

## Research Article

# PREDICTORS OF COMPLETION OF EXPOSURE THERAPY IN OEF/OIF VETERANS WITH POSTTRAUMATIC STRESS DISORDER

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**Background:** *Despite large-scale dissemination and implementation efforts of evidence-based psychotherapy to veterans from Operation Enduring/Iraqi Freedom (OEF/OIF), little is known regarding the factors that contribute to the successful completion of these treatments in this high-risk population. The present study investigated predictors of treatment completion during a standardized exposure-based psychotherapy for PTSD. Methods: Ninety-two OEF/OIF combat veterans enrolled in a randomized controlled trial for an eight session exposure-based psychotherapy for PTSD. All participants completed structured clinical interviews and several background and symptom questionnaires. Of the initial 92 participants, 28% of the sample (n = 26) discontinued treatment prior to completion of the trial. Results: Predictors of discontinuation of treatment were assessed with a hierarchical logistic regression. Disability status was positively associated with treatment discontinuation, and postdeployment social support was negatively associated with discontinuation. In contrast to previous findings, other factors, such as age and PTSD symptomatology, were not identified as significant predictors. Conclusions: The present study suggested that disability status at the start of treatment increases the risk for treatment discontinuation whereas increased social support buffers against discontinuation. Together, these findings highlight the importance of increased assessment and early intervention when these factors are present to potentially reduce treatment discontinuation and improve treatment outcomes in OEF/OIF veterans with PTSD. Depression and Anxiety 30:1107–1113, 2013. Published 2013. This article is a U.S. Government work and is in the public domain in the USA.*

**Key words:** *Operation Enduring Freedom; Operation Iraqi Freedom; posttraumatic stress disorder; exposure therapy; dropout; social support; disability*

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## INTRODUCTION

Between 2001 and 2010, nearly 1.9 million U.S. service members were deployed in Operations Enduring/Iraqi Freedom (OEF/OIF),<sup>[1]</sup> with as many as 15% returning with psychiatric disorders such as posttraumatic stress disorder (PTSD).<sup>[2,3]</sup> Given the high prevalence of psychiatric symptomatology and severe impairment associated with the disorder, emphasis has been placed on the identification and evidence-based treatment of OEF/OIF veterans with PTSD within the Veteran Affairs Medical Centers (VAMCs), as well as in treatment facilities within the Department of Defense.<sup>[4]</sup> Fortunately, several evidence-based psychotherapies are effective in treating PTSD in veterans and military personnel, including treatments such as *Prolonged Exposure Therapy for PTSD* and *Cognitive Processing Therapy for PTSD in Veterans and Military Personnel*.<sup>[5]</sup> These psychotherapeutic interventions are administered by highly trained providers for 12–16 weekly sessions, guided by a treatment protocol that includes specific session-by-session psychoeducation, skills training, and between-session practices. The two primary mechanisms of these treatments are exposure techniques/exercises, involving both situational and imaginal exposures, and cognitive restructuring.<sup>[5]</sup>

Although these treatments were rigorously developed for victims of trauma, and evaluated in, and disseminated through VAMCs, the majority of veterans with PTSD do not receive and/or complete an adequate trial of psychotherapy within the VAMCs.<sup>[6]</sup> Based on data from VAMCs in 2004, 64% of veterans with PTSD did not receive any sessions of psychotherapy after their initial diagnosis, and of those veterans with PTSD receiving psychotherapy, only 21.4% received an adequate dose, defined as at least eight sessions.<sup>[6]</sup> Across all veterans that attended at least one session of psychotherapy within the study, the average number of sessions attended was small ( $M = 5.4$ ;  $SD = 8.7$ ; median = 2.0; mode = 1; range = 1–180). Although several initiatives have been implemented throughout the VAMCs over the past several years that likely have resulted in significant improvements in the number of veterans with PTSD receiving evidence-based psychotherapy, including national VAMC provider training programs<sup>[7]</sup> as well as using telehealth technologies to increase VAMC providers' service areas,<sup>[8]</sup> these findings suggest that additional understanding is needed on service use of veterans with PTSD.

