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A Comparison of Veterans Who Repeat Versus Who Do Not Repeat a Course of Manualized, Cognitive-Behavioral Therapy for Posttraumatic Stress Disorder

Jeremiah A. Schumm
Wright State University

Nicole D. Pukay-Martin
Whitney L. Gore
Cincinnati VA Medical Center

Despite evidence that cognitive-behavioral therapy (CBT) for posttraumatic stress disorder (PTSD) is effective, some individuals do not experience clinically significant reduction or remission of their PTSD symptoms. These individuals may return for additional PTSD-focused psychotherapy. However, there is no research to know whether PTSD treatment repeaters have worse symptoms prior to the initial treatment episode or display differences in other pretreatment characteristics versus nonrepeaters. Research is also needed to explore whether treatment repeaters exhibit PTSD symptom changes during an initial or second course of treatment. The current study examines differences in pretreatment characteristics and treatment response among U.S. military veterans who participated in either a single course (n = 711) or in two separate courses (n = 87) of CBT for PTSD through an outpatient Veterans Affairs PTSD treatment program. Veterans completing two courses of CBT for PTSD were more likely to be married and employed and more likely to drop out of their initial course of treatment versus those who completed a single course. Hierarchical linear models showed that reductions in PTSD symptoms during treatment were not different for those who completed a second versus single course of CBT for PTSD. However, for those participating in two courses of CBT for PTSD, a relapse in PTSD symptoms was observed between the first and second course. These findings show that a second course of CBT may be viable for those with ongoing PTSD symptoms.

Keywords: posttraumatic stress disorder; psychotherapy; cognitive behavior therapy; treatment outcomes; veterans

The Department of Veterans Affairs (VA) has been engaged in a national initiative to disseminate evidence-based, cognitive-behavioral psychotherapies for the treatment of posttraumatic stress disorder (PTSD; Karlin, & Cross, 2014). Beginning in 2006–2007, the VA began training clinicians in cognitive processing therapy (CPT) and prolonged exposure (PE) therapy (Cook & Stirman, 2015). In addition, the VA has begun to disseminate cognitive-behavioral conjoint therapy for PTSD (CBCT for PTSD; U.S. Department of Veterans Affairs, 2016). Although these cognitive-behavioral therapies are shown to have benefits for treating PTSD, these therapies are not a panacea for all veterans with PTSD. Between 30% to 51% of veterans who receive CBT for PTSD fail to exhibit clinically significant improvement in their PTSD symptoms (Steenkamp, Litz, Hoge, & Marmar, 2015). For those who continue to exhibit problems with PTSD, some return to receive an additional course of cognitive behavioral therapy (CBT) for PTSD (i.e., CPT, PE, or CBCT for PTSD).

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Address correspondence to Jeremiah A. Schumm, Ph.D., Wright State University, Ellis Human Development Institute, 9 North Edwin C. Moses Boulevard, Dayton, OH 45402-6837; e-mail: jeremiah.schumm@wright.edu.

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Unfortunately, there is no research to date to know whether individuals who repeat a second course of CBT differ from those who complete only one course of CBT for PTSD. By identifying differences between these groups, clinicians would be able to proactively target individuals who are prone to repeat treatment and address the factors that lead to these individuals needing a second course of treatment. In addition, there is no research to know whether those who repeat CBT for PTSD demonstrate reductions of PTSD symptoms during the initial course of treatment. Finally, it is unclear if these individuals who repeat a second course of CBT for PTSD show symptom reduction during their second course of treatment. It is important to understand whether repeating CBT for PTSD is effective so that recommendations can be made as to whether a second course of CBT for PTSD is an evidence-based option, or if other interventions need to be considered.

Failure to respond to CBT for PTSD may be explained by a variety of factors. Noncompliance with CBT homework assignments may inhibit patients' mastery of skills, such as the ability to challenge trauma-related cognitions or eliminate avoidance behaviors, both of which are hypothesized to be key mechanisms of change in CBT for PTSD (Cahill, Rothbaum, Resick, & Follette, 2009). A poor fit between patients' preferences and abilities versus the requirements for the treatment protocol may also play a role in patient nonresponse. For example, patients who are reluctant to complete written CBT homework assignments due to poor self-efficacy regarding their writing abilities may respond poorly to CBT protocols that require written assignments. In addition, low therapist fidelity to CBT protocols or poor therapeutic alliance may also be factors that explain a lack of positive response to a course of CBT for PTSD.

Empirical studies that have attempted to identify factors that predict veterans' treatment response to CBT for PTSD have produced mixed findings. One study compared veterans meeting full diagnostic criteria for PTSD versus subthreshold PTSD. A study by Dickstein, Walter, Schumm, and Chard (2013) examined whether veterans who exhibit pretreatment subthreshold PTSD symptoms versus those meeting full diagnostic criteria for PTSD differed in degree of PTSD symptom change during CPT. Although those exhibiting subthreshold PTSD had less severe clinician- and veteran-rated PTSD symptoms at pretreatment and posttreatment, the groups did not differ on degree of improvement in PTSD symptoms during treatment. Several studies have found that pretreatment PTSD and depression severity significantly predict differential response to CBT for PTSD, such that higher pretreatment PTSD and depression predicted being categorized within a latent class characterized by higher PTSD symptoms during and following treatment (Elliott, Biddle, Hawthorne, Forbes, and Craemer, 2005; Schumm, Walter, & Chard, 2013). In contrast, neither Kehle-Forbes et al. (2016) nor Miles and Thompson (2016) found pretreatment, veteran-rated PTSD symptom severity to be associated with veteran-rated PTSD symptom changes during treatment.

