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Effectiveness of Written Exposure Therapy for Posttraumatic Stress Disorder in the Department of Veterans Affairs Healthcare System

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Objective: Written Exposure Therapy (WET) for posttraumatic stress disorder (PTSD) has been shown to be efficacious in clinical trials; however, research is needed to determine WET's effectiveness in clinical practice settings. Additionally, research is needed to understand whether patient characteristics or treatment delivery format moderate outcomes. ***Method***: Patient outcomes (n = 277) were assessed as part of a multisite training and implementation program in the Department of Veterans Affairs (VA). During treatment, patients completed self-report measures of PTSD, depression, and functional impairment. Patient characteristics (i.e., demographics, psychiatric comorbidity, trauma type) and treatment delivery format (i.e., telehealth vs. in-person) were assessed as treatment moderators. ***Results:*** Intent-to-treat analyses indicated that WET was effective in reducing PTSD symptoms (d = .84), depression symptoms (d = .47), and functional impairment (d = .36) during treatment. Approximately one quarter of patients dropped out of treatment prematurely. No moderators of PTSD treatment outcome were observed; however, telehealth delivery was associated with lower dropout. ***Conclusions:*** WET was an effective approach across a range of patient characteristics in this sample of veterans with PTSD. WET was also effective whether delivered in-person or via telehealth. WET is a promising treatment option for veteran patients in VA clinical care settings.

Clinical Impact Statement
Veterans receiving WET from therapists in the VA had significant symptom improvement. There was similar symptom reduction across patient characteristics and regardless of whether care was in-person or via telehealth. These findings provide support for WET's effectiveness and show it can be successfully delivered via telehealth.

Keywords: Written Exposure Therapy, posttraumatic stress disorder, telemental health, effectiveness, veterans

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Posttraumatic stress disorder (PTSD) is a treatable mental health disorder, with the first line recommended approach being trauma-focused cognitive behavioral psychotherapy (e.g., Department of Veterans Affairs [VA]/Department of Defense [DoD], 2017). Specific trauma-focused treatment protocols for PTSD, such as Cognitive Processing Therapy (CPT; Resick et al., 2017) and Prolonged Exposure (PE; Foa et al., 2019) have been implemented in practice settings and shown to be effective (e.g., Goetter et al., 2020; Forbes et al., 2012; LoSavio et al., 2019; Schulz et al., 2006; Tuerk et al., 2011). The VA Healthcare System is one of the largest providers of healthcare services and has widely disseminated CPT and PE (e.g., Chard et al., 2012; Eftekhari et al., 2013). However, evidence-based psychotherapies (EBPs) for PTSD continue to be underutilized, even in VA specialty care settings (e.g., Finley et al., 2015; Lu et al., 2016; Shiner et al., 2013). CPT and PE typically require 8–15 sessions, with eight sessions often considered an adequate dose (e.g., Wang et al., 2005). However, fewer than 40% of VA patients who initiate these treatments complete eight or more sessions (Hale et al., 2019; Sayer et al., 2021). Both CPT and PE also require patient practice outside of sessions, which PTSD-related avoidance can make difficult (Cooper et al., 2017; Stirman et al., 2018). Therefore, implementation of additional EBPs for PTSD that are more efficient and do not require between session practice may fill a gap in current PTSD treatment offerings and increase access.

Written Exposure Therapy (WET; Sloan & Marx, 2019) is a brief, evidence-based, trauma-focused treatment consisting of psychoeducation about PTSD symptoms and a treatment rationale, followed by writing about the trauma in each of five sessions. WET is exposure-based, with prompts for patients to write about the details of the traumatic event and, in later sessions, the impact of the trauma. Patients receiving WET are encouraged to allow themselves to think about the trauma between sessions, but no formal between session practice is assigned.

