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Abstract

Objective

Prolonged exposure is characterized by reported dropout rates ranging from 25% to 40%. This premature attrition is also observed in other evidence-based treatments for posttraumatic stress disorder. While home-based telehealth delivery of prolonged exposure resolves logistical barriers to care such as travel time and cost, dropout appears unaffected. A previous study on dropouts from prolonged exposure delivered via telehealth found that Veterans, particularly those receiving care via telehealth, reported problems with in vivo exposure and that having a peer to offer support during in vivo exposure assignments might have prevented their attrition from treatment.

Methods

The present pilot study treatment was designed in a manner consistent with the aforementioned Veteran suggestions, specifically to involve peers offering verbal support and encouragement during in vivo exposure homework. Such a treatment modification might be particularly useful for those receiving care via telehealth, given increased difficulties with exposure reported when this treatment delivery modality is used. It was hypothesized that dropouts would agree to reengage in treatment with a peer and would subsequently evince improvement in posttraumatic stress disorder and depression scores as a result of this treatment reengagement.

Results

Of 82 dropouts from prolonged exposure, 29 reentered treatment when offered peer support during exposure (12 in telehealth and 17 in person).

Conclusion

Treatment reentry was effective insofar as indices of both posttraumatic stress disorder and depression were significantly reduced in both telehealth and in person groups, indicating that using peers in this way may be an effective means by which to return Veterans to care, and ultimately reduce symptomatology.

Keywords telehealth, posttraumatic stress disorder, Veterans, depression, dropout

Introduction

Posttraumatic stress disorder (PTSD) is a debilitating condition characterized by high comorbidity with other mental and physical health disorders[1] and affects approximately 15%–20% of Vietnam Veterans,[2–4] 10%–15% of Persian Gulf War Veterans,[5] and up to 23% of Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Veterans.[6] Fortunately, effective treatments for PTSD including combat-related PTSD exist, such as prolonged exposure (PE) and cognitive processing therapy (CPT).[7–10] Recommended pharmacological interventions, despite their relative ease of implementation, do not produce the same degree of treatment improvement as the exposure-based psychotherapies.[10,11] However, evidence-based psychotherapies such as PE and CPT are plagued by relatively high rates of dropout, with approximately 30%–40% of patients terminating treatment prematurely[12–19] and continuing to experience problems that have significant impact on themselves, their families, and the systems (e.g., Department of Veterans Affairs (VA)) and communities within which they live.[20,21]

Consistent with aforementioned treatment guidelines, and in keeping with increased awareness of psychological suffering in Vietnam, Persian Gulf, and OEF/OIF service era Veterans,[18,22,23]VA[24] recommended that all Veterans in their care with PTSD have access to these evidence-based treatments. To meet this need, all psychotherapy providers in VA services who primarily served Veterans with PTSD were trained in either PE or CPT (or both) through formal workshops followed by a six-month

supervision consultation program.[25–28] Moreover, the Department of Defense (DoD) and VA implemented postdeployment screening for mental health problems at all primary care visits.[29] As a result of this tremendous and coordinated investment, Veterans and active duty personnel are more likely than ever to be identified and referred to effective PTSD treatment.

Given this massive effort and associated expense, it is rather disconcerting that of those who attend the first session, between 25% and 40% eventually dropped out of PE or CPT prior to completion.[13] Thus, because PTSD symptoms persist over time in the absence of treatment, and in light of the tremendous resources directed toward training providers in evidence-based treatment for PTSD,[22] research to address the problem of dropout is essential. However, dropouts virtually always receive less research attention than treatment completers by the very nature of the fact that they frequently also drop out of the study within which the treatment is offered. Additionally, even when dropouts in treatment outcome research do agree to continue to participate in follow-up assessment, their numbers are relatively small because the original trials from which they dropped were statistically powered with respect to intent-to-treat or completer analyses, not dropout analyses.

