized in the current study. The CAPS has excellent documented reliability and validity across a variety of populations and settings (Weathers, Keane, & Davidson, 2001), high internal consistency (Blake et al., 1990), and high convergent validity with other measures of PTSD (Keane, Caddell, & Taylor, 1988; Weathers, Litz, Herman, Huska, & Keane, 1993; Weathers, Ruscio, & Keane, 1999).

Although the definition of MST used by the VA includes both threatening sexual harassment and physical assaults of a sexual nature (U.S. Code: Title 38, 1720D), for the current study MST was more narrowly defined as an attempted or completed sexual assault that occurred while the veteran was on active duty. This narrower definition was adopted to ensure consistency with the requirements of Criterion A for diagnosis of PTSD according to the *DSM-IV*. In the event that the participant reported more than one MST event, the CAPS was administered in relation to the event causing the most distress currently.

In addition to the CAPS, participants completed the PCL (Weathers et al., 1993), a self-report assessment of severity of 17 posttraumatic symptoms as they relate to a specific traumatic event (in this case MST). Participants rated how often and to what degree they had been "bothered in the past month" by each symptom contextually and temporally linked to the MST on a scale from 1 = *not at all* to 5 = *extremely*. The PCL has acceptable test-retest reliability and internal consistency (Weathers et al., 1993). Participants also completed the 16-item QIDS (Rush et al., 2003) to rate the severity of the nine *DSM-IV-TR* (APA, 2000) major depression symptoms over the past week, with total possible scores ranging from 0–27. The QIDS has demonstrated good psychometric properties (Rush et al., 2003), including high internal consistency and high correlation with the Hamilton Rating Scale for Depression (Hamilton, 1960).

Treatment Conditions

Cognitive processing therapy. Cognitive processing therapy is a manualized cognitive–behavioral therapy developed by Resick and Schnicke (1993) for the treatment of rape-related PTSD and further adapted for the treatment of PTSD in veterans and military personnel (Resick, Monson, & Chard, 2007). Cognitive processing therapy provides a framework for conceptualizing PTSD as a disorder of nonrecovery from trauma. Interventions include education, cognitive restructuring, and writing trauma narratives. Patients are educated on a cognitive theory of PTSD that includes explanation of the "just world belief,"

assimilation, and overaccommodation concepts, as well as the relationship between thoughts and feelings. The first seven sessions address education, examination of thoughts through Socratic dialogue, and skill building; the remaining five sessions challenge beliefs surrounding themes of safety, trust, power, self-esteem, and intimacy.

Present-centered therapy. Present-centered therapy was used as the active comparison condition. Present-centered therapy is a manualized therapy for the treatment of PTSD, but without the cognitive-behavioral or trauma-focused components of CPT. In PCT, therapeutic focus is deliberately redirected away from discussion of traumatic events. PCT provides general support and education focused on current issues in the patient's life. Emphasis is on problem solving and improving relationships, with connections made between current problems and PTSD symptoms. Like CPT, PCT utilizes a written component, but in the form of daily journaling as opposed to written trauma accounts. In the current study, the number of sessions of PCT was extended from 10 to 12 to match the time/attention components of CPT. Present-centered therapy has been successfully used as a comparison condition in randomized controlled trials of CBTs (McDonagh et al., 2005; Schnurr et al., 2007). The PCT manual has not been published.

Treatment fidelity. Four masters- or doctoral-level mental health providers trained in both the CPT and PCT protocols provided treatment in the study. All therapy sessions were videotaped after obtaining informed consent. A minimum of two practice cases was required for each treatment modality. Therapists received weekly supervision, including videotape review. Twelve percent of the therapy tapes from each condition were randomly selected for rating by an independent expert. Ratings were made on a scale of 1 = *poor* to 7 = *excellent*, with 4 = *satisfactory*. Ratings were made for unique and essential elements specific to each session of each therapy approach, as well as essential but not unique elements (i.e., rapport-related) that were the same for every session across both approaches. Ratings were averaged across sessions for each therapist, for each condition.

Treatment fidelity analysis indicated a below-satisfactory competency rating in the CPT condition for one therapist. These results, combined with supervisory evaluation, contributed to the decision to remove this therapist from the study and exclude this therapist's data from study analyses. This therapist was not delivering CPT as intended; therefore, outcomes in these participants could not be attributed to CPT. The treatment fidelity ratings for the remaining therapists in the CPT condition were in an acceptable range. Likewise, the ratings for all therapists in the PCT condition were satisfactory or better. Excluding data from this therapist reduced the final sample to 86 participants from the original 129.