In clinical trials, WET has been shown to be efficacious with civilians and veterans (Sloan et al., 2013, 2012, 2018). In a small pilot study, 86% of veterans receiving WET evidenced a clinically significant decrease in PTSD symptoms by the 3-month follow-up (Sloan et al., 2013). In a randomized clinical trial (RCT), adults diagnosed with PTSD related to a motor vehicle accident receiving WET exhibited significant reductions in PTSD symptoms, with 100% exhibiting a reliable change, and large between-group effect sizes relative to waitlist (Sloan et al., 2012). In an RCT of veterans (n = 33) and civilians (n = 93) who experienced a variety of traumas, WET was noninferior to CPT on PTSD symptom improvement (Sloan et al., 2018). Moreover, treatment gains were maintained for both treatments for 60-weeks post the first treatment session (Thompson-Hollands et al., 2018). WET has also been shown to be tolerable and satisfactory to patients, with low dropout, ranging from 6–14% (Sloan et al., 2013, 2012, 2018). In the noninferiority trial, significantly fewer patients dropped out of WET (6%) compared to CPT (39%; Sloan et al., 2018). Based on the available evidence, WET is recommended in VA/DoD (2017) clinical practice guidelines for PTSD. However, less is known about WET's effectiveness when delivered in routine clinical settings.

Other important effectiveness questions concern for whom the intervention works and under what conditions. There are limited data on moderators of WET's efficacy. In a secondary analysis of the WET noninferiority trial (Sloan et al., 2018), a variety of possible moderator variables were examined (e.g., education, estimated full-scale IQ, age, sex, number of comorbid Axis I disorders, baseline PTSD severity, depression diagnosis), but none were found to moderate WET outcome (Marx et al., 2021). However, only a limited number of studies have examined moderators of WET outcome, and outcomes may be different in routine clinical care.

A critical area that has not been studied is whether treatment delivery format—in-person versus telemental health (TMH)—impacts WET outcomes. Previous research has demonstrated that PTSD treatments delivered via TMH are acceptable, effective, and noninferior to in-person treatment delivery (see Morland et al., 2020 for a review); however, comparisons of delivery modality have not yet been reported for WET. Data about WET's effectiveness via TMH is particularly important because the COVID-19 pandemic has forced much of VA service to shift from in-person care to TMH (Rosen et al., 2020; Worley et al., 2020).

We examined these questions with program evaluation data from a national dissemination and implementation pilot of WET in VA clinics. Our primary aim was to report on the effectiveness of WET in clinical care settings. We hypothesized that WET delivered in VA clinics by VA providers would be associated with significant reductions in patients' self-reported PTSD and depression symptoms, as well as improvements in functioning. We also sought to characterize dropout from WET. An exploratory aim was to determine whether certain veterans responded better to WET based on demographics (i.e., age, race/ethnicity, gender, education, relationship status), trauma type, and presence or absence of depression or substance abuse comorbidity. Finally, we explored WET outcomes when delivered in-person versus via TMH.

Method

Participants

Participants in our intent-to-treat sample included 277 veteran patients with session data treated by 83 clinicians across 24 VA sites representing a diverse range of geographical regions of the United States. Patients were recruited at their local sites by clinicians participating in the WET training and implementation program. Inclusion criteria were intentionally broad and consistent with typical requirements to be eligible for trauma-focused treatment in the VA: at least 18-years-old, with a positive PTSD diagnosis, and willing to engage in at least weekly trauma-focused treatment. The therapist determined that another problem did not require prioritization over PTSD. Patient demographics are reported in Table 1.

Procedure

Data presented reflect the first 2 years of an ongoing WET training and implementation program, which included four training cohorts. The program evaluation was reviewed by the Institutional Review Board and deemed exempt. Participating clinicians implemented WET at their local sites following a virtual workshop training and while participating in weekly phone-based group clinical consultation on their WET cases.