Efforts to retain patients in or return dropouts to evidence-based treatment for PTSD have included leveraging technology to resolve barriers to care, such as delivering treatment through telehealth, or even home-based telehealth. Specifically, delivering PE via telehealth was presented as a strategy to reduce dropout insofar as telehealth addresses logistical factors such as travel time, distance, and related costs, while reducing disparities in access to care for those in remote/rural areas.[30–32] However, despite the apparent logistical advantages of home-based telehealth-delivered treatment for PTSD, rates of dropout remained unchanged at about 26%.[15]Moreover, those in the telehealth condition reported that completing exposure-based PTSD treatment was more difficult. That is, while evincing similar levels of improvement to standard in-person care, participants receiving exposure-based psychotherapy for PTSD reported increased anxiety and hypervigilance, particularly during in vivo exposure homework completion.[15,33]

Clearly, the problem of dropout from evidence-based psychotherapy for PTSD will not be solved by telehealth alone. Fortunately, prior research indicates social support may lower attrition from psychotherapy,[34–36] and formalized peer social support programs, often referred to as "peer navigation" services, enhance treatment engagement by creating a means by which peers who have completed treatment assist those currently in treatment.[37,38] Along these lines, we interviewed Veterans who had dropped out from PE in an attempt to identify factors that might be useful in preventing or reversing dropout.[15] One consistent report from these Veterans was that in vivo exposure homework, a key treatment component of PE in which patients are required to approach previously avoided environmental stimuli because they remind the patient of the traumatic event and elicit significant anxiety, was particularly difficult to complete. Moreover, these patients reported that they might not have dropped out, and might consider returning to treatment, if they had the support of a Veteran peer who had successfully completed the treatment during in vivo exposure homework sessions. Thus, we hypothesized that peer social support, brought to bear directly during in vivo exposure homework, might be particularly useful when treating PTSD with PE delivered via home-based telehealth, potentially addressing, in part, the problem of dropout from PE while attending to aforementioned patient report of increased anxiety associated with PE treatment components in telehealth patients.

Using peers to enhance treatment success is by no means novel, and in fact, the VA has initiated a peer support program throughout its medical centers.[39] However, in these programs, peers are typically used to enhance treatment engagement, facilitate treatment initiation, and offer extra-treatment support. Using peers directly to assist in core PTSD treatment components such as in vivo exposure homework taking place outside VA facilities has not been reported and is actually specifically prohibited by most peer support program guidelines. Nonetheless, Veterans in the aforementioned dropout study[15] indicated that such peer support was consistent with the "buddy system" training they had received in the military and that the presence of a peer directly during in vivo exposure homework would have been sufficiently compelling to prevent their premature treatment termination.

In response to this feedback, we designed and subsequently assessed the feasibility of using peer support during in vivo exposure homework and found that (1) offering peer support directly during a limited number of in vivo exposure homework sessions can reengage dropouts from PE back into treatment, (2) Veterans who have successfully completed treatment are willing to serve as peers and offer support during in vivo exposure homework to other Veterans with PTSD who are at risk of, or who have already dropped out of treatment, and (3) satisfaction with such a program on the part of the peer and on the part of the patient is high.[40] The present study compliments aforementioned feasibility findings with preliminary evidence regarding symptom improvement among PE dropouts who returned to treatment with a peer offering verbal support directly during a limited number of in vivo homework assignments.

Methods

Overview

Participants who had dropped out from treatment offered through two RCTs comparing in person versus home-based telehealth-delivered PE were contacted by telephone and offered the opportunity to return to treatment, this time with the assistance of a peer who would meet them at in vivo exposure homework sites in the community and offer verbal support during in vivo exposure homework. This was described to participants as being roughly analogous to having a weight-lifting "workout buddy" during in vivo exposure exercises, which were conceptualized as "a mission they would face together, as they had been trained to do." They also reinitiated PE with their former therapists in the same treatment delivery modality (i.e., in person or home-based telehealth), and this therapist coordinated communication with the peer and patient. Peers were Veterans who successfully completed PE therapy and no longer meet PTSD diagnostic criteria (see Hernandez-Tejada et al.[40] for extensive discussion of this peer program and its feasibility).

Procedures

Once a patient agreed to return to treatment with a peer who offered support during in vivo exposure, they attended a session with their therapist wherein the exposure hierarchy was reviewed and a telephone call with the peer was held (i.e., on

speakerphone so that both patient and therapist could communicate with peer). Patient, peer, and therapist jointly identified one or two in vivo exposure items, the time and place homework would take place, and patient and peer agreed to meet at the exposure site. Both patients and peers were instructed to telephone the therapist following the first homework meeting to discuss how the process went and to assure that the next in vivo session with the peer was scheduled. If both parties were willing, the program persisted with three to four meetings per week for 3–4 weeks of the 12-week PE protocol sessions.