Premature dropout may interfere with patients' abilities to obtain and retain the necessary skills for reducing PTSD symptoms. Recent naturalistic studies have found that 46% to 49% of veterans prematurely drop out from CPT and PE (Kehle-Forbes et al., 2016). Findings from these studies are mixed as to whether PE versus CPT is associated with less dropout. Kehle-Forbes et al. found higher dropout in PE versus CPT, whereas Miles and Thompson did not find significant differences in dropout between CPT and PE. In the study by Kehle-Forbes et al., younger veterans were found to be more likely to drop out of treatment. Miles and Thompson found that veterans who had histories of combat trauma were more likely to complete treatment versus those who did not have combat trauma histories. In addition, those with histories of childhood trauma were less likely to complete CBT for PTSD versus those without such trauma histories. Although it is plausible that premature treatment dropout may be a factor that contributes to why some veterans return for additional CBT for PTSD, studies have yet to examine this possibility. Research is also needed to examine whether premature treatment dropout and factors associated with dropout from CBT for PTSD (e.g., younger age, type of traumatic experiences) are also related to whether veterans engage in a second course of CBT for PTSD.

The aim of this study was to examine whether veterans who engage in two courses of CBT for PTSD were different from those who engage in a single course of CBT on pretreatment symptoms of PTSD and depression and in trajectory of change in PTSD symptoms during treatment. We hypothesized that those who engaged in a second course of CBT for PTSD will exhibit less PTSD symptom reduction during their initial course of CBT for PTSD versus those who engage in only a single course of CBT for PTSD. This hypothesis is based upon the assumption that individuals who engage in a second course of CBT for PTSD will demonstrate less within treatment gains during the initial course of CBT for PTSD, thereby requiring additional treatment to address their PTSD symptoms.

We also had several exploratory aims. Prior studies have been mixed as to whether pretreatment PTSD and depression are predictive of PTSD symptoms

during and following CBT for PTSD (Elliott et al., 2005; Kehle-Forbes et al., 2016; Miles & Thompson, 2016; Schumm et al., 2013). However, since some of these studies have found a relationship between pretreatment symptoms and differential treatment response (Elliott et al., 2005; Schumm et al., 2013), we sought to explore whether individuals who engage in a second course of CBT for PTSD exhibit higher severity of PTSD and depression prior to their initial course of CBT for PTSD in comparison to pretreatment PTSD and depression severity among those who engage in only a single course of CBT for PTSD. In addition, we were interested in seeing whether those who complete only one course of CBT for PTSD had quicker reductions in PTSD symptoms during treatment versus those who repeated treatment. No studies to date have examined whether rate of improvement predicts differential sustained improvement and less likelihood of returning to treatment. Therefore, no hypothesis was made regarding rate of improvement in PTSD symptoms between treatment repeaters versus nonrepeaters. Finally, no research to date has examined whether individuals who repeat CBT for PTSD demonstrate improvement in PTSD symptoms during their second course of treatment. Therefore, we sought to explore whether PTSD symptoms significantly decrease from the beginning to the end of the second course. We were also interested in exploring whether the degree of PTSD symptom change differs in the first versus second course of CBT for PTSD. We believe that these exploratory aims are important to know whether a second course of CBT for PTSD should be considered for those seeking out additional treatment following an initial course of CBT for PTSD or if other alternatives should be considered for these cases.

Method

PARTICIPANTS

The initial sample included 1,470 veterans who were seen between June 2005 and June 2014 for an intake evaluation and at least 1 session of psychotherapy through an outpatient VA PTSD specialty clinic. All participants met criteria for PTSD diagnosis according to the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (*DSM-IV*, American Psychiatric Association, 1994) or exhibited subthreshold PTSD. Following prior research (Dickstein et al., 2013), subthreshold PTSD was defined as meeting DSM-IV PTSD criteria A and having at least 1 symptom from each of the PTSD DSM-IV symptom clusters (i.e., at least 1 criterion B (re-experiencing) symptom, at least 1 criterion C (avoidance/numbing) symptom, and at least 1 criterion D (hyperarousal) symptom). From this initial sample of 1,470 veterans, we excluded 283 because they engaged in a form of psychotherapy other than CBT for PTSD (i.e., CPT, PE, or CBCT for PTSD). Of the remaining 1,187 participants, 143 engaged in an initial course of CBT for PTSD and then returned to the clinic for a second intake evaluation. Thirty-nine were found to be ineligible because they did not exhibit PTSD or subthreshold PTSD at the second intake or for other reasons (e.g., referred for non-PTSD-focused treatment). An additional 17 individuals were excluded because they were administered DSM-5 measures during their second course of treatment. The remaining 87 individuals comprised the "*treatment repeater*" sample in this study. Of the treatment repeaters, the mean length of time between treatment episodes was 22.38 months (*SD* = 18.51).

A total of 1,044 individuals engaged in only one course of CBT for PTSD. These participants' last session date occurred longer ago than the mean length of time between treatment for the treatment repeaters plus one standard deviation prior to September 1, 2015. This criterion was chosen because the treatment repeater data suggested that individuals were not particularly likely to return for a second course of therapy after this window of time. In addition, to be included in the nonrepeaters sample, individuals could not have returned for a second course of therapy at any point through the end of data collection. After these individuals (n = 333) were removed from the sample, 711 individuals remained, constituting the "*treatment non-repeater*" sample.

MEASURES

The intake assessment battery administered included structured clinical interviews and self-report measures collected in approximately 2 to 3 hours. The measures in this study were part of this larger battery of assessments. These data were collected from clinical chart review of veterans, and therefore, item-level data were not available.

Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995)

The CAPS was used to determine DSM-IV PTSD diagnosis. The CAPS is a structured clinical interview designed to assess *DSM-IV* PTSD symptoms. Each symptom is rated in terms of frequency and intensity (both on a scale of 0 to 4). Each symptom item is counted towards meeting diagnostic criteria for PTSD if the frequency is rated as at least 1 (i.e., symptoms occur on a monthly basis) and intensity is rated at least 2 (i.e., indicating moderate distress). As part of the CAPS assessment, individuals completed the Life Events Checklist (Blake et al., 1995) to identify potential traumas. The CAPS was then used to rate the individual's PTSD symptoms in response to his or

her worst identified trauma. The period of assessment used for the CAPS was the previous month. Most of the CAPS assessments were administered by licensed psychologists or social workers, and the remainder were administered by supervised psychology or social work trainees. Before they were permitted to independently administer the CAPS, all clinicians were directly observed in their CAPS administration on multiple occasions and provided feedback on their fidelity by clinicians who were trained and experienced in delivering the CAPS. The CAPS has been found to have good internal consistency and test-retest reliability as well as strong convergent and discriminant validity (Weathers, Keane, & Davidson, 2001).