Questions of particular interest for OEF/OIF veterans with PTSD are: (1) what factors are associated with utilization of services within the VAMC?, (2) what types of services are used?, and (3) what factors are associated with successful completion of these services? Several studies have attempted to address the first two research questions over the past several years.<sup>[9–12]</sup> These studies have used large VAMC national databases to track service utilization and *International Classification of Diseases* diagnostic codes, VAMC clinic and procedural

codes, and veterans' demographic information. Findings indicate widescale use of primary care services (94.3%) as well as mental health outpatient services (95.5%) by OEF/OIF veterans with PTSD.<sup>[10]</sup> Mental health inpatient services also are used by a significant minority of OEF/OIF veterans with PTSD (12.4%).<sup>[11]</sup> Veterans living in rural settings were less likely to utilize outpatient services whereas the number of comorbid conditions was associated with increased service utilization.<sup>[9]</sup>

The investigation of the factors associated with successful completion of VAMC services, namely, evidence-based psychotherapy, by OEF/OIF veterans with PTSD has received less attention in the literature.<sup>[13–15]</sup> Unlike the studies listed above, evidence-based psychotherapeutic services do not receive distinct procedural codes, nor are all types of psychotherapy necessarily evidence-based, limiting researchers' ability use of large national databases to address this question. Rather, to date, research has focused on investigating predictors within existing trials of evidence-based psychotherapy and has identified a few preliminary findings thus far. When compared to Vietnam Era veterans, OEF/OIF veterans with PTSD attended fewer sessions and were less likely to complete treatment,<sup>[13,14]</sup> but these differences were not accounted for by differences in symptomatology. In the only study of predictors of treatment discontinuation in OEF/OIF veterans with PTSD, younger veteran age (but not employment status or ethnicity), more severe pretreatment PTSD symptom severity, and higher pretreatment negative treatment indicators on the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) differed between veterans that did and did not complete treatment.<sup>[15]</sup> However, this study had several limitations. In particular, evidence-based psychotherapy, labeled cognitive behavioral therapy in the study, was not standardized across all participants, with variations noted in individual versus group sessions, inclusion of exposure therapy, and the number and frequency of sessions provided. In addition, the predictors included in the analyses were limited to three demographic variables and two self-report questionnaires.

The present study sought to address these gaps in the treatment completion literature in OEF/OIF veterans with PTSD. Specifically, this study investigated predictors of treatment completion during a standardized evidence-based psychotherapy for PTSD. Hypothesized predictors were based on two primary sources from the existing literature. First, the present study included predictors identified from the preliminary findings described earlier.<sup>[13–15]</sup> Second, the present study also included factors identified in the general literature to influence treatment outcome of evidence-based psychotherapy for PTSD, due to the relation between treatment discontinuation and symptomatology.<sup>[15]</sup> For example, research has demonstrated that increased social support is positively associated to increased treatment response in OEF/OIF veterans with PTSD.<sup>[16]</sup> Although treatment discontinuation was not investigated in the study, it is reasonable to hypothesize that increased

social support also may lead to improved treatment retention, due to improved symptomatology. Similar findings and related predictions exist for stress, combat exposure, and comorbidity in the existing literature.<sup>[17–19]</sup> Together, the predictors in the present study included demographic variables (ethnicity, marital status, disability status, employment, age), treatment modality (in-person vs. telehealth), factors from deployment (combat exposure, perceived threat), postdeployment factors (social support, stressors), PTSD symptoms, and comorbid symptoms of depression. Based on the previous literature on treatment completion,<sup>[13–15]</sup> younger age, deployment factors,<sup>[16,17]</sup> PTSD symptom severity, and comorbid depression symptom severity<sup>[18,19]</sup> were hypothesized predictors of increased treatment discontinuation, whereas increased postdeployment social support was hypothesized to be associated with decreased treatment discontinuation.<sup>[16]</sup>