Table 1
Patient Demographic and Completion Data

Variable	Total sample (N = 277)	TMH (n = 122)	In-person (n = 106)		
Category	M (SD)	M (SD)	M (SD)	t-test	p
	n (%)	n (%)	n (%)	χ2/Fisher's exact test	
Gender					
Male	208 (76.2%)	86 (71.7%)	82 (78.8%)	Fisher's exact test	.16
Female	64 (23.4%)	34 (28.3%)	21 (20.2%)		
Other	1 (0.4%)	0	1 (1.0%)		
Race/Ethnicity					
White	141 (52.4%)	50 (43.1%)	64 (61.5%)	Fisher's exact test	.048
Black	93 (34.6%)	49 (42.2%)	28 (27.0%)		
Hispanic/Latinx[a]	20 (7.4%)	10 (8.6%)	8 (7.7%)		
Other	15 (5.6%)	7 (6.0%)	4 (3.8%)		
Relationship status					
Committed relationship	179 (65.6%)	85 (70.8%)	60 (57.7%)	Fisher's exact test	.047
Single/Widowed/Divorced	82 (30.0%)	33 (27.5%)	37 (35.6%)		
Other	12 (4.4%)	2 (1.7%)	7 (6.7%)		
Age (Years)	47.79 (14.08)	45.6 (13.4)	49.5 (14.8)	$t(222) = 2.07$	.040
Education (Years)	13.91 (2.24)	14.3 (2.5)	13.5 (1.7)	$t(202.63) = -2.60$	.001
Index trauma type[b]					
Military-based	215 (78.8%)	101 (84.2%)	72 (69.2%)	X^2 (1, n = 224) = 7.07	.008
Nonmilitary-based	58 (21.2%)	19 (15.8%)	32 (30.8%)		
Sexual	71 (26.0%)	34 (28.3%)	25 (24.0%)	X^2 (1, n = 224) = 0.53	.47
Nonsexual	202 (74.0%)	86 (71.7%)	79 (76.0%)		
Interpersonal	82 (30.0%)	38 (31.7%)	31 (29.8%)	X^2 (1, n = 224) = 0.09	.76
Noninterpersonal	191 (70.0%)	82 (68.3%)	73 (70.2%)		
Psychiatric comorbidity					
Depression comorbidity	116 (42.6%)	48 (40.3%)	43 (41.3%)	X^2 (1, n = 223) = 0.02	.88
No depression comorbidity	156 (57.4%)	71 (59.7%)	61 (58.7%)		
SUD comorbidity	57 (21.0%)	19 (16.0%)	29 (27.9%)	X^2 (1, n = 223) = 4.67	.031
No SUD comorbidity	215 (79.0%)	100 (84.0%)	75 (72.1%)		
Baseline PCL-5	50.37 (14.55)	49.37 (14.58)	52.41 (14.57)	$t(226) = 1.57$	.12
Treatment completion status					
Completed	207 (74.7%)	96 (78.7%)	70 (66.0%)	X^2 (1, n = 228) = 3.97	.046
Dropped out	70 (25.3%)	26 (21.3%)	36 (34.0%)		

Note. Means and standard deviations reported for continuous variables. T-values and p values of independent samples t-tests are reported for continuous variables. Sample sizes and percentages are reported for categorical variables. χ^2-values and p values of Chi-squared tests and p values of Fisher's exact tests are reported for categorical variables. TMH = telemental health; SUD = substance use disorder; PCL-5 = PTSD Checklist for *DSM-5*. [a] Latin American (e.g., Mexican, El Salvadorian, Cuban, etc.). [b] Participants are categorized for each of the three index trauma category types.

WET is a structured, five-session intervention that includes psychoeducation about PTSD, a treatment rationale, narrative writing about the trauma, and a brief check-in following the writing experience (Sloan & Marx, 2019). For the trauma narratives, the clinician provides a prompt to the patient at each session, and the patient is asked to engage in 30 minutes of uninterrupted writing. At subsequent sessions, the clinician gives feedback about the writing, focusing on how well the instructions were followed, before giving the new writing prompt. Initial writing prompts focus on describing the experience of the event, and subsequent prompts focus on the impact of the trauma on the patient's life. At the conclusion of the session, following the check-in about how the writing went, the therapist encourages the patient to allow themselves to have any thoughts or emotions that arise between sessions. Although WET is intended to be delivered in five sessions, additional sessions can be added for patients who do not follow the initial writing instructions (e.g., they write about the impact of the event rather than provide a detailed account of the trauma event). However, adding sessions is not typical, and, when it is done, no more than two sessions are recommended to be added (Sloan & Marx, 2019).

WET was delivered in-person (n = 106), via TMH (n = 122), or via a combination of in-person and TMH (n = 49) based on patient/provider preference, or as needed in response to the COVID-19 pandemic shifting clinics toward virtual care. In cases where patients received WET via TMH, WET was delivered via video teleconferencing (i.e., VA Video Connect). Clinicians were discouraged from delivering therapy over the phone without video unless the video connection was dropped in session. For more information about clinicians' delivery of WET via TMH during the COVID-19 pandemic, please see Worley et al. (2020).