PTSD Checklist-Specific Version (PCL-S; Weathers, Litz, Herman, Huska, & Keane, 1993)

The PCL-S is a 17-item self-report measure designed to assess the symptoms of *DSM-IV* PTSD. The PCL-S was used to rate the severity of PTSD symptoms related to each individual's index trauma (i.e., worst identified trauma). The index event on the PCL-S was anchored to the worst index event that was assessed via the CAPS. Items are rated on a scale ranging from 1 (*not at all)* to 5 (*extremely)*. The PCL-S assessments administered at intake used the assessment period of the previous month, while the PCL-S assessments administered during treatment used the period of the previous week to measure progress in treatment. The PCL-S has been shown to have strong psychometric properties, including good internal consistency, test-retest reliability, convergent validity, and sensitivity to change (Wilkins, Lang, & Norman, 2011).

Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown, 1996)

The BDI-II is a 21-item self-report measure of depression symptomatology. Items are rated on a 4-point Likert-type scale ranging from 0 to 3. The BDI-II has been shown to have strong internal consistency, test-retest reliability, and convergent validity (Beck, Steer, & Brown, 1996). The BDI-II was administered during the intake only.

PROCEDURES

All data were collected as part of routine clinical care at a VA hospital PTSD outpatient clinic. This study was approved by the local institutional review board and the local VA research office. Because the study involved archival data collected as part of routine clinical care, the local institutional review board determined that written informed consent was not necessary. At intake, an assessment battery was administered to veterans to inform clinical care. As part of this assessment battery, the CAPS, PCL-S and BDI-II were administered at intake. At the end of the intake, the intake clinician and veteran discussed treatment options and mutually determined the type of treatment that the veteran would receive. During the course of CBT for PTSD, participants completed the PCL-S on a weekly basis.

CBT for PTSD

Treatment type was coded based on a review of veterans' electronic medical records. The CBT treatment protocols ranged from approximately 9 to 15 sessions, and sessions were typically delivered on a weekly basis. The CBT treatment protocols included CPT (Resick, Monson, & Chard, 2017), PE (Foa, Hembree, & Rothbaum, 2007), or CBCT for PTSD (CBCT; Monson & Fredman, 2012). These psychotherapies were chosen because they are the three PTSD psychotherapies that are being nationally disseminated with the VA, and each of these psychotherapies was being offered as first-line recommended treatments at the VA hospital PTSD outpatient clinic where this study took place. In the current study, the individually delivered version of CPT was used, and this protocol involved 12, 60-minute sessions. Using in-session practice and out-of-session written exercises, CPT teaches skills to help veterans challenge their problematic, trauma-related beliefs and to identify alternative ways of thinking about the traumas and views of oneself, others, and the world. PE involves 9 to 15, 90-minute individual sessions. Using in- and out-of-session imaginal exposure exercises and out-of-session *in vivo* exposure exercises, PE teaches skills to help veterans to eliminate avoidance behaviors and to develop alternative trauma-related cognitions. CPT and PE are empirically supported psychotherapies that are recommended as first-line treatments for veterans with PTSD (U.S. Department of Veterans Affairs/Department of Defense, 2010). CBCT for PTSD includes both the veteran and a concerned significant other (CSO) into PTSD treatment. This protocol includes 15, 75-minute sessions that are attended by both the veteran and CSO, and the protocol targets both reduction of PTSD and improvement of relationship functioning. CBCT for PTSD teaches communication and conflict management skills, utilizes out-of-session approach exercises to reduce avoidance, and uses in- and out-of-session exercises to teach the veteran and CSO how to challenge and identify alternatives to problematic, trauma-related cognitions (Monson & Fredman, 2012). Participants were considered as having completed treatment if they met either of the following criteria: (a) participant completed a total of 9 sessions or more or (b) medical record notes document that the clinician and patient agreed that treatment was completed. We chose 9 or more

sessions as one of the criteria for defining treatment completion because this would constitute completing the majority of the prescribed number of sessions in the CPT, PE, or CBCT for PTSD protocols. Initial treatment completion was not a factor in determining whether individuals were classified as treatment repeaters or nonrepeaters. Because treatment was delivered as part of routine clinical care, sessions were not audio- or video-recorded, and could, therefore, not be coded for fidelity to the protocols.

DATA ANALYTIC PLAN

We used a modified intent-to-treat approach by including participants who completed one or more sessions of CBT for PTSD. To investigate differences between repeaters and nonrepeaters on a number of demographic and symptom severity variables prior to treatment, a series of *t*-tests and chi-square analyses were conducted. To test hypotheses related to differences in treatment outcome between repeaters and nonrepeaters, two hierarchical linear models were estimated. In the first model, PCL-S scores from repeaters' first episode were compared to nonrepeaters' scores, while in the second model, PCL-S scores from repeaters' second episode were compared to nonrepeaters' scores. In both models, time, repeater status, and the time × repeater status interaction were included as predictors of PCL-S score. All demographic variables that were statistically different between repeaters and nonrepeaters (i.e., marital status, employment status, combat trauma as the worst trauma, and type of treatment) were included as covariates. Random effects were estimated for intercept and slope, an unstructured covariance structure was specified, and a first-order autoregressive error structure was estimated. Finally, to investigate repeaters' trajectory of change over both episodes of treatment, a piecewise hierarchical linear model was estimated. PCL-S scores were included as the outcome of interest, and fixed effects were estimated for (a) time across both episodes of treatment (i.e., average rate of change in PCL-S scores over both episodes 1 and 2), (b) a change in level between episodes 1 and 2 (i.e., the difference between PCL-S scores at the end of episode 1 and PCL-S scores at the beginning of episode 2), and (c) a change in slope between episodes 1 and 2 (i.e., the difference in the rate of change in PCL-S scores over time between episodes 1 and 2). Identical covariates, random effects, and error structures were specified in this model as compared to the previous models. We attempted to estimate random effects for the change in level and change in slope, but the parameters were considered redundant, as no additional variance was associated with these parameters. Therefore, these random effects were not included in the final model.