Data Analyses

Statistical analyses were conducted using SAS, version 9.2 (SAS Institute, Cary, NC). An alpha level of .05 (two-sided) was used for all analyses. Baseline characteristics were compared between the two treatment groups using the chi-square test for categorical variables and Student's t test for continuous variables. Primary outcomes were analyzed using the generalized linear mixed model (GLMM; SAS PROC MIXED) to investigate whether there were significant treatment effects on outcomes over time using therapist as a random cluster effect, and baseline severity, treatment group, and time as fixed effects. We used GLMM under the assumption that the data were missing at random. Effect size (Cohen's d) was calculated from baseline to posttreatment within groups and longitudinally between groups. Confidence intervals for Cohen's effect size were computed using the noncentral t-based approach (Algina, Keselman, & Penfield, 2006).

Because the male sample was small and no significant gender differences were detected on baseline demographics or outcome measures, male and female samples were combined for analyses. In addition, although the two treatment groups did not significantly differ in any demographic characteristics, the baseline CAPS re-experiencing subscale (CAPS B) was significantly higher for the CPT than for the PCT group ($p = .03$). This difference was addressed in relevant statistical analyses.

Results

The combined treatment dropout rate was 28% ($n = 24$), with rates of approximately 35% for CPT and approximately 18% for PCT. The difference in dropout rates between the treatment conditions was not significant, $\chi^2(1, N = 86) = 2.94, p = .086$ (see Table 1). Mean number of sessions completed was 9.7 in CPT and 10.5 in PCT; $F(1, 84) = 1.17, p = .28$. Dropout rates among the three therapists with acceptable fidelity did not significantly differ by therapist, $\chi^2(2, N = 86) = 3.20, p = .20$. When compared on baseline measures, treatment completers did not differ from dropouts (all $ps > .05$).

During the course of the study there were three adverse events in the CPT condition (one suicide attempt by overdose and two psychiatric hospitalizations) and two adverse events in the PCT condition (one suicide attempt by overdose and one psychiatric hospitalization). No events were deemed definitely study-related; however, one psychiatric hospitalization in the CPT condition was deemed possibly related.

Table 2 presents least squares means for the outcome measures at each time point. Mixed-effects analysis of the intent-to-treat sample ($N = 86$) revealed a significant treatment by time interaction for PCL score ($p = .05$), with significantly lower self-reported PTSD severity in the CPT group compared to the PCT group at posttreatment ($p = .05$). There were no significant differences between the CPT and PCT groups in self-reported PTSD severity scores at baseline ($p = .85$), 2-month ($p = .07$), 4-month ($p = .48$), or 6-month ($p = .13$) follow-up. The

Table 2
Least Square Means for Posttraumatic Stress Disorder and Depression Symptoms by Treatment Group[a]

	Baseline				Posttreatment				2-Month follow-up				4-Month follow-up				6-month Follow-up			
	CPT		PCT		CPT		PCT		CPT		PCT		CPT		PCT		CPT		PCT	
Variable	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
CAPS																				
B	23.11	0.92	22.23	1.12	18.27	1.13	19.77	1.24	17.92	1.08	18.15	1.28	16.80	1.13	18.28	1.19	15.26	1.11	16.12	1.22
C	34.33	1.38	33.69	1.69	25.03	1.68	28.50	1.85	24.73	1.61	29.47	1.91	25.32	1.67	27.60	1.78	23.14	1.66	25.43	1.82
D	26.95	0.94	26.45	1.15	21.40	1.16	20.72	1.28	21.18	1.11	20.61	1.32	21.53	1.16	20.80	1.22	20.80	1.15	19.82	1.25
Total	85.07	2.69	83.81	3.29	64.97	3.27	68.64	3.61	64.05	3.13	68.15	3.71	63.96	3.26	66.35	3.47	59.47	3.23	61.38	3.54
PCL	65.53	1.67	65.40	2.00	51.39	2.02	57.89	2.18	52.71	1.98	59.35	2.24	54.98	1.99	55.22	2.15	50.52	1.97	56.22	2.17
QIDS	15.85	0.62	15.82	0.76	12.84	0.75	13.82	0.83	13.43	0.73	14.26	0.87	12.83	0.75	13.92	0.80	12.01	0.74	13.90	0.81

Note. CPT = Cognitive processing therapy; PCT = present-centered therapy; CAPS = Clinician Administered PTSD Scale; B = reexperiencing subscale; C = avoidance subscale; D = hyperarousal subscale; Total = sum of subscales B, C, and D; PCL = PTSD Checklist; QIDS = Quick Inventory of Depressive Symptomatology.
[a]$N = 86$.