Measures

Demographic information was collected by clinicians and entered for each patient. Clinicians were asked to indicate any comorbid depression or substance use disorder, based on their own assessment or the patient's electronic medical record. Clinicians also reported the index event that served as the focus of treatment. For the purposes of examining trauma type as a moderator of treatment outcome, index events were categorized three different ways to examine potential differences between: (a) military versus nonmilitary traumas, (b) sexual

versus nonsexual traumas, and (c) interpersonal (i.e., those involving a malicious perpetrator) versus noninterpersonal traumas. Treatment delivery format was coded positive for TMH if a patient received all sessions via TMH and positive for in-person if a patient received all sessions in-person. Those patients who received a mixture of TMH and in-person care (n = 49) were excluded from those analyses assessing the impact of delivery format on treatment outcome. Consistent with routine clinical practice, self-report symptom measures were administered throughout the course of treatment to monitor change.

The PTSD Checklist for *DSM–5* (PCL-5, weekly version; Weathers et al., 2013) was administered at each WET session. Scores on this 20-item self-report measures of PTSD symptom severity range from 0 to 80, with higher scores indicating greater severity. The PCL-5 has demonstrated internal and test–retest reliability and convergent and discriminant validity (Bovin et al., 2016). In the current sample, internal consistency was high (α = .95).

The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) is a 9-item measure of depressive symptom severity. This measure produces scores ranging from 0–27, with higher scores indicating more depressive symptoms. The PHQ-9 was administered at each session. The PHQ-9 has demonstrated internal consistency, test–retest reliability, and construct validity (Kroenke et al., 2001). Internal consistency was high in the current sample (α = .86).

The Brief Inventory of Psychosocial Functioning (B-IPF; Kleiman et al., 2020) is a 7-item measure of psychosocial functioning. Respondents rate on a 6-point Likert type scale the relevant domains that are impacted by their symptoms. It is scored by summing the items to create a total score, dividing the total score by the maximum possible score based on the number of items scored, and multiplying by 100. Higher scores indicate greater functional impairment. The B-IPF was administered at Sessions 1, 3, and 5 of the WET protocol. The B-IPF has demonstrated internal reliability, test–retest reliability, and construct validity. In the current sample, the B-IPF had high internal consistency (α = .88).

Data Analytic Strategy

Multilevel growth curve modeling was used to estimate patient symptom trajectories during WET. The statistical software environment R (R Core Team, 2018) was used to conduct analyses, and the multilevel models were estimated using the R packages lme4 (Bates et al., 2015) and lmerTest (Kuznetsova et al., 2017).

A preliminary variance decomposition of the nested data indicated that the majority of the variance in PTSD symptoms (87.2%) was within- and between-patients (Level 1/within-patients, 26.4%; Level 2/between-patients, 60.8%, $p < .001$), with another considerable amount between-clinicians (Level 3, 12.0%, p = .006). A negligible amount of variance was observed at Level 4 (between-clinics, < 0.01%, p = 1.00) and Level 5 (between-cohorts, 0.75%, p = 0.56). Therefore, we adopted a three-level model for growth models, with repeated assessments throughout treatment (Level 1) nested within patients (Level 2) nested within clinicians (Level 3).

Unconditional growth curve models were used to examine whether patients' symptoms improved during treatment. To determine the best fitting model, we examined growth curve models with linear and quadratic time trajectories and compared the fit indices. The linear time variable was created by counting the number of days from the patient's baseline assessment date to each session. The quadratic time variable was created by squaring the linear time variable. To test competing models, we evaluated the change in the deviance statistic, which followed the chi-squared distribution. Model fit comparisons indicated that adding the quadratic time variable did not improve fit (ΔDEV = .30, ΔParms = 1, p = .58). Thus, we incorporated only the linear time variable to evaluate symptom trajectories. Growth curve models incorporated all intent-to-treat data regardless of how many sessions patients completed; however, we describe symptom change through Session 6 because a substantial minority of patients completed six sessions.

To investigate potential moderators of PTSD symptom change during WET, we constructed a conditional growth curve model for each of our variables of interest, including in these models the potential moderator variable, the time variable, and the moderator by time interaction as predictors of PCL-5. We also conducted t-tests, chi-square tests, and two-sided Fisher's exact tests to examine potential differences in dropout.