Results

DIFFERENCES BETWEEN TREATMENT REPEATERS AND NONREPEATERS' PRETREATMENT VARIABLES

As displayed in Table 1, there were no significant differences between treatment repeaters and nonrepeaters on most demographic and clinical variables. In comparison to treatment nonrepeaters, treatment repeaters were significantly more likely to be married, to be employed, to report combat as their worst trauma, and to drop out of their first course of treatment than treatment nonrepeaters. In addition, treatment type differed significantly across groups. Treatment repeaters were less likely to engage in CPT in their first course of treatment than nonrepeaters (see Table 1). In terms of type of therapy repeaters engaged in for their first and second courses of treatment, 50.6% (n = 44) engaged in CPT for both courses of treatment, 21.8% (n = 19) had CPT followed by PE, and 9.2% (n = 8) had CPT followed by CBCT for PTSD. Additionally, 6.9% (n = 6) had PE followed by CPT and 5.7% (n = 5) had CBCT for PTSD followed by CPT. Finally, 2 patients (2.3%) had CBCT for PTSD followed by PE, 1 (1.1%) had PE followed by CBCT for PTSD, 1 (1.1%) had PE for both courses, and 1 (1.1%) had CBCT for PTSD for both courses. There were no differences on the proportion of repeaters versus non-repeaters who had subthreshold PTSD or co-occurring alcohol use disorder, substance use disorder, or major depressive disorder. There was also no difference between repeaters and non-repeaters in terms of the proportion who identified childhood abuse as their worst trauma.

As shown in Table 2, comparison of the repeater versus nonrepeater sample on pretreatment PTSD and depression provided limited support for the study hypotheses. Prior to the initial episode of treatment, repeaters had significantly higher self-reported PTSD symptoms on the PCL-S than nonrepeaters. However, repeaters and nonrepeaters did not differ significantly on whether they exhibited full PTSD diagnosis or subthreshold PTSD (see Table 1) or clinician-rated CAPS severity at pretreatment (see Table 2). In addition, repeaters and nonrepeaters did not differ on pretreatment clinician diagnosis of depression (see Table 1) or veteran-rated depression severity according to the BDI-II (see Table 2).

To determine whether dropout explained differences in repeaters and nonrepeaters, we examined whether treatment type was related to dropout. For the first course of treatment, there was not a significant difference in treatment completion for those who received CPT (n = 367, 49.5%) compared to those who received PE or CBCT for PTSD (n = 30, 52.6%), χ^2 (1) = 0.20, p = .65. For the second course

Table 1
Comparisons of Treatment Repeaters With Treatment Non-Repeaters on Demographic and Treatment-Related Characteristics

	Repeaters (n = 87)		Non-repeaters (n = 711)			
Variable	*M* or *n*	*SD* or %	*M* or *n*	*SD* or %	*t* or χ^2	*p*
Age: *M, SD*	43.06	13.83	45.18	14.83	t (796) = -1.27	.204
Sessions completed in 1st course: *M, SD*	7.90	5.10	8.94	5.08	t (796) = -1.80	.072
Sessions completed in 2nd course: *M, SD*	7.77	4.99	—	—		
Months until 2nd treatment course: *M, SD*	22.39	18.51	—	—		
Male: *n,* %	78	90	635	89	χ^2 (1) = 0.01	.922
White: *n,* %	66	76	578	81	χ^2 (1) = 1.47	.226
Married: *n,* %	58	67	374	53	χ^2 (1) = 6.18	.013
Employed: *n,* %	46	53	277	39	χ^2 (1) = 6.23	.013
Years of education: *M, SD*	13.01	1.72	13.23	1.94	t (789) = -1.00	.319
OEF/OIF/OND era: *n,* %	42	48	275	39	χ^2 (1) = 2.98	.084
Army: *n*, %	54	62	421	59	χ^2 (1) = 0.26	.608
PTSD service-connected disability: *n,* %	18	26	133	22	χ^2 (1) = 0.58	.447
Service-connection status: *n*, %					χ^2 (3) = 3.39	.335
Not connected or seeking	37	60	292	51		
Seeking but not connected	15	24	180	32		
Connected not seeking increase	7	11	48	8		
Connected and seeking increase	3	5	51	9		
Treatment dropout: *n,* %	55	63	346	49	χ^2 (1) = 6.57	.010
Combat worst trauma: *n,* %	71	82	500	70	χ^2 (1) = 4.85	.028
Childhood abuse worst trauma: *n,* %	6	7	36	5	χ^2 (1) = 0.51	.476
Subthreshold PTSD	4	5	78	11	χ^2 (1) = 3.41	.065
Current or Past Substance Use Disorder: *n,* %	18	21	130	18	χ^2 (1) = 0.30	.586
Current or Past Alcohol Use Disorder: *n*, %	39	45	335	47	χ^2 (1) = 0.16	.686
Current or Past Major Depressive Disorder: *n,* %	52	60	428	60	χ^2 (1) = 0.01	.939
Initial course treatment type: *n,* %					χ^2 (2) = 23.14	<.001
CPT	71	82	670	94		
PE	8	9	29	4		
CBCT for PTSD	8	9	12	2		
Second course treatment type: *n,* %						
CPT	55	63	—	—		
PE	22	25	—	—		
CBCT for PTSD	10	11	—	—		

Note. Due to missing data for some variables, *n* varies from 62 to 87 for the repeater sample and from 571 to 711 for the non-repeater sample. OEF/OIF/OND = Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn, PTSD = posttraumatic stress disorder, CPT = cognitive processing therapy, PE = prolonged exposure, CBCT for PTSD = cognitive-behavioral conjoint therapy for PTSD.

of treatment, there was also not a significant difference in treatment completion between those who received CPT (n = 22, 40.0%) and those who received PE or CBCT for PTSD (n = 18, 56.3%), χ^2 (1) = 2.15, p = .14. Additionally, the relationship between treatment completion and type of treatment did not differ by repeater status (i.e., the relationship between treatment completion and type of treatment) was nonsignificant for both repeaters, χ^2 (1) = 0.41, p = .52, and nonrepeaters, χ^2 (1) = 0.40, p = .53).

