

Training in the Implementation of Prolonged Exposure Therapy: Provider Correlates of Treatment Outcome

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The authors examined the degree to which provider characteristics, such as profession, treatment orientation, prior experience in treating posttraumatic stress disorder (PTSD), prior experience with prolonged exposure (PE) therapy, and attitudes about PE, were related to the clinical outcomes of veterans receiving care from clinicians participating in the national Department of Veterans Affairs (VA) PE Training Program. Positive patient outcomes were achieved by providers of every profession, theoretical orientation, level of clinical experience treating PTSD, and prior PE training experience. With 1,105 providers and 32 predictors (13 provider variables), power was at least 90% power to detect an effect of $\beta = .15$. Profession was the only provider characteristic significantly related to outcomes, but the mean effect (a 2 point difference on the PTSD Checklist) was too small to be clinically meaningful. The results support the intensive training model used in the VA PE training program and demonstrate that clinicians of varying backgrounds can be trained using interactive training workshops followed by case consultation to deliver PE effectively.

Prolonged exposure therapy (PE), one of the most studied treatments for posttraumatic stress disorder (PTSD), has been shown to be effective with civilians and veterans of all eras, different trauma types, and both men and women (e.g., Foa et al., 2005; Schnurr et al., 2007). In 2007, Mental Health Services (MHS) in the Veterans Affairs (VA) central office commenced several training programs to ensure that veterans had access to evidence-based psychotherapies (EBPs), including PE for PTSD (Karlin et al., 2010). The VA PE training program was intended to be sufficiently comprehensive so that clinicians would not require prior cognitive-behavioral therapy (CBT) training. A previous report evaluating this program demonstrated that trainees could effectively use PE to reduce PTSD and co-occurring depression symptoms in male and female veterans (Eftekhari et al., 2013). Questions remained, however, about whether VA clinicians with diverse professional back-

grounds, different theoretical orientations, and varying levels of experience could be equally effective in delivering PE.

In light of the literature supporting the importance of provider experience, training, and attitudes on dissemination and training efforts (e.g., Beidas & Kendall, 2010), and on patient outcomes (e.g., Huppert et al., 2001), the current study examined the degree to which clinician characteristics were related to the clinical outcomes of veterans treated with PE. We anticipated that better outcomes might be obtained by (a) psychologists, (b) clinicians with a CBT background and orientation, (c) clinicians with prior training in PE, (d) more years of experience treating PTSD, (e) more positive patient outcome expectancies, (f) fewer negative patient outcome expectancies, (g) fewer concerns about clinician time and emotional burdens associated with delivering PE, and (h) greater self-efficacy for implementing PE.

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Method

Participants

Clinicians were 1,105 licensed Veterans Health Administration (VHA) mental health providers receiving weekly case consultation from expert PE consultants through the national VA PE training program. All clinician trainees were nominated by mental health leadership in their medical center or region and treated patients with PTSD for a minimum of 50% of their

work time, providing an average of 25.51 ($SD = 7.69$) direct patient care hours per week. Information on trainee gender, clinic setting, and orientation was available for 1,074 clinicians. Information on trainee profession and years of experience was available for 1,075 and 1,073, respectively. Seven-hundred forty (68.9%) trainees were female. Psychologists comprised 616 (57.3%), 399 (37.1%) were social workers, and 60 (5.6%) were in other professions. There were 931 who (86.7%) listed cognitive-behavioral therapy as part of their theoretical orientation. The sample contained 685 who (63.8%) had fewer than 6 years of experience in treating PTSD, 187 (17.4%) who had 6–10 years, and 201 (18.7%) who had 10 or more years of experience in treating PTSD. Setting included 374 (34.8%) in outpatient PTSD specialty clinics, 337 (31.4%) in mental health clinics, 70 (6.5%) in PTSD residential or day hospital programs, 47 (4.4%) in primary care clinics for Iraq/Afghanistan veterans, 38 (3.5%) in other primary care clinics, and 208 (19.4%) in other settings.