## MATERIALS AND METHODS

### PARTICIPANTS

Combat veterans ( $N = 92$ ) of OEF/OIF were recruited through PTSD clinic referrals at a large Southeastern VAMC. Eligible participants were required to meet diagnostic criteria for combat-related PTSD or subthreshold PTSD, defined as fulfillment of Criteria A (traumatic event) and Criteria B (re-experiencing), and either Criteria C (avoidance) or Criteria D (hyperarousal).<sup>[20]</sup> To determine eligibility, a masters-level clinician administered the Clinician Administered PTSD Scale (CAPS)<sup>[21]</sup> to assess PTSD symptoms and the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (SCID-IV)<sup>[22]</sup> to assess psychiatric comorbidities. Individuals who were actively psychotic, acutely suicidal, or met criteria for substance dependence on the SCID were excluded from participation. To enhance generalizability of study findings, participants receiving psychotropic medication were not excluded from participation, nor were participants with comorbid mood or anxiety disorders. Consented participants were predominantly male (93.5%), African-American (40.2%) or Caucasian (55.4%), employed (52.2%), married (50.0%), served in the Army (64.1%), and had a mean age of 33.2 years ( $SD = 9.0$ ) and an average of 13.0 years ( $SD = 3.3$ ) of education. A significant percentage of participants reported being disabled (37.0%) and met diagnostic criteria for major depressive disorder (MDD; 34.8%) or panic disorder (20.7%) on the SCID. Participants reported an average of 54.7 months ( $SD = 25.2$ ) between their index trauma and their intake assessment and an average of 2.0 ( $SD = 1.8$ ) deployments to OEF/OIF.

### PROCEDURES

A full description of the larger study methodology involving a complete list of assessment measures, treatment protocols, and the randomization process can be found in a previously published article.<sup>[23]</sup> An abbreviated presentation of the methodology that is most pertinent to the current study is presented below. All participants were offered eight, 90-min sessions of Behavioral Activation and Therapeutic Exposure (BA-TE), a transdiagnostic exposure-based psychotherapy designed specifically to improve treatment outcome in patients with comorbid symptoms of PTSD and depression.<sup>[24,25]</sup> The active treatment components of BA-TE include behavioral activation, situational exposure, and imaginal exposure techniques/exercises.<sup>[24]</sup> All participants were randomized into either in-person treatment ( $n = 49$ ) or

treatment via home-based telehealth technologies ( $n = 35$ ). Masters-level therapists administered BA-TE and met weekly with the principal investigator for supervision throughout the duration of the study. Sessions were audio-recorded and monitored by an independent rater to ensure treatment fidelity. Several assessments were completed at baseline, including a brief demographic questionnaire, select SCID modules, CAPS, Deployment Risk and Resiliency Inventory (DRRI),<sup>[26]</sup> Beck Depression Inventory-Second Edition (BDI-II),<sup>[27]</sup> and PTSD Checklist (PCL).<sup>[28]</sup> Disability status was assessed by a self-report demographic question, “are you currently classified as disabled?” which was completed by all participants. No independent verification was completed for the demographic variables (e.g., disability, marital, or employment status).

Of note, the preliminary findings from the larger trial were consistent with our initial hypotheses.<sup>[25]</sup> More specifically, significant pre- to posttreatment symptom improvements were demonstrated on the PCL and BDI-II across all participants. In addition, no differences were observed in symptom improvements between the two treatment conditions (telehealth vs. in-person).