We also examined differences in the same demographic variables for dropouts versus completers for

Table 2
Baseline Comparisons for Treatment Repeaters With Treatment Non-Repeaters on the CAPS, PCL-S and BDI-II

	Repeaters (n = 87)		Non-repeaters (n = 711)				
	M	*SD*	*M*	*SD*	*t* (*df*)	*p*	*d*
CAPS	66.68	15.18	64.21	17.28	1.27 (795)	.204	.09
PCL-S	61.19	10.77	58.12	11.78	2.27 (765)	.023	.16
BDI-II	30.85	11.74	30.25	11.47	.45 (768)	.652	.03

Note. Due to missing data for some variables, *n* varies from 84 to 87 for the repeater sample and from 683 to 711 for the non-repeater sample. CAPS = Clinician-Administered PTSD Scale, PCL-S = PTSD-Checklist-Specific Version, BDI-II = Beck Depression Inventory – II. Cohen's *d* effect size guideline is small < 0.2 (Cohen, 1988).

the first episode of treatment. Treatment dropouts were significantly younger (M = 41.56, SD = 14.48) than completers (M = 48.38, SD = 14.18), $t(796)$ = 6.71, $p < .001$, were significantly more likely to serve in the recent era (Operation Enduring Freedom – Operation Iraqi Freedom; n = 188, 46.9%) than completers (n = 129, 32.5%), χ^2 (1) = 17.25, $p <$ .001, and were significantly less likely to be married (n = 210, 52.4%) than completers (n = 156, 39.3%), χ^2 (1) = 13.74, $p < .001$. Treatment dropouts were also more likely to have a current or history of substance use disorder (n = 93, 23.2%) than completers (n = 55, 13.9%), χ^2 (1) = 11.52, p = .001. Unsurprisingly, treatment dropouts (M = 5.11, SD = 3.85) completed significantly fewer sessions than completers (M = 12.57, SD = 3.02), $t(796)$ = 30.41, $p < .001$. Treatment dropouts did not differ from treatment completers on any other demographic or pretreatment variables, including whether they endorsed combat as their worst trauma (completers: n = 285, 71.8%), dropouts: n = 286, 71.3%), χ^2 (1) = 0.02, p = .88, or childhood abuse as their worst trauma (completers: n = 21, 5.3%), dropouts: n = 21, 5.3%), χ^2 (1) = 0.00, p = .97. Therefore, the only demographic or pretreatment variable related to both repeater status and dropout was marital status.

Finally, a series of ANOVAs and chi-square tests were conducted to determine whether the relationship between repeater status and each demographic and treatment variable was different for dropouts versus completers. The analyses revealed that the relationship between repeater status and both (a) marital status and (b) employment status depended on dropout status. In terms of marital status, for treatment dropouts, repeaters were more likely to be married (n = 38, 69.1%) than nonrepeaters (n = 153, 44.2%), $\chi^2(1)$ = 11.77, p = .001; however, there was no relationship between marital status and repeater status for treatment completers, $\chi^2(1)$ = 0.05, p = .828. In terms of employment status, there was no significant relationship between employment status and repeater status for treatment dropouts, $\chi^2(1)$ = 2.12, p = .15. However, for treatment completers, repeaters were more likely to be employed (n = 20, 62.5%) than nonrepeaters (n = 149, 40.8%), $\chi^2(1)$ = 5.66, p = .02. The relationship between repeater status and the remaining demographic and treatment variables did not differ between treatment dropouts and completers.

HIERARCHICAL LINEAR MODELS TESTING DIFFERENCES BETWEEN TREATMENT REPEATERS AND NONREPEATERS ON PTSD SYMPTOMS DURING TREATMENT

Results from the hierarchical linear models investigating differences between repeaters and nonrepeaters on PCL-S scores are displayed in Table 3. In both models comparing repeaters to nonrepeaters, time was a significant predictor of PCL-S scores, such that patient scores decreased over time. For every additional session attended, patients' PCL-S scores decreased by 1.89 points on average. However, neither repeater status nor the interaction between repeater status and time was significant, indicating that there was not a significant difference between average PCL-S scores in the repeater versus nonrepeater groups and that the groups did not differ in the rate of improvement in PCL-S scores over time.

Results from the piecewise hierarchical linear model are shown in Table 4. Again, time was a significant predictor of PCL-S scores, such that patient scores decreased over time. The parameter modeling change in level between episodes 1 and 2 was significant, demonstrating that patient scores significantly increased from the end of episode 1 to the beginning of episode 2. However, the parameter modeling change in slope between episodes 1 and 2 is not significant, suggesting that the slopes for episodes 1 and 2 were not statistically significantly different. This result indicates that the rate of improvement in repeaters' PCL-S scores in episodes 1 and 2 were not significantly different. As noted in Tables 3 and 4, there was not a significant relationship between therapy type (i.e., CPT vs PE or CBCT) and the PCL-S.