For TMH versus in-person delivery of WET comparisons, we conducted a conditional growth curve model with the TMH variable included as a potential moderator of PTSD symptom trajectories. However, because patients were not randomized to TMH versus in-person care, we employed propensity matched scoring, defined as the conditional probability of assignment to treatment groups given pretreatment variables (Bartak et al., 2009). Before creating the propensity score matched groups, we examined potential demographic differences between the TMH and in-person groups to identify variables by which to match the two groups. Additionally, baseline PCL-5 score was used to match the two propensity score matched groups.

Results

Table 1 presents baseline descriptive statistics. The identified target trauma was most frequently combat (n = 130), followed by military sexual trauma (n = 52). PCL-5 scores at baseline were not significantly different across treatment completers (M = 49.70, SD = 14.66) and noncompleters (M = 52.36, SD = 14.14), $t(275)$ = -1.33, p = .19. Most patients completed treatment in five sessions; however, a substantial minority of treatment completers (n = 58; 28.01%) received more than five sessions, with most of these (n = 42) finishing in six sessions. The maximum number of sessions delivered was nine, which was the case for one patient, followed by eight sessions for three patients.

Symptom Change

The model-derived PCL-5 score at baseline was 50.56, which is considered severe (Bovin et al., 2016). Our unconditional growth curve model indicated that PTSD symptoms significantly reduced during treatment, $b = -.25$, $t(74.79) = -8.79$, $p < .001$. The model-derived reduction in PCL-5 scores from Session 1 to Session 6 was 12.13 points, an effect size of d = .84.

The model-derived initial PHQ-9 score was 15.10, which reflects moderately severe depression. Our unconditional growth curve model indicated that depression symptoms significantly reduced during treatment, $b = -.05$, $t(181.84) = -5.90$, $p < .001$.

The model-derived reduction from Session 1 to Session 6 was 2.55 points, an effect size of $d = .47$.

Veterans initially endorsed moderate levels of functional impairment with a model-derived initial score of 56.05 out of 100. The B-IPF trajectory significantly reduced (8.29 points) during WET, $b = -.23$, $t(116.49) = -5.45$, $p < .001$, a moderate effect size change ($d = .36$).

Potential Moderators of Symptom Outcome

At baseline, PTSD symptom severity did not differ between patients with different index trauma types: military versus nonmilitary ($b = -.21$, $t(265.47) = -.10$, $p = .92$), sexual versus nonsexual ($b = 2.93$, $t(270.68) = 1.51$, $p = .13$), or interpersonal versus noninterpersonal ($b = 1.08$, $t(270.15) = .58$, $p = .56$). There was also no significant time by trauma type interaction when considering military versus nonmilitary index traumas, $b = -.005$, $t(175.32) = -.075$, $p = .94$, sexual versus nonsexual index traumas, $b = .016$, $t(170.26) = .29$, $p = .78$, and interpersonal versus noninterpersonal index traumas, $b = .015$, $t(171.55) = .28$, $p = .78$.

Therapists indicated that 42.6% of patients had comorbid depression. Baseline PTSD symptom severity was higher [$b = 3.45$, $t(270.35) = 1.97$, $p = .05$] for patients with comorbid depression ($M = 52.52$, $SD = 13.76$) than those without ($M = 48.72$, $SD = 14.94$). However, examining PCL-5 outcomes, there was no significant time by depression comorbidity interaction, $b = .025$, $t(171.01) = .48$, $p = .64$.

Approximately one fifth (21.0%) of patients were identified as having a comorbid substance use disorder. At baseline, these patients were not significantly different in their PTSD symptom severity compared to those without substance use disorder comorbidity ($b = -.19$, $t(263.14) = -.089.$, $p = .93$). There was also no significant time by substance use disorder comorbidity interaction, $b = .034$, $t(174.00) = .54$, $p = .59$.