Table 3
Effect Sizes by Treatment Group[a]

| | Pre-/posttreatment effect size | | | | Between-group effect size | |
| | CPT | | PCT | | | |
Variable	d	95% CI	d	95% CI	d	95% CI
CAPS-B	0.87	[0.59, 1.15]	0.61	[0.33, 0.88]	-0.90	[-1.19, -0.63]
CAPS-C	0.87	[0.59, 1.15]	0.58	[0.30, 0.85]	-0.72	[-0.99, -0.44]
CAPS-D	0.65	[0.38, 0.92]	0.63	[0.35, 0.90]	0.08	[-0.19, 0.35]
CAPS-Total	1.02	[0.73, 1.30]	0.80	[0.52, 1.08]	-0.49	[-0.76, -0.22]
PCL	1.02	[0.73, 1.30]	0.56	[0.29, 0.84]	-0.85	[-1.13, -0.57]
QIDS	0.67	[0.39, 0.94]	0.30	[0.03, 0.57]	-1.58	[-1.88, -1.27]

Note. Effect size is measured with Cohen's *d*. Pre-/posttreatment effect sizes were calculated from analyses to generate least square means. Between-group effects indicate the overall difference between CPT and PCT in longitudinal analysis (negative values favor CPT over PCT). CPT = Cognitive processing therapy; PCT = present-centered therapy; CAPS = Clinician Administered PTSD Scale; B = re-experiencing subscale; C = avoidance subscale; D = hyperarousal subscale.
[a]$N = 86$.

corresponding between-group effect size for PCL was large ($d = -0.85$; Table 3). There were no statistically significant treatment × time interaction effects for clinician-rated PTSD symptom severity (i.e., CAPS total) or depression symptom severity (i.e., QIDS; $p > .05$ for both comparisons); however, between-group effect sizes on these measures trended in favor of CPT ($d = -0.49$ and $d = -1.58$, respectively; Table 3). All outcome measures improved significantly over time in both treatment groups ($p < .001$ in all comparisons). Pre- and posttreatment effect sizes were mostly moderate to large, and trended larger in the CPT group compared to the PCT group across all measures, with the exception of the CAPS hyperarousal subscale (CAPS-D; see Table 3). Least square means are graphically presented by treatment group for the outcome measures (Figure 2).

Discussion

This study investigated the effectiveness of CPT applied to women and men with MST-related PTSD. We hypothesized that both self-reported and clinician-assessed PTSD symptoms, as well as depressive symptoms, would show significantly greater reduction in the CPT group than in the PCT group. Only the hypothesis regarding self-reported PTSD symptoms was supported by the mixed-effects model analyses. No statistically significant differences were observed longitudinally between treatment groups for clinician-reported PTSD symptom severity or depression symptom severity; however, longitudinal between-group effect sizes were moderate to large and trended in favor of CPT for each of the three primary outcome measures.

Although notable that the longitudinal between-group differences reached significance for the self-reported PTSD symptoms (i.e., PCL), but not the clinician-assessed symptoms (i.e., CAPS) in the mixed-effects model analyses, the magnitude of the between-group effect sizes points to lack of power as a

possible explanation for the lack of a significant interaction effect.

The current study demonstrated that CPT and PCT were both effective at reducing posttraumatic and depressive symptoms. Similar to findings from other randomized controlled clinical trials (McDonagh et al., 2005; Schnurr et al., 2007), PCT appeared to perform more like an active intervention rather than a comparison condition intended to control for the nonspecific aspects of therapy such as time and attention. Clinician-reported posttraumatic symptoms and self-reported posttraumatic and depressive symptomatology all improved significantly pre- to posttreatment in both groups. The pre- to posttreatment effect sizes were mostly moderate to large in both groups, but tended to be larger in the CPT group.
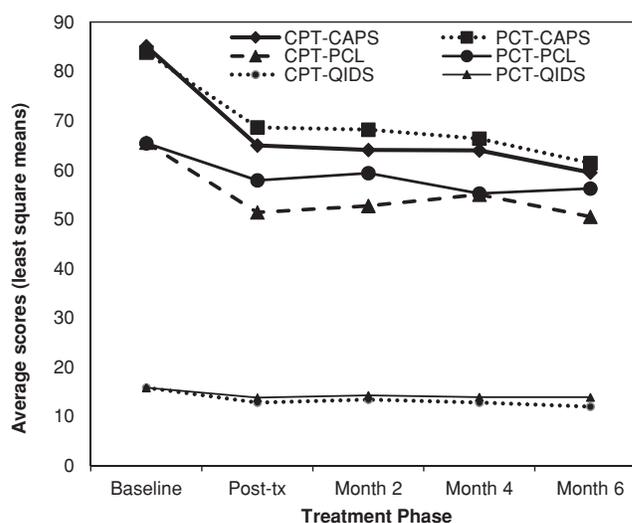

Figure 2. Posttraumatic stress disorder and depression scores across time by treatment group ($n = 86$). CAPS = Clinician Administered PTSD Scale; PCL = PTSD Checklist; QIDS = Quick Inventory of Depressive Symptomatology; CPT = cognitive processing therapy; PCT = present-centered therapy.