We calculated change from pretreatment PCL-S score to last available session PCL-S score and categorized patients with a decrease of 10 or more points as having achieved clinically significant improvement and patients with an increase of 10 or more points as experiencing clinically significant deterioration (Monson et al., 2008). We then compared repeaters and nonrepeaters on clinically significant change using chi-square analyses. Number and percentage of patients who achieved clinically significant change are displayed in Table 5. When repeaters' first course was compared with nonrepeaters, there was no significant difference in the proportion of repeaters and nonrepeaters achieving clinically significant change, $\chi^2(2)$ = 1.65, p = .44. Similarly, when repeaters' second course was compared with nonrepeaters, there was no significant difference in the proportion of repeaters and nonrepeaters achieving clinically significant change, $\chi^2(2)$ = 0.28, p = .87. However, when taking treatment dropout into account, the relationship between dropout status and clinically significant change depended on repeater status. For repeaters, there was not a significant relationship between dropout status and achievement of clinically significant change (patients who dropped out and achieved clinically significant improvement: n = 11, 35.5%; patients who completed and achieved clinically significant improvement: n = 11, 55.0%),

Table 3
Results from Hierarchical Linear Model Comparing Nonrepeaters to Repeaters on PCL-S Score Over Time

Non-repeaters vs. Repeaters 1st Episode						
Fixed Effects	*B*	SE	*t*	*p*	95% CI	
Intercept	62.76	2.21	28.39	<.001	58.42	67.10
Time	-1.89	0.10	-19.82	<.001	-2.07	-1.70
Repeater Status	2.35	2.00	1.17	.242	-1.59	6.28
Repeater Status * Time	0.64	0.33	1.90	.058	-0.02	1.29
Married	-1.69	1.13	-1.50	.134	-3.92	0.53
Employed	-2.65	1.10	-2.40	.017	-4.82	-0.48
Combat	-2.03	1.22	-1.67	.096	-4.43	0.36
Therapy Type	-0.77	2.03	-0.38	.704	-4.76	3.22
Random Effects	*B*	SE	Wald Z	*p*	95% CI	
τ_{00}	114.14	10.80	10.57	<.001	94.83	137.39
τ_{11}	1.74	0.25	6.90	<.001	1.31	2.31
τ_{01}	-0.65	1.23	-0.53	.598	-3.06	1.76
σ^2	54.97	2.90	18.93	<.001	49.56	60.97
ρ	0.38	0.03	11.56	<.001	0.31	0.44
Non-repeaters vs. Repeaters 2nd Episode						
Fixed Effects	*B*	SE	*t*	*p*	95% CI	
Intercept	61.37	2.15	28.49	<.001	57.14	65.60
Time	-1.89	0.10	-19.79	<.001	-2.08	-1.70
Repeater Status	1.41	1.90	0.74	.458	-2.32	5.15
Repeater Status * Time	0.43	0.29	1.47	.143	-0.15	1.00
Married	-1.24	1.12	-1.10	.272	-3.44	0.97
Employed	-2.94	1.11	-2.66	.008	-5.11	-0.76
Combat	-1.49	1.21	-1.22	.222	-3.87	0.90
Therapy Type	0.18	1.93	0.09	.928	-3.62	3.97
Random Effects	*B*	SE	Wald Z	*p*	95% CI	
τ_{00}	115.50	10.74	10.75	<.001	96.25	138.60
τ_{11}	1.75	0.25	7.04	<.001	1.33	2.31
τ_{01}	-0.45	1.22	-0.37	.714	-2.83	1.94
σ^2	54.84	2.85	19.22	<.001	49.52	60.73
ρ	0.39	0.03	11.94	<.001	0.32	0.45

Note. PCL-S = Posttraumatic Stress Disorder Checklist-Specific Version (Weathers, Litz, Herman, Huska, & Keane, 1993). Combat = combat listed as the worst trauma as compared to all other trauma types. Therapy type is coded as cognitive processing therapy compared to prolonged exposure and cognitive-behavioral conjoint therapy for posttraumatic stress disorder.

$\chi^2(2) = 2.59$, $p = .27$. However, for nonrepeaters, patients who dropped out of treatment were less likely to achieve clinically significant improvement ($n = 66$, 29.9%) than patients who completed treatment ($n = 182$, 72.5%), $\chi^2(2) = 85.72$, $p < .001$.

Discussion

Contrary to our hypothesis, veterans who repeated a course of CBT for PTSD did not exhibit significantly different degrees of improvement in PTSD symptom severity ratings during their first course of therapy versus veterans who completed only one course of CBT for PTSD. During the initial course of therapy, both repeaters and nonrepeaters showed significant and clinically meaningful improvements in their PTSD symptoms. However, the results showed that veterans who repeated treatment were more likely to prematurely drop out of their initial course of CBT for PTSD. These results were further qualified by findings which showed that achieving clinically significant improvement was unrelated to dropout among those who repeated CBT for PTSD. This suggests that for treatment repeaters, factors other than PTSD symptom changes during treatment may explain why some of these individuals return for a second course of CBT for PTSD. However, for nonrepeaters, failure to achieve clinically significant improvement was significantly associated with dropping out of CBT for PTSD. These findings suggest that for some veterans, dropout may be related to lack of meaningful treatment response, thereby reducing motivation to return for a second course of CBT for

Table 4
Results From Piecewise Hierarchical Linear Model Investigating Repeaters' Scores on PCL-S Over Time

Fixed Effects	*B*	SE	*t*	*p*	95% CI	
Intercept	61.18	4.07	15.03	<.001	53.10	69.26
Time	-1.04	0.21	-4.85	<.001	-1.46	-0.61
Score Change	36.43	6.79	5.37	<.001	22.99	49.87
Slope Differential	-0.37	0.28	-1.33	.187	-0.93	0.18
Married	-1.35	2.61	-0.52	.605	-6.52	3.82
Employed	3.68	2.48	1.48	.142	-1.25	8.60
Combat	-1.20	2.99	-0.40	.690	-7.13	4.74
Therapy Type	-1.91	2.66	-0.72	.473	-7.18	3.36

Random Effects	*B*	SE	Wald Z	*p*	95% CI	
τ_{00}	102.30	40.37	2.53	.011	47.21	221.70
τ_{11}	0.12	0.08	1.50	.134	0.03	0.45
τ_{01}	-1.69	2.08	-0.81	.416	-5.76	2.38
σ^2	64.28	8.95	7.18	<.001	48.93	84.46
ρ	0.59	0.06	9.51	<.001	0.45	0.69

Note. PCL-S = Posttraumatic Stress Disorder Checklist-Specific Version (Weathers, Litz, Herman, Huska, & Keane, 1993). Score change = change in patient score between episodes 1 and 2. Slope differential = the difference in slope for episode 2 as compared with episode 1. Combat = combat listed as the worst trauma as compared to all other trauma types. Therapy type is coded as cognitive processing therapy compared to prolonged exposure and cognitive-behavioral conjoint therapy for posttraumatic stress disorder.