Peers were trained to offer verbal support during exposure homework to help patients complete assignments and stay in the anxiety-provoking situation for as long as they could tolerate. Peers were allowed to share their own recovery stories during in vivo homework if similarities were observed between patient and peer experiences of avoidance. Geographic proximity was the criteria used to pair peers with patients. Peers and patients were not permitted to drive together in their own vehicles and to go to each other's residences, shooting ranges, or any other place evaluated as dangerous.

Participants

PE dropouts contacted for this study were 82 Veterans (75 male and 7 female) who had prematurely terminated evidence-based treatment for PTSD and continued to meet PTSD diagnostic criteria at the point of dropout. Participants were male and female Veterans of Vietnam, Persian Gulf, and OIF/OEF conflicts, aged 21 and older. Patients with psychosis or dementia were excluded from participation, but other forms of psychopathology (e.g., depression) were not excluded. Approximately 35%–40% of participants resided in rural areas. Of the original 82 dropouts from PE, 43 (52.4%) indicated their intention to return back to treatment with peer support when such an offer was made. Of these 43, 29 of the 82 (35.4%) reengaged in treatment. The remaining 14 of the 82 (17.1%) continued to indicate an interest in returning to treatment but did not do so for reasons including relocation (5 of the 14) and lack of time off from work or family responsibilities. Demographic characteristics of the 29 who reengaged in treatment are given in Table 1. A majority was black, male, and served

in the OIF/OEF conflicts. Most were also employed and lived relatively close to the VA hospital (≤30 miles).

Table 1. Demographics characteristics of the 29 participants returning to treatment.

Demographics	Telehealth ($n = 12$)	In person ($n = 17$)	Total ($n = 29$)
Age (years)	$\bar{x} = 48.3$ (SD = 13.7)	$\bar{x} = 47.7$ (SD = 12.0)	$\bar{x} = 47.9$ (SD = 12.5)
Education (years)	$\bar{x} = 13.6$ (SD=1.2)	$\bar{x} = 13.1$ (SD=4.1)	$\bar{x} = 13.3$ (SD = 3.15)
Gender (%)			
Female	16.7	41.2	31.0
Male	83.3	58.8	69.0
Race (%)			
Black	66.7	70.6	69.0
White	33.3	29.4	31.0
Marital status (%)			
Married	75.0	47.0	58.6
Not married	25.0	53.0	41.3
Employment (%)			
Employed	58.3	58.8	58.6
Unemployed/retired	33.3	29.4	31.1
Other	8.3	11.8	10.3
War era (%)			
Persian Gulf/OEF/OIF	72.8	75.0	74.0
Vietnam	28.2	22.5	25.0
Other		2.5	1.0
Distance to VA clinic (%)			
Less than 30 miles	50.0	88.2	72.4
More than 30 miles	50.0	11.8	27.6

VA: Veterans Affairs.

Measures

Demographic variables were collected at baseline assessment in the parent studies, and included age, race, ethnicity, gender, marital status, educational level, income, service connection/disability rating, branch of service, and war theater served.

PTSD Checklist-Military (PCL-M)

The PCL-M[41] is a 17-item self-report measure of PTSD symptoms based on DSM-IV criteria. The PCL-M uses a 5-point Likert scale response format ranging from not at all

(1) to extremely (5). Total scores on the PCL-M range from 17 to 85. A change of 10–20 points from the baseline score is considered clinically meaningful.[42] The instrument is highly correlated with the clinician administered PTSD scale (r = .93), has good diagnostic efficiency (>.70), and robust psychometrics with a variety of trauma.[43]

Patient Health Questionnaire (PHQ-9)

The PHQ-9 Is a self-report questionnaire used to screen, diagnose, monitor, and measure the severity of depression.[44] The tool rates the frequency of the symptoms which factors into the scoring severity index. The symptoms are scored from not at all (0) to nearly every day (3). The instrument has a sensitivity of 88% and a specificity of 88% for major depression. The scores range from 5 (mild), 10 (moderate), 15 (moderately severe), and 20 (severe) depression.

Peer support and treatment modality

The primary focus of study was the introduction of a supportive peer during three to four in vivo homework assignments per week for 3–4 weeks of the 12-week treatment. Peer support within PE treatment is supported by the social support evidence discussed previously and the actionable options recommended within the VHA.[39] A variable carried over from the parent studies was the delivery modality of PE: home-based telemedicine versus standard, in-person office-based sessions.