### MEASURES

**Deployment Risk and Resiliency Inventory.** The DRRI consists of 13 subscales to assess predeployment, active duty, and postdeployment factors in recently returning combat veterans.<sup>[26]</sup> For the present study, four subscales were of interest: deployment concerns (e.g., “I thought I would never survive.”), combat experience (e.g., “I went on combat patrols or missions.”), postdeployment support (e.g., “I have problems that I can’t discuss with family or friends.”), and postdeployment life events (e.g., “Since returning home, I have lost my job.”). Work with veterans has shown the DRRI to demonstrate acceptable internal consistency for the subscales ( $\alpha > .81$ ) and convergent and discriminative validity.<sup>[26]</sup>

**BDI-II.** The BDI-II is a 21-item measure designed to assess the cognitive, affective, behavioral, motivational, and somatic symptoms of depression in adults and adolescents.<sup>[27]</sup> The BDI-II has demonstrated excellent test–retest reliability over a 1-week interval ( $r = .93$ ), excellent internal consistency ( $\alpha < .92$ ), and convergent and discriminant validity in multiple samples.<sup>[27]</sup>

**PTSD Checklist-Military.** The PCL is a 17-item measure designed to assess PTSD symptom severity.<sup>[28]</sup> The PCL has been shown to have excellent internal consistency ( $\alpha > .94$ ), test–retest reliability in veterans ( $r = .96$ ), and convergent validity with alternative measures of PTSD ( $r$ s range from .77 to .93).<sup>[28]</sup>

### TELECOMMUNICATIONS TECHNOLOGY

Treatment sessions for the telehealth participants were conducted using in-home videoconferencing technology as part of the larger study. Either an internet-based instant video service (e.g., a “Skype” type program) or an analog videophone (Viterion 500; Elmsford, NY) was used at the participant’s discretion. Prior research demonstrates that exposure therapy can be delivered effectively to individuals with PTSD via telehealth technologies.<sup>[8,12,29]</sup>

### DATA ANALYTIC PLAN

Treatment discontinuation was defined as discontinuing treatment prior to the completion of all eight sessions of the BA-TE treatment protocol. Participants that missed scheduled appointments were rescheduled, sometimes repeatedly, until all eight sessions were completed and posttreatment assessments were administered (treatment complete:  $M$  sessions attended = 8.0;  $SD = 0.0$ ). However, a significant minority of participants did not ultimately reschedule and/or attend all sessions and discontinued treatment without completion of follow-up assessments (treatment discontinued:  $M$  sessions

attended = 3.2;  $SD = 1.7$ ; range = 1–6). Predictors of treatment discontinuation were assessed with a hierarchical logistic regression. Discontinuation served as the outcome variable such that 0 = completed treatment and 1 = discontinued treatment. Predictors were entered into the model across two steps with demographic variables (ethnicity, disability status, marital status, employment status, age) and treatment condition (in-person or telehealth) entered in step 1 and symptom measures (BDI-II, PCL) and deployment factors (DRRI subscales) in step 2. Demographic variables were included in the first step to control for their effects given prior work that has suggested age, ethnicity, and marital status are associated with discontinuation of treatment. Missing data on at least one continuous variable was observed on 16% ( $n = 15$ ) of the cases. Missing data was handled with multiple imputation such that final estimates were obtained by pooling the estimates of 25 complete datasets.<sup>[30]</sup> Complete datasets were created with imputation models that used all variables used in the current analyses. All analyses were performed with SPSS 20 (Chicago, IL). An a priori power analysis indicated that with  $\alpha = 0.05$  and power of 0.80, the current sample size could detect an odds ratio (OR)  $> 1.74$  or an OR  $< 0.57$ .