PTSD. More research is needed to guide the development or implementation of interventions for these individuals who fail to respond and are not prone to return for a second course of CBT for PTSD.

An exploratory aim was to examine pretreatment PTSD or depression diagnosis or severity of these symptoms was predictive of veterans repeating CBT for PTSD. Neither clinician-rated PTSD severity nor clinician-assessed PTSD diagnostic status (meeting full diagnostic criteria for PTSD versus subthreshold PTSD) prior to the initial episode of treatment were predictive of whether veterans repeated CBT for PTSD. Also, veteran-rated depression severity and clinician-rated depression diagnosis prior to the initial episode of treatment was unrelated to whether veterans repeated a second course of CBT for PTSD. In comparison to those who completed only one course of CBT for PTSD, veterans who repeated CBT for PTSD did exhibit significantly higher self-reported PTSD symptoms prior to the first treatment episode; however, the effect size difference was small (Cohen, 1988). These findings may suggest that more severe veteran—but not clinician—ratings of PTSD symptoms are predictive of whether veterans repeat CBT for PTSD. One possible explanation for this finding is that veterans who are experiencing higher general distress may rate their PTSD symptoms as being more severe versus clinicians' ratings of these symptoms. Higher general distress might motivate some individuals to seek an additional course of CBT. However, it is important to note that the effect size differences between treatment repeaters and nonrepeaters for clinician-rated (d = .09) and veteran-rated (d = .16) PTSD severity were both in a range that is not considered to be clinically significant (Monson et al., 2008). Additional research is needed to see if these findings are reproducible or represent a spurious finding.

We conducted exploratory analyses to examine whether demographic differences might be related to treatment dropout, since treatment dropout was shown to be a risk factor for repeating treatment. Consistent with prior research (Kehle-Forbes et al., 2016), we found that those who dropped out of the first course of therapy were younger and to have served in Operational Iraqi Freedom–Operation Enduring Freedom versus veterans who did not drop out. We also found that those who dropped out were more likely to have current or past substance use disorders. These findings suggest that younger age and having a substance use disorder may be indirect factors explaining why some veterans may be at risk to repeat CBT for PTSD, since they may increase the chance that veterans prematurely terminate their initial course of therapy. These findings point to the need for interventions that improve CBT for PTSD treatment completion among younger veterans and those with substance use disorders. For example, clinicians might consider delivering integrated or simultaneous treatments for PTSD and substance use disorders, such as COPE (Back et al., 2014) or Seeking Safety (Najavits, 2002), which would help to consolidate care and serve to address substance-related problems that may interfere with engagement in CBT for PTSD (Schumm & Gore, 2016). Programs may also be needed to help younger veterans to

Table 5
Baseline and Last Observation for Treatment Repeaters and Treatment Non-Repeaters, Within-Group Effect Sizes, and Clinically Significant Change on the PCL-S

	Baseline		Last Observation		*t(df)*	*p*	Within Group *d*	95% CI		Patients with Clinically Significant Improvement		Patients with Clinically Significant Deterioration	
	M	*SD*	*M*	*SD*						*n*	%	*n*	%
Repeaters 1st Course	61.19	10.77	52.02	14.57	3.77(50)	<.001	.53	.25	.81	22	43.1	4	7.8
Repeaters 2nd Course	60.49	11.38	50.37	17.14	5.09(55)	<.001	.68	.41	.95	29	51.8	5	8.9
Nonrepeaters	58.12	11.78	45.34	17.03	15.52(471)	<.001	.71	.62	.80	248	52.5	33	7.0

Note. Due to missing data for some variables, *n* varies from 51 to 84 for the repeater sample and from 481 to 683 for the non-repeater sample. PCL-S = PTSD-Checklist-Specific Version. Cohen's *d* effect size guideline is small = 0.2, medium = 0.5, large = 0.8 (Cohen, 1988). Clinically significant change on the PCL-S is defined as a change of 10 points or more from pre-treatment score to last available session score (Monson et al., 2008).

eliminate barriers to their receiving CBT for PTSD, such as competing responsibilities or stigma over receiving mental health treatment.

Marital status was found to be related both to treatment repeater status and treatment dropout. We found that married individuals were significantly less likely to drop out of treatment; however, married individuals were also more likely to repeat treatment. This suggests that being married may be a positive prognostic variable for treatment engagement, such that married veterans are more likely to complete an initial course of CBT for PTSD and to return to engage in a second course of treatment. It is important to note that our exploratory analyses showed a potential moderating impact of treatment dropout on the relationship between marital status and repeating treatment. We found that marital status was *only* related to repeating treatment among those who dropped out of their first course of CBT for PTSD. In contrast, marital status was not related to repeating treatment among those who completed an initial course of CBT for PTSD. These findings might be explained by spousal encouragement toward veterans returning to treatment when veterans fail to complete a full course of CBT for PTSD. Additional research is needed to see if these findings can be replicated and to explore whether spousal encouragement or support for treatment engagement might explain the association between marital status and treatment engagement. Research is also needed to explore whether interventions that increase spousal support for treatment are effective for helping veterans to sustain engagement in CBT for PTSD.