Results

Measures of PTSD were collected every two weeks per VA guidelines for PTSD clinics and revealed the time course of therapeutic effects, as illustrated in Figure 1. PCL-M scores at week 0 of the peer support program averaged about 65 for both groups (home-based telehealth $\bar{x} = 65.5$, SD = 11.0; in person $\bar{x} = 65.3$, SD = 9.4) and showed a typical pattern of early intensification, followed by gradual reduction at week 12 for both groups (home-based telehealth $\bar{x} = 45.4$; SD = 4.1; in person $\bar{x} = 49.7$, SD = 6.1). Depression measures were only taken at week 0 (home-based telehealth $\bar{x} = 19.8$, SD = 6.4; in person $\bar{x} = 15.3$, SD = 3.8) and week 12 (home-based telehealth $\bar{x} = 9.4$,

SD = 0.2; in person $\bar{x}$ = 9.1, SD = 0.2) and reflected a reduction higher in intensity in the teleheath group, as illustrated in Figure 2.

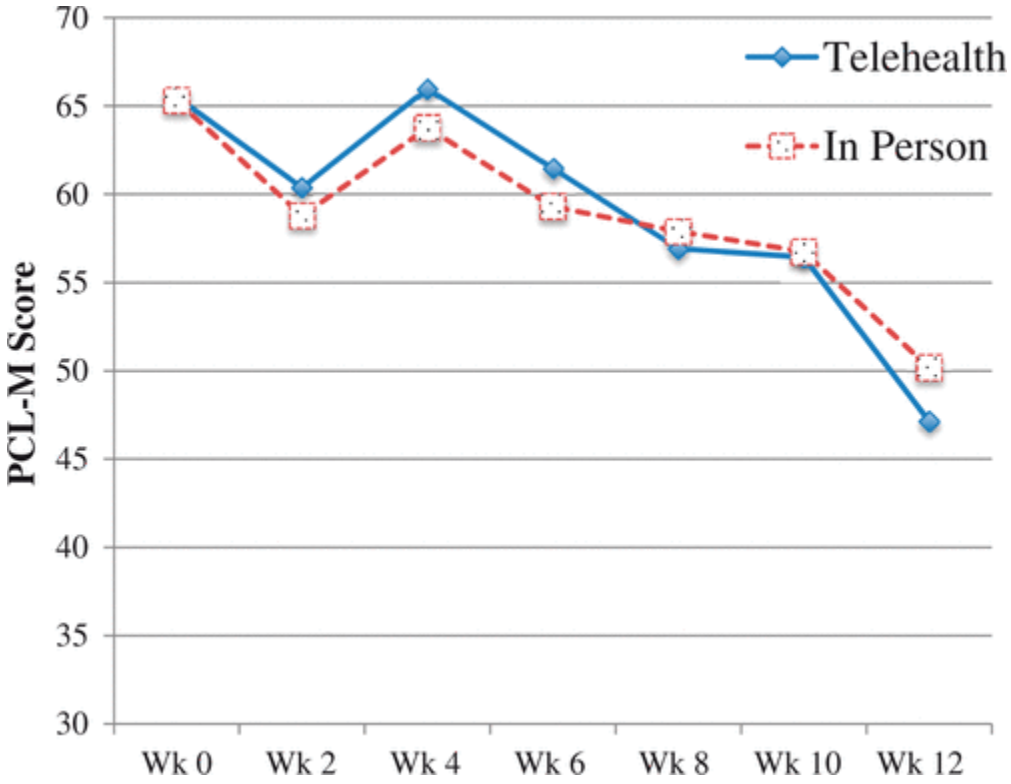

Figure 1. PCL-M scores of PE dropouts who returned to therapy with assistance of a peer. PCL-M: post-traumatic stress disorder checklist—military version; PE: prolonged exposure.