## RESULTS

Findings evidenced that 28.3% of the sample ( $n = 26$ ) discontinued treatment. Descriptive statistics for discontinuers ( $n = 26$ ) and treatment completers ( $n = 66$ ) are presented in Table 1. In comparison to normative data from veterans, participants endorsed higher symptoms of PTSD on the PCL and depression on the BDI-II, as well as higher combat exposure, higher deployment concerns, higher postdeployment stressors, and lower postdeployment social support on the DRRI.<sup>[26]</sup>

Fit statistics for the first step of the logistic regression that included demographic variables and treatment condition suggested that the model demonstrated good fit ( $P = .71$ ). However, treatment condition, ethnicity, marital status, age, and employment status were unrelated to treatment discontinuation (Table 2). Disability status was positively associated with discontinuation, OR = 3.38,  $P = .04$ , 95% CI: 1.05–10.81. The total model, which included measures of mental health symptoms and deployment factors, demonstrated good fit ( $P = .82$ ). Postdeployment support was negatively associated with discontinuation of treatment as well, OR = 0.89,  $P = .01$ , 95% CI: 0.82–0.97. These findings suggest that disability status at the start of treatment increases the risk for treatment discontinuation whereas increased social support buffers against discontinuation. Correlations among the predictor variables do not support evidence of multicollinearity of suppression (Table 3).

## DISCUSSION

The present study investigated predictors associated with treatment discontinuation of evidence-based psychotherapy in OEF/OIF veterans with PTSD. Prior to this study, little research on treatment discontinuation had been completed with this high-risk patient population. Strengths of the study include its standardization of evidence-based psychotherapy for PTSD, as

well as the number of investigated predictors for treatment discontinuation, which were selected based on prior studies.<sup>[13–19]</sup> The present findings provided reliable support for two predictors of treatment discontinuation, namely, disability status and postdeployment social support. The lack of a relation for age and PTSD symptom severity, as well as marital status and employment status in this sample were also of note, as these factors have been identified as predictors in the previous literature and/or are typically discussed as facilitators/barriers to participation in evidence-based psychotherapy.<sup>[13,15]</sup> In addition, the lack of differences in discontinuation rates between the telehealth and in-person treatment conditions also is of note, as improved attendance and adherence are frequently cited as primary rationale for the shift to treatment delivery via telehealth.<sup>[8]</sup> Together, these aforementioned factors associated with treatment discontinuation may provide additional areas for consideration to improve treatment completion and related outcome in OEF/OIF veterans with PTSD.

The two primary predictors of treatment discontinuation identified in the present study yield important implications regarding treatment of OEF/OIF veterans with PTSD. Lack of social support has been consistently identified as a risk factor for developing and maintaining PTSD, as well as influencing pretreatment presentation and posttreatment outcomes.<sup>[16]</sup> Complicating these findings, OEF/OIF veterans must make a substantial transition from surviving the war-zone experience abroad to reintegrating with friends and family at postdeployment,<sup>[31]</sup> which may in turn diminish their social support and exacerbate PTSD symptomatology. The present findings extend the literature by suggesting that OEF/OIF veterans with poorer social support are more likely to discontinue evidence-based psychotherapy for PTSD. Interestingly, a new development in the evidence-based psychotherapies for PTSD, *Cognitive-Behavioral Conjoint Therapy for PTSD* (CBCT), simultaneously addresses symptoms of PTSD and enhances relationship satisfaction,<sup>[32]</sup> and has evidenced promising initial outcome findings.<sup>[33]</sup> In addition, CBCT has been revised to specifically address symptoms in OEF/OIF veterans with PTSD.<sup>[34]</sup> Together, these findings may suggest that additional psychotherapeutic practices, such as CBCT and/or a review of available social resources, should be considered in OEF/OIF veterans that are identified to have poor social support prior to treatment to investigate potential influence on rates of treatment discontinuation. Although pretreatment social support, rather than changes in social support, was found to be predictive of treatment discontinuation, it is reasonable to expect that improved social support may improve treatment completion.