Employed individuals were more likely to repeat CBT for PTSD, but employment was unrelated to treatment dropout. In addition, we found that employment status was *only* related to repeating treatment among those who completed an initial course of CBT for PTSD. Employment was unrelated to repeater status among those who dropped out of the first course of CBT for PTSD. Future research should explore whether current problems functioning at work may explain why some veterans who have previously completed a full course of CBT for PTSD might then return for an additional course of treatment. Perhaps completing an initial course of CBT for PTSD may serve as evidence for some of these individuals that they can successfully complete CBT for PTSD, whereas those who are experiencing work-related problems and who dropped out of their initial course of treatment may have less self-efficacy about their ability to complete a second attempt at treatment.

In addition to demographic differences between repeaters and nonrepeaters, the repeater sample had a higher proportion of veterans who endorsed combat as the worst trauma. Prior research has shown that

combat trauma is associated with worse PTSD treatment outcomes versus noncombat trauma (Bradley, Greene, Russ, Dutra, & Westen, 2005; Schumm et al., 2013). Prior research has also shown that perpetration of killing in combat may have a uniquely damaging psychological effect due to moral injuries that arise from these experiences (Maguen et al., 2009). It seems possible that some of these veterans who experienced killing during combat or who were a witness to killing or death may need more extended CBT for PTSD or specific psychotherapies that specifically target the consequences of these morally injurious experiences. Litz and colleagues (2009) detail the lasting impact of these experiences and propose an intervention strategy for addressing moral injury among combat veterans. The CPT manual also describes ways that CPT can be used to address moral injury (Resick et al., 2017). Clinicians might consider using these approaches in order to help combat veterans who are dealing with the impact of moral injury.

The findings showed that nonrepeaters were more likely than repeaters to receive CPT during the initial course of therapy. The present study found no differences between CPT versus PE or CBCT for PTSD with regard to treatment dropout in either the first or second treatment episode. In addition, therapy type did not predict changes in PTSD symptoms during the first or second episode of treatment. This suggests that neither treatment dropout nor differential PTSD symptom changes during treatment accounted for CPT having proportionally less treatment repeaters. Since the current study is uncontrolled and veterans and clinicians collaboratively chose the type of therapy, this finding may be attributable to veteran and clinician variables, rather than differences that are attributable to the therapy protocols. Most veterans in the current study received CPT; therefore, future studies are needed that include a greater number of individuals receiving PE and CBCT for PTSD.

Another aim of the study was to investigate whether treatment repeaters would exhibit symptom improvement during their second course of CBT for PTSD and to explore whether PTSD symptom changes during a second course of therapy differ from the changes observed during the initial course of therapy. We found that treatment repeaters exhibited significant improvements in PTSD symptoms during both the first and second course of CBT for PTSD, and the degree of improvement did not differ between these two courses of therapy. However, it is noteworthy that there was a significant increase in the severity of self-rated PTSD symptoms for repeaters between the first and second episode of treatment. This finding suggests that some of the repeaters experienced a relapse in PTSD symptoms between the first and second episode of treatment, which may have been a motivating factor in their returning to treatment. This relapse in PTSD symptoms may have led veterans to have negative views of their progress, thus elevating their general distress and initial PTSD symptom severity ratings during the second course of CBT. Fortunately, the second course of CBT for PTSD was shown to produce significant reduction of PTSD symptoms. Together these findings suggest that a second course of CBT for PTSD is a viable treatment option for veterans who have already engaged in treatment.

The study has several strengths. Given that the sample was composed of veterans receiving routine clinical care through a VA PTSD program, the external validity and applicability of the findings is high for veterans seeking VA outpatient PTSD treatment. Another strength is that we used psychometrically sound and widely utilized outcome measures for assessing PTSD and depression. Finally, the HLM analyses allowed us to appropriately model dependency of the within-treatment outcomes and the effects of multiple treatment episodes, while also being able to efficiently test the association of between-participant predictors on PTSD treatment outcomes.

Study limitations should also be noted. Since the study is uncontrolled, there are multiple, confounding factors that could have affected differences between the treatment repeaters and nonrepeaters, and it is not possible to draw causal inferences. Another limitation is that we did not obtain data from veterans about their reported reasons for repeating a course of treatment. If such qualitative data were collected in future studies, this would improve the understanding of why veterans may be returning for PTSD treatment. Because the therapies were delivered as part of routine clinical care, fidelity measures were not collected, leaving open the possibility that deviation from the treatment protocols or CAPS administration impacted the findings. Finally, we did not have data on veterans' symptoms following treatment, so there is no information to know whether repeaters' and nonrepeaters' symptoms differ during the period of time following their participation in CBT for PTSD. We also do not have data to assess whether treatment repeaters received treatment from providers outside of the local VA where the study treatments were delivered. Future studies are needed to assess whether longer-term differences exist between repeaters and nonrepeaters, since it is possible that some individuals returned to treatment beyond the period that was captured in the current study. Given the limitations of the present study, future studies should also address whether CBT treatment fidelity or receiving other treatments

outside of the VA might contribute to observed differences between those who repeat versus those who do not repeat CBT for PTSD.

This is the first study of which we are aware to examine differences between individuals who complete a second course of CBT for PTSD versus those who participate only in a single course of CBT for PTSD. The findings are important in showing that relapse in PTSD symptoms may be a factor in why some individuals return for additional PTSD-focused psychotherapy. Critically, the findings indicate that a second course of CBT for PTSD is associated with significant and meaningful improvements in PTSD symptoms. Hence, a second course of CBT for PTSD appears to be a viable option for some individuals who experience a relapse in PTSD symptoms or who otherwise fail to respond to an initial course of therapy. Additional research is needed to further understand and address factors that contribute to relapse of PTSD symptoms. Future research should also investigate whether there are identifiable subclasses of individuals that show symptom trajectories that are prognostic for repeating a course of CBT for PTSD. Finally, studies are needed to investigate how to improve the effectiveness of an initial course of CBT for PTSD, so that individuals are less likely to need to return for a second course of therapy.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

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