Several major advantages support the external validity of the current findings. Both females and males were included, and the study included good ethnic minority representation. The minimal exclusion criteria permitted concurrent use of psychotropic medications and nontrauma-focused therapeutic interventions outside of the study; such concurrent treatments are the norm in the VA setting. The study therapists were trained, but not expert, in the therapeutic approaches they delivered, which is characteristic of standard clinical settings and increases generalizability. Furthermore, participants in the comparison group received an active intervention rather than assignment to a waitlist control, providing a more useful point of reference in judging comparative clinical effectiveness.

The primary limitation to the current study was low treatment fidelity on the part of one study clinician, which emphasizes the importance of fidelity monitoring in clinical research. Poor treatment fidelity resulted in exclusion of one therapist's data from analyses. We arrived at the decision to remove this data after careful consideration, as removing participants after randomization can threaten internal validity and limit generalization of results, and reducing sample size reduces power while increasing the likelihood of Type II error. Although far from ideal, we concluded that removing this therapist's data was preferable to retaining it and in effect contaminating the treatment condition.

Although not statistically different from the 18% dropout rate of the PCT group in the current study, the 35% dropout rate in the CPT group was higher than in other randomized control trials of CPT (Chard, 2005; Monson et al., 2006; Resick et al., 2002), but lower than rates in a similar randomized controlled trial of prolonged exposure therapy (PE) for PTSD in veterans (Schnurr et al., 2007). Because no other studies of CPT specifically in a population with MST-related PTSD have been conducted, it is unknown if the current dropout rate is representative of this population. Dropouts did not differ from treatment completers on baseline measures. Separate analyses of PTSD outcomes comparing treatment completers with dropouts were not performed as only 20.8% ($n = 5$) of the treatment dropouts in the current study participated in any of the four follow-up assessments.

In the current study, the vast majority of CPT dropouts occurred in the first half of treatment, specifically between sessions 3 and 6. Although we did not collect data on causes of dropout, we hypothesize that this is related to the fact that participants write their trauma narratives as homework for sessions 3 and 4. The writing of trauma narratives can be an especially challenging component of this therapy approach in terms of the emotional demands involved. Dropping out of therapy is one method of avoidance coping when faced with distressing emotions, or even the possibility of distressing emotions. In addition to the emotional demands of directly confronting one's trauma, CPT is also more demanding in terms of the mental focus and the homework required (as opposed to the trauma-free journaling of PCT), which may have also contributed to the differential dropout between the treatment groups.

Although the inclusion of males was a definite advantage of the current study, they were represented in limited numbers. To prevent underrepresentation of men in the burgeoning research literature on MST-related PTSD, researchers must develop effective recruitment strategies for this specific population that may be less willing to disclose MST and seek treatment.

Conclusion

According to 2010 data, 562,986 outpatient encounters at VHA facilities represented mental health visits for veterans who screened positive for MST (VA, 2011). The increasing numbers of veterans seeking MST-related mental health services at VHA facilities have created an urgent need to identify and implement efficient, effective methods for treating those veterans with PTSD related to MST. The results of the current study appear to provide preliminary evidence for the effectiveness of CPT in the treatment of PTSD related to sexual trauma; however, treatment fidelity issues and subsequent removal of a portion of participants from analyses limits the conclusiveness with which we can state superiority of CPT over the comparison condition. Cognitive processing therapy's efficacy in reducing PTSD symptoms related to sexual trauma has been demonstrated in prior randomized controlled trials in civilian sexual assault and childhood sexual abuse populations (Chard, 2005; Resick et al., 2002, 2003). It addresses the salient issues of personal safety, power differential, and betrayal faced by women and men who have experienced MST, and thus holds promise as an effective treatment for this population. Participants who received PCT also improved over time, just as they did in the Schnurr et al. (2007) study, providing more evidence for PCT as a viable alternative for patients unable or unwilling to participate in current trauma-focused empirically based treatments (EBT's) for PTSD (e.g., CPT, PE).

This was the first randomized controlled trial of psychotherapy for PTSD specifically related to MST of which we are aware. Further randomized controlled trials are needed to determine the relative effectiveness of CPT in this subpopulation of people with PTSD, especially given the limits to interpretation in the current study.

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