The second reliable predictor of treatment discontinuation was disability status, in that disabled OEF/OIF veterans were more likely to discontinue treatment than OEF/OIF veterans that were not disabled. There are two primary interpretations for these findings. The first interpretation is consistent with the previous findings

**TABLE 1. Descriptive statistics**

Scale	Complete (n = 66)	Discontinuation (n = 26)	Total sample (n = 92)
In-person treatment	34 (52%)	15 (58%)	49 (53%)
Nonwhite	31 (47%)	10 (39%)	41 (45%)
Disabled	22 (33%)	13 (50%)	35 (38%)
Married	34 (52%)	12 (46%)	46 (50%)
Employed	35 (53%)	13 (50%)	48 (52%)
Age	34.0 (9.3)	32.3 (9.5)	33.8 (9.3)
Deployment concerns (DDRI-H)	51.3 (8.9)	48.6 (11.7)	50.6 (9.7)
Combat experiences (DDRI-I)	8.7 (4.4)	10.1 (3.5)	9.1 (4.2)
Postdeployment support (DDRI-L)	52.4 (8.2)	48.7 (9.0)	51.4 (8.5)
Postdeployment life events (DRRI-M)	4.4 (3.1)	4.0 (3.7)	4.3 (3.3)
PTSD (PCL)	56.4 (13.7)	56.5 (15.6)	56.4 (14.1)
Depression (BDI-II)	22.7 (10.4)	26.7 (13.1)	23.7 (11.3)

Note. The first five rows represent categorical variables (yes/no) with sample size and percentages presented in the group columns. The final seven rows represent continuous variables with means (standard deviations) in the group columns. DRRI, Deployment Risk and Resiliency Inventory; PCL, PTSD Checklist; BDI-II, Beck Depression Inventory II.

regarding symptom severity and impairment;<sup>[15]</sup> that is, disability status is associated with more severity symptoms (PTSD and MDD), and more severe symptoms are associated with treatment discontinuation. This interpretation is limited somewhat by the marginal find-

ings for the symptoms of PTSD and depression. However, it also is possible that the overlap between disability and symptomatology and variance accounted for by disability may have contributed to the marginal findings for the symptoms PTSD and depression. A second

**TABLE 2. Logistic regression predicting treatment discontinuation**

Variable	b	SE	OR	95% CI	P
Step 1					
In-person treatment	0.25	0.54	1.28	0.45–3.67	.65
Nonwhite	– 0.15	0.58	0.86	0.28–2.66	.79
Disabled	1.22	0.59	3.38	1.05–10.81	.04
Married	0.42	0.56	1.52	0.51–4.53	.47
Employed	0.63	0.59	1.87	0.59–5.49	.29
Age	– 0.05	0.03	0.95	0.89–1.01	.11
Step 2					
Deployment concerns (DRRI-H)	– 0.04	0.03	0.96	0.90–1.02	.17
Combat experiences (DRRI-I)	0.08	0.08	1.09	0.89–1.01	.28
Postdeployment support (DRRI-L)	– 0.12	0.04	0.89	0.82–0.97	.01
Postdeployment life events (DRRI-M)	– 0.03	0.09	0.97	0.91–1.16	.73
PTSD (PCL)	– 0.05	0.03	0.95	0.89–1.01	.11
Depression (BDI-II)	0.07	0.04	1.07	0.99–1.16	.11

Note. DRRI, Deployment Risk and Resiliency Inventory; PCL, PTSD Checklist; BDI-II, Beck Depression Inventory II.

**TABLE 3. Correlations of continuous variables**

	1	2	3	4	5
1. Combat Experiences (DRRI-I)	1.00				
2. Deployment Concerns (DRRI-H)	0.15	1.00			
3. Postdeployment support (DRRI-L)	0.15	– 0.10	1.00		
4. Postdeployment life events (DRRI-M)	.27*	0.12	– .28*	1.00	
5. PTSD (PCL)	0.09	0.15	– .33**	.31**	1.00
6. Depression (BDI-II)	0.07	0.06	– .43**	.35**	.79**

Note. DRRI, Deployment Risk and Resiliency Inventory; PCL, PTSD Checklist; BDI-II, Beck Depression Inventory II.

\*P < .05.