Patients were 3,133 veterans (2,695 male, 422 female, and 16 unreported) who received PE from clinicians taking part in the training program. The average age of veteran patients was 47.06 years ($SD = 14.20$). There were 1,044 (33.5%) Vietnam era veterans, 1,198 (38.5%) Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) era veterans, 273 (8.8%) Persian Gulf War era veterans, and 599 (19.2%) served during other eras. Information on war era was unavailable for 19 (0.6%). The most common target trauma was combat (61.9%, $n = 1,905$). Other common target traumas included sexual harassment or assault during military service (10.3%, $n = 316$), noncombat warzone trauma (11.4%, $n = 350$), childhood trauma (4.3%, $n = 131$), and postchildhood nonmilitary trauma (3.5%, $n = 109$). Our study received an IRB exception as all data were from archival data files. Over two thirds ($n = 2,176$, 69.5%) completed eight or more sessions of the PE treatment protocol. In analyses described below, these individuals were regarded as treatment completers.

Measures

A questionnaire assessing provider experience with and attitudes regarding PE was administered following the 4-day workshop. We examined four sets of provider beliefs: (a) positive expectations for how PE might improve patient outcomes ($\alpha = .91$, 8 items), (b) negative expectations regarding how PE might distress or harm patients ($\alpha = .69$, 3 items), (c) concerns about anticipated time ($\alpha = .79$, 4 items) and emotional burdens ($\alpha = .69$, 2 items) for clinicians delivering PE, and (d) clinician self-efficacy to deliver PE elements ($\alpha = .95$, 14 items). Clinicians' attitudes were measured on a 7-point scale with higher values for positive patient outcomes and clinician self-efficacy and lower values on expectations of patient distress and anticipated time and emotional burdens indicating more confidence in PE and PE treatment delivery. Additional details of the survey measure have been reported previously (Ruzek et al., 2014).

Patients completed the PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993) and the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) at the first session and every second session throughout treatment. The PCL-S is a widely used 17-item measure corresponding to the PTSD symptom criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000), which has been found to demonstrate good validity, internal consistency, and reliability (Wilkins, Lang, & Norman, 2011). Scores range from 17 to 85, with higher scores representing greater PTSD symptom severity. The BDI-II is a well-validated 21-item self-report measure of depression. BDI-II scores range from 0 to 63, with higher scores reflecting greater depression severity (Beck et al., 1996). Due to item aggregation, the internal consistency of BDI-II and PCL-S items for the current sample could not be calculated.

Data Analysis

Mixed effects models with patient- and provider-level variables were used to predict treatment completion and PTSD and depression outcomes. Continuous predictor and outcome variables were standardized prior to imputation, and categorical predictor variables were orthogonally coded to reduce nonessential collinearity. Missing values of both predictor and outcome variables were estimated using multiple imputation with 30 imputations.

All models included nested random effects of patients within providers and providers within consultant. Provider-level variables included gender, profession, theoretical orientation, previous training in PE, years of experience in treating PTSD, self-efficacy for delivering PE, and anticipated positive patient outcomes, negative patient outcomes, time burden, and emotional burden from using PE. All analyses included patient-level variables (gender, war era, and initial severity of PTSD and depression) shown to predict treatment outcomes in prior reports (Eftekhari et al., 2013). Models predicting symptom outcomes also included number of treatment sessions completed by the patient (these were coded categorically to account for the non-linear relationship between treatment sessions and outcomes). Visual inspection of the distribution of the standardized errors and the random effects was used to determine if model assumptions were met. Reported parameter estimates are interpreted as they are in usual linear regression analyses. With 1,105 providers and 32 predictors (13 provider variables), we had at least 90% power to detect effects of $\beta = .15$ (Lenth, 2006–2009).