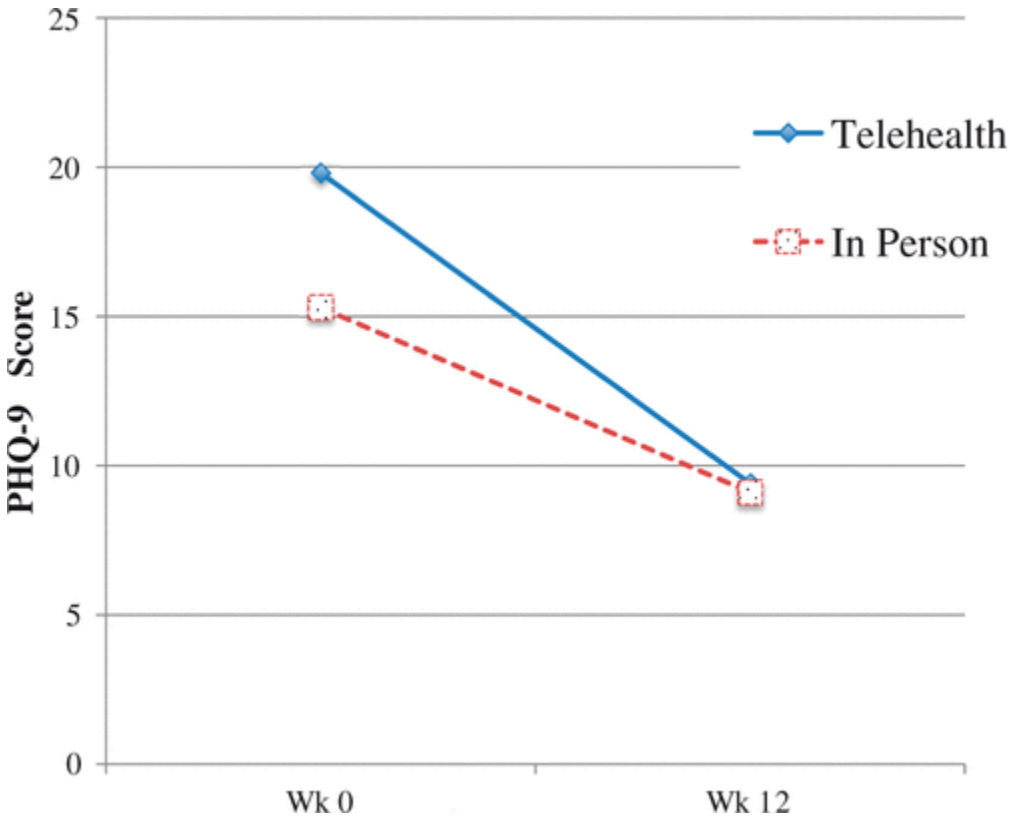

Figure 2. PHQ-9 scores of PE dropouts who returned to therapy with assistance of a peer. PE: prolonged exposure; PHQ-9: Patient Health Questionnaire, 9th edition.

Cognizant of low power, a preliminary comparison of treatment response in terms of treatment delivery modality (i.e., home-based telehealth versus in person), was conducted using repeated measures analysis of variances comparing week 0 and week 12 in terms both PCL-M and PHQ-9 outcomes. These analyses revealed a significant effect of time, but not of treatment modality or the interaction between the two, indicating that participants who had dropped out but returned to treatment, this time with the assistance of a peer, evidenced significant reductions in PCL-M scores by week 12, irrespective of group membership (see Table 2). Similarly, considering the PHQ-9 (see Table 3), there was a significant effect of time, in that both groups reported lower levels of depression by the end of peer-assisted PE. There was also a significant between-groups effect in that those receiving treatment via home-based telehealth reported higher week 0 PHQ-9 scores, but about the same week 12 PHQ-9 scores, thereby evincing an overall larger decline in scores.

Table 2. Repeated measures descriptive and analysis of variance (ANOVA) results: PCL-M scores week 0 versus week 12.

Variable	Mean	SD	*n*		
PCL-M week 0 telehealth	65.50	11.02	12		
PCL-M week 0 in person	65.29	9.41	17		
PCL-M week 12 telehealth	45.39	4.18	12		
PCL-M week 12 in person	49.73	6.12	17		
Source	*df*	SS	MS	*F*	*p*
Within (week 0 vs. week 12)	1	179,511.25	179,511.25	2577.34	.000
Between (telehealth vs. in person)	1	175.97	175.97	2.34	.128
Within × Between	1	72.67	72.67	1.18	.287
Total	27	11,053.13	75.19		

PCL-M: post-traumatic stress disorder checklist—military version; SS: Sum Squares; MS: Mean Squares.AQ7

Table 3. Repeated measures descriptive and ANOVA results: PHQ-9 scores week 0 versus week 12.

Variable	Mean	SD	*n*		
PHQ-9 week 0 telehealth	19.8	6.4	12		
PHQ-9 week 0 in person	15.3	3.8	14		
PHQ-9 week 12 telehealth	9.4	0.2	12		
PHQ-9 week 12 in person	9.1	0.2	14		
Source	*df*	SS	MS	*F*	*p*
Within (week 0 vs. week 12)	1	889.36	889.36	62.51	.000
Between (telehealth vs. in person)	1	77.30	77.30	5.27	.031
Within × Between	1	57.10	57.10	4.01	.057
Total	24				

Note. ANOVA: analysis of variance; PHQ-9: Patient Health Questionnaire, 9th edition; SS: Sum Squares; MS:Mean Squares.