\*\*P < .01.

interpretation is related to the potential unintentional influence of disability on full participation in treatment programs,<sup>[35]</sup> and therefore result in higher rates of treatment discontinuation. Although controversial and still largely lacking rigorous investigation, some researchers have suggested that disability status may have iatrogenic effects on the treatment of PTSD in veterans, due to reduced motivation to complete treatment.<sup>[35]</sup> This second interpretation may suggest that motivation building techniques, such as Motivational Interviewing (MI),<sup>[36]</sup> could be incorporated into evidence-based psychotherapy protocols to improve treatment completion. In fact, there is preliminary support for the use of telephone MI to enhance treatment engagement in OEF/OIF veterans.<sup>[37]</sup> Together, whether either interpretation is correct regarding disability status, disabled OEF/OIF veterans may be at greater risk for discontinuing evidence-based psychotherapy for PTSD, suggesting increased recognition, assessment, and motivational interventions may be needed.

Surprisingly, symptoms of PTSD were not identified as a reliable predictor of treatment discontinuation in the present study in contrast to previous findings.<sup>[15]</sup> Rather, both the symptoms of PTSD and MDD were found to be marginal predictors of treatment discontinuation. There are a couple possible interpretations of these contrasting findings for PTSD symptoms. In comparison to previous studies in which fewer predictors were investigated,<sup>[15]</sup> the effects for the symptoms PTSD may have been attenuated by other related predictors, such as disability status and social support. The inclusion of the highly overlapping symptoms of MDD also may have lessened the effects for the symptoms of PTSD.<sup>[18,19]</sup> Another possibility is that the use of a standardized evidence-based psychotherapy for PTSD in the present study, in comparison to unstandardized treatment approaches across participants in previous research,<sup>[15]</sup> reduced the influence of the symptoms of PTSD on treatment discontinuation. However, despite these marginal findings, the symptoms of PTSD and MDD still should be assessed, and potentially addressed, as a possible risk for treatment discontinuation. Additional brief treatment components for consideration include MI<sup>[36,37]</sup> and behavioral activation psychotherapy.<sup>[38,39]</sup>

There were several limitations within the present study that should be addressed in future studies on this topic. First, the evidence-based psychotherapy used in the present study was only eight sessions, suggesting similar research may be warranted for psychotherapy protocols with a greater number of sessions.<sup>[13]</sup> Second, treatment discontinuation was coded as a dichotomous variable due the available sample size and related power analyses, rather than investigating the range of sessions completed, suggesting future research on the time/session of discontinuation is needed to investigate potential differences between discontinuing earlier versus later in treatment. Third, not all of the previously identified predictors of treatment discontinuation (e.g., negative treatment indicators on the

MMPI) were included in the present study due in part to the length of the existing assessment materials. Fourth, the present study was completed within a randomized controlled trial,<sup>[23]</sup> suggesting that similar investigations are needed in purely clinical settings as well. These methods may have contributed to the lower than expected discontinuation rates and diagnostic comorbidity in the present study, compared to previous effectiveness studies.<sup>[13–15,18,19]</sup> Finally, the present study was underpowered to accurately detect the significance of the smaller effects that were observed in this sample. Thus, it is unclear if these findings were misclassified as Type II errors. A power analysis suggested that unusually large samples ( $N > 1,000$ ) would be needed to detect such small effects.

## CONCLUSION

The present study represents the first investigation of treatment discontinuation in OEF/OIF veterans with PTSD during a course of standardized evidence-based psychotherapy for PTSD. The present findings identified disability status and social support as the most significant predictors of treatment discontinuation. Although included in the analyses, age and PTSD symptom severity were not shown to be reliable predictors, in contrast to previous findings.<sup>[15]</sup> Together, these findings may highlight the necessity of early identification and intervention in disabled OEF/OIF veterans and/or those with poor postdeployment social support in order to potentially reduce treatment discontinuation and improve treatment outcomes in this particularly high risk patient population.

There are no conflicts of interest to disclose.

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