Baseline PTSD symptom severity differed by race/ethnicity ($b = 2.08$, $t(264.48) = 1.99$, $p = .047$). There was a difference in mean baseline PCL-5 among the groups ($F(3, 265) = 3.00$, $p = .031$), and a Tukey post hoc test revealed that mean baseline PCL-5 was significantly higher ($p = .042$) for Black individuals ($M = 53.0$, $SD = 14.3$) compared to White individuals ($M = 47.9$, $SD = 14.1$), but there were no other significant differences between the other race/ethnicity categories. Baseline PCL-5 did not significantly differ by other characteristics including gender ($b = .85$, $t(308.9) = .40$, $p = .69$), age ($b = .11$, $t(271.80) = 1.79$, $p = .075$), education ($b = .15$, $t(302.14) = .34$, $p = .73$), and relationship status ($b = -.69$, $t(265.22) = -.46$, $p = .64$). Of primary interest, patient demographic variables did not moderate PTSD symptom trajectory. Specifically, there were no significant demographic variable by time interactions for gender ($b = -.003$, $t(1024) = -.099$, $p = .92$), race/ethnicity ($b = .039$, $t(173.96) = 1.26$, $p = .21$), age ($b = .002$, $t(187.49) = 1.33$, $p = .19$), education ($b = .011$, $t(996.31) = 1.71$, $p = .09$), or relationship status ($b = .020$, $t(174.21) = .47$, $p = .64$).

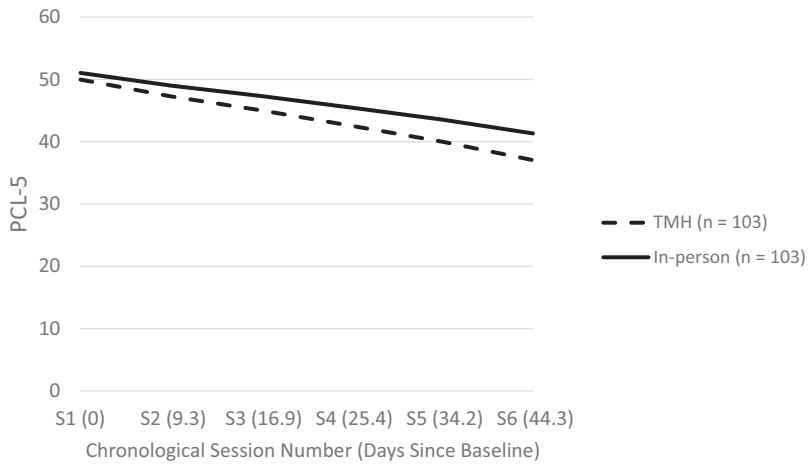
As reflected in Table 1, at baseline, PCL-5 scores were not significantly different across treatment delivery formats (TMH $M = 49.37$, $SD = 14.58$; in-person $M = 52.41$, $SD = 14.57$), $t(226) = 1.57$, $p = .12$. However, veterans receiving WET via TMH and in-person had significant differences in demographic characteristics including age, education, race/ethnicity, relationship status, trauma type (military vs. nonmilitary), and presence of comorbid substance use (see Table 1). Patients were therefore matched by these demographics variables in addition to baseline PCL-5 score for a propensity score matched analysis, resulting in 103 cases per group. In this model, there was no significant time by treatment format interaction ($b = -.073$, $t(101.37) = -1.07$, $p = .29$; see Figure 1).

Patient Dropout

The overall dropout rate was 25.27%. Clinicians reported on the reasons for patient dropout, with the option to select all that applied. The most common clinician-reported reasons for dropout were "avoidance"

Figure 1

Propensity Score Matched Growth Curve Model Examining PTSD Symptom Change for TMH Versus In-Person Delivery



Note. PTSD = posttraumatic stress disorder. PCL-5 = PTSD Checklist for *DSM-5*; TMH = telemental health; S = session.

(31.4%) and "unknown/lost to follow-up" (30.0%), followed by "could not adhere to session schedule" (17.1%).

When examining demographics for patients who completed versus dropped out of WET, there was a significant difference in education, $t(134.18) = 2.18$, $p = .031$, such that treatment completers had slightly higher mean years of education ($M = 14.06$, $SD = 2.34$) than those who dropped out of treatment ($M = 13.45$, $SD = 1.86$). There were no differences between those who completed versus dropped out of treatment with respect to other variables examined, including baseline PCL-5 [$t(275) = -1.33$, $p = .19$], age [$t(115.90) = .82$, $p = .42$], gender ($p = .48$, Fisher's exact test), race/ethnicity ($p = .22$, Fisher's exact test), or relationship status ($p = .82$, Fisher's exact test). There were also no differences in dropout based on index trauma type (military vs. nonmilitary: $\chi^2(1, N = 273) = 1.09$, $p = .30$; sexual vs. nonsexual: $\chi^2(1, N = 273) = 1.04$, $p = .31$; interpersonal vs. noninterpersonal: $\chi^2(1, N = 273) = .76$, $p = .38$) or presence of depression ($\chi^2(1, N = 272) = 3.09$, $p = .08$) or substance use disorder comorbidity [$\chi^2(1, N = 272) = 1.77$, $p = .18$]. However, patients receiving care via TMH were significantly more likely to complete treatment [$\chi^2(1, N = 228) = 3.97$, $p = .046$] than patients receiving care in-person (34.0% dropout rate for in-person vs. 21.3% for TMH).

Discussion

In this study of WET's clinical effectiveness, veterans in VA clinics demonstrated significant improvements in PTSD and depression symptoms and decreases in functional impairment during treatment. Examining potential moderators of WET's effectiveness, we found that PTSD symptom improvement was not impacted by patient age, race/ethnicity, gender, education, relationship status, trauma type, or presence of depression or substance use disorder, nor by TMH versus in-person delivery. These findings provide support for WET's effectiveness in routine care across a range of patients and delivery formats.

We observed a large effect size for PTSD symptom change in this sample. The effect size was of similar magnitude to the within-condition effect size for WET 12 weeks postbaseline in the WET noninferiority trial (Sloan et al., 2018). The effect size is also within the range of within-group intent-to-treat effect sizes for CPT and PE in RCTs with military and veteran samples ($d = .78–1.10$; Steenkamp et al., 2015). Notably, the effect size in this sample is similar to training cases in the VA PE training program (i.e., .87; Eftekhari et al., 2013), in which patients received treatment with more sessions and between-session assignments. The promising results observed here suggest that WET is an effective treatment option to include in VA PTSD treatment programs. Expanding treatment offerings to include WET as part of shared decision-making with patients may increase access to evidence-based care.

It is noteworthy that patients experienced reductions in functional impairment during a short course of WET. Historically, studies of EBPs for PTSD have focused on reductions in PTSD symptoms, giving less attention to effects on interpersonal functioning (Reich et al., 2019). Silverstein et al. (2019) found PTSD symptoms account for less than half the variance in trauma-related functional impairment. The reductions in functional impairment found for this intervention may address some of the broader impacts of trauma in areas important to patients.

Dropout in this sample was greater than that observed in previous clinical trials of WET (6–14%; Sloan et al., 2012, 2013, 2018), closer to the 27% mean dropout in trials of trauma-focused psychotherapy in military personnel and veterans (Edwards-Stewart et al., 2021), and slightly lower than the 30% rate for veteran training cases in the national VA training program for PE (Eftekhari et al., 2020). However, it is much lower than the 69% rate for CPT or PE in routine VA care (Hale et al., 2019). As Sloan and colleagues (2018) posited, fewer sessions and absence of formal between-session practice assignments (a core feature of other EBPs for PTSD) may reduce patient burden and increase completion of the protocol.

While the majority of patients completed WET in five sessions, 28% of treatment completers received more than five sessions, most often six. Completing WET in six sessions instead of five typically occurred when a session was repeated due to the patient not following a writing prompt. This modification may have been discussed and recommended as part of clinical consultation. A very small number of patients ($n = 4$) received eight or nine sessions. This likely occurred if the therapist repeated the protocol on a different traumatic event. Delivery of more than five sessions of WET is not typical, and it is generally not recommended to add more than two sessions (Sloan & Marx, 2019). Given that this is the first report of WET's effectiveness when delivered in VA clinics, information about the frequency with which sessions are added provides an important lens into how WET may be implemented in routine care. Flexing the length of treatment is consistent with efforts to tailor interventions to patient need (e.g., Foa et al., 2019; Galovski et al., 2012; Resick et al., 2021). However, future research is needed to examine the effects of adding additional sessions to WET and to ensure flexibility while maintaining the brevity and efficiency that is a potential advantage of this protocol. A current RCT of WET in the VA is examining the frequency with which additional sessions are needed when treating veterans with PTSD (Sloan et al., 2021).

In this study, with the exception of years of education, demographic variables did not predict completion of WET. This contrasts with other studies, which have shown that younger veterans are less likely than older veterans to complete eight or more sessions of CPT or PE (Eftekhari et al., 2020; Hale et al., 2019). Younger veterans tend to have greater work and childcare responsibilities than older veterans, which may interfere with their receipt of treatment. Because WET involves fewer sessions than CPT and PE and requires no formal between-session practice, WET may be a more feasible treatment for busy, young veterans to complete.

It is also promising that presence of a comorbid substance use disorder did not preclude completion or success with WET. Similar to guidance for other trauma-focused treatments, patients receiving WET were encouraged not to use substances 2 hours before or after sessions. The comparable treatment outcomes for patients with comorbid substance use disorders is consistent with current VA/DoD (2017) clinical practice guidelines, which encourage use of trauma-focused treatment for patients with comorbid PTSD and substance use disorders.

This was also the first investigation of WET delivery via TMH. Patients exhibited significant reductions in PCL-5 scores while receiving WET regardless of format, and patients completing WET via TMH were less likely to drop out of care than those

receiving in-person treatment. The lower dropout and similar symptom improvement in TMH is encouraging and suggests that WET can be effectively delivered in this format. This finding is also consistent with studies of TMH delivery of other trauma-focused interventions (e.g., Morland et al., 2020).

It should be noted that a portion of the patient care occurred during the COVID-19 pandemic, the onset of which coincided with the third of four training cohorts reported here. The onset of the COVID-19 pandemic resulted in significant changes in care delivery (e.g., restrictions to in-person care), patient demands and stressors (e.g., increased stress, less time to devote to therapy due to caregiving responsibilities), and potential illness impacts on providers and patients. The dropout rate was highest in this third cohort (29.5%); however, as reported earlier, between-cohort differences did not contribute significant variability in PTSD outcomes. Although some cases dropped out due to the initial impacts of COVID-19, most clinicians were able to enroll new participants during the pandemic. Thus, there was a high acceptance rate of WET via TMH as evidenced by the continued delivery via this modality. VA patients and therapists may be particularly willing to move forward with EBPs via TMH regardless of external challenges (Sciarrino et al., 2020; Myers et al., 2020). Nonetheless, when patients who may not have selected TMH had in-person care been an option enrolled in TMH, there were logistical challenges to overcome (e.g., retrieval of the narrative). For more information about the training program's efforts in response to the pandemic please see Worley et al. (2020).

This study had a number of strengths, including the use of clinical data from VA providers across the United States and broad inclusion criteria for patient participants. These factors support the generalizability of the findings to patients and providers in VA. Statistical analyses also utilized multilevel modeling and incorporated session-by-session data. Nonetheless, it is important to note that this was not an RCT, and, while we have reported on symptom change over the course of treatment, there was no comparison group. Patients were also not randomized to TMH or in-person care. Patients/providers were initially allowed to choose the treatment delivery format; however, as noted earlier, the COVID-19 pandemic changed VA policy such that the majority of therapy sessions were delivered using TMH. To address this fact, we accounted for nonrandomization in our statistical analyses using propensity score matching. Additionally, when examining demographic variables as potential moderators, some cells had fewer participants. It is possible that with a larger, more diverse sample, different findings may be observed. However, effect sizes for PTSD across subgroups were all in the medium to large range. Because the current study was based on program evaluation data, symptoms were assessed via self-report during treatment, but no clinician-rated measures or follow-up assessments were completed. While this is a limitation of the current data, this approach reflects how assessment typically occurs in clinical practice. Although we cannot speak to whether the treatment gains observed here were maintained long-term, previous studies of WET have shown that additional PTSD symptom reductions continue for the first several months posttreatment (Sloan et al., 2012, 2018). Additionally, the data were drawn from clinical care occurring during clinician involvement in training. Therefore, cases were discussed during weekly consultation calls and had more oversight than traditionally occurs in regular clinical practice. Thus, future research should examine WET's clinical effectiveness during regular, unsupervised care. Finally, all clinicians had prior experience delivering PTSD EBPs (e.g., CPT or PE). Thus, research will also be needed to evaluate WET's effectiveness when delivered by non-specialty providers.

These findings add to the growing empirical support for WET. Results suggest that WET is an effective treatment for a range of veterans and can be successfully delivered in-person or via TMH. Given WET's effectiveness across patient characteristics, WET should be considered by clinicians for a diverse range of patients with PTSD.

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