Results

After imputation, overall mean pre- and posttreatment PTSD severity scores were 63.52 ($SD = 11.54$) and 49.40 ($SD = 17.13$), respectively. The mean pre- and posttreatment depression severity scores were 30.05 ($SD = 11.44$) and 21.82 ($SD = 13.67$), respectively. After adjusting for patient variables, no

Table 1
Clinician Predictors of Treatment Completion and Symptom Reduction

Variable	Treatment completion model		PTSD model		Depression model	
	OR	95% CI	β	95% CI	β	95% CI
Female	1.02	[0.85, 1.22]	.02	[-.05, .09]	.02	[-.05, .09]
Profession						
SW	1.01	[0.84, 1.21]	-.12***	[-.19, -.05]	-.09**	[-.15, -.02]
Other	0.98	[0.66, 1.46]	.04	[-.11, .19]	.01	[-.13, .15]
Psychologist ^a	1.00	–	.00	–	.00	–
Non-CBT approach	0.89	[0.65, 1.21]	-.05	[-.20, .10]	-.04	[-.18, .10]
Prior PE training	0.98	[0.80, 1.20]	.06	[-.02, .13]	.04	[-.04, .12]
PTSD experience						
> 10 years	1.12	[0.84, 1.49]	-.09	[-.21, .02]	-.08	[-.18, .03]
6–10 years	1.12	[0.83, 1.50]	.00	[-.12, .12]	-.00	[-.12, .11]
1–5 years	1.18	[0.93, 1.49]	-.04	[-.14, .05]	.00	[-.09, .09]
< 1 year ^b	1.00	–	.00	–	.00	–
Self-efficacy	0.98	[0.89, 1.09]	-.02	[-.06, .02]	-.01	[-.04, .03]
Positive outcomes	0.99	[0.90, 1.09]	-.03	[-.07, .01]	-.03	[-.06, .01]
Negative outcomes	0.99	[0.90, 1.10]	.00	[-.04, .04]	.01	[-.03, .05]
Time burden	1.05	[0.95, 1.15]	-.02	[-.06, .02]	-.03	[-.06, .01]
Emotional burden	0.96	[0.87, 1.06]	-.00	[-.05, .04]	-.02	[-.06, .02]

Note. $N = 3,133$. β = standardized beta coefficient; SW = social worker; PE = prolonged exposure; Self-efficacy = self-efficacy for delivering PE; Positive outcomes = belief that PE produces positive patient outcomes; Negative outcomes = belief that PE may lead to negative patient outcomes; Time burden = perceived clinician time burden of using PE; Emotional burden = perceived clinician emotional burden of using PE; PTSD = posttraumatic stress disorder; CBT = cognitive-behavioral therapy. All analyses adjust for the patient-level variables (not shown), including gender, war era, target trauma, and initial severity of PTSD and depression symptoms. Analyses of PTSD and depression outcomes also adjusted for the number of treatment sessions that patients completed.

^aReference categories for ORs have an estimate of 1.00.

^bReference categories for β s have an estimate of 0.

** $p < .01$. *** $p < .001$.

provider-level variables included in the model significantly predicted whether participants completed eight or more sessions of PE. Profession was the only significant provider-level predictor of clinical outcomes, with social workers achieving slightly greater reductions in PTSD symptom severity ($M = 1.99$ points on the PCL) and depression severity ($M = 1.19$ points on the BDI-II) than psychologists (see Table 1 for standardized parameter estimates of these models).

Discussion

Similar patient outcomes were achieved by providers of every profession and theoretical orientation, with varying years of clinical experience treating PTSD, and levels of prior PE training experience. Social workers achieved greater reductions in PTSD symptom severity and depression severity than did psychologists, but this 2-point mean difference was clinically meaningful when we consider that a clinically significant change on the PCL-S is 10 points (Monson et al., 2010). Contrary to our expectations, providers with more CBT experience and with prior PE training did not achieve better patient outcomes. The standardized training protocol used in the VA PE training program may have been effective in improving the skills of these participants to the level needed to achieve good patient outcomes.

We previously found that both the 4-day PE training workshop and subsequent consultation improved providers' outcome expectancies for PE and their self-efficacy for

delivering PE (Ruzek et al., 2014). In these models, however, variation in these attitudes was not related to patient outcomes. Thus, providers who have some concerns about PE and their ability to deliver it were able to attain positive patient outcomes with adequate training and consultation.

These findings are promising for the dissemination of PE and suggest that clinicians of varying backgrounds and