Discussion

This study demonstrated potential utility of including peers directly during the in vivo exposure therapy homework component of PE in that just over half of those approached indicated a willingness to return to treatment, and about a third actually

did so. Specifically, dropout was reversed in 29 of 82 participants upon the offer of participation in the peer support program, and following treatment, 21 of 29 (72%) evinced clinically significant (greater than 15 points) reductions on the PCL-M, with the same proportion evincing PHQ-9 scores below the cutoff for moderate depression (i.e., 10). These findings are impressive given that all participants had already dropped out of treatment, and would have ostensibly endured PTSD symptoms and associated diminished quality of life for years or decades into the future, were this program not available. Although dropout was not entirely reversed, reengaging 35.4% of dropouts, and subsequently achieving clinically significant improvement in these patients, offers a potentially important means by which to reduce address the primary shortcoming associated with evidence-based therapies for PTSD, including PE. Given decades of evidence in support of PE for PTSD, guidelines from National Center on PTSD, the Institute of Medicine, and the DoD and VA supporting PE, and the significant investment by the VA and DoD in providing this evidence-based therapy to Veterans, findings that dropout can be effectively reversed are worthy of further study.

In the present feasibility study, participants who dropped out of a clinical trial evaluating PE delivered in person versus home-based telehealth were simply offered the opportunity to try the same treatment again, this time with the social and verbal support, during a limited number of in vivo exposure homework episodes, by a peer who had been through the process. Peer training was brief, focused on the limits of their responsibility and safe conduct, and confined their role to that of supportive "workout buddy" during exposures, offering encouragement to "stick with the mission a bit longer." This phrasing was actually used by peers and Veterans, who indicated that they approached exposures using the same mission-focused teamwork that they had been trained to use as service members. Leveraging this team-based, mission-focused effort appeared quite useful insofar as patients and peers described the process as building on their prior training.

Although reversing dropout is notable, the central clinical question remains one of symptom reduction. Indeed, psychological outcomes were improved. Participants in PE delivered via home-based telehealth or through traditional in person settings showed an average PCL-M reduction of 10–20 points, which is considered clinically

significant. A similar reduction was observed for depression scores, with a slight advantage for patients in the telehealth condition due to their relatively higher level of symptomatology at baseline. An interesting observation is that both groups evinced a slight worsening of symptoms at week 4, perhaps coinciding with the time point at which participants shifted back to completed in vivo exposure homework independently for the remainder of the 12-week treatment, without the aid of the peer. This might be an indicator that the peer program was probably effective not because it made exposure homework easier, but because it made it more likely for exposure homework to be completed over time.

The results of this study are promising, particularly given the easily disseminated, brief training program for peers in the context of VA efforts to roll out peer programs across its system. Findings provide preliminary support indicating that peer-based social support is an effective, readily available tool to address difficulties related to dropout from exposure-based therapy for PTSD. This study builds on a large body of work indicating the utility of peer-based support across seemingly disparate health and mental health issues, including promoting academic engagement in students with autism,[45] diabetes management,[46] and HIV[47] to name a few. Moreover, results might have been even more impressive if the peer program were offered to those contemplating dropout, rather than to those who had already left treatment.

Limitations of the present study include the lack of a no-peer comparison group and subsequent random assignment to condition, the small sample size, and use of a potentially atypical sample of Veterans who had, at least originally, consented to be part of an experimental clinical trial and who may differ from typical clinical patients. Moreover, the timing of this intervention (i.e., post dropout) may not be optimum insofar as it seems likely that offering peer support during exposure homework to those contemplating dropout, rather than waiting for them to drop out, may have prevented a greater proportion of early treatment termination relative to treatment reengagement.

Future studies should build on this preliminary study using a sufficiently powered between-groups design with an appropriate comparator (e.g., peer support offered outside of treatment components) so as to support causal inferences with respect to the utility of this type of peer support program. Moreover, dropouts from a standard VA

PTSD clinic, rather than dropouts from a formal treatment outcome study, should be used as participants to enhance generalizability. Finally, an experimental manipulation of timing (i.e., offering the program to those contemplating dropout, rather than waiting for dropout to occur) may be warranted insofar as it may be more effective to prevent, than reverse dropout.

Declaration of Conflicting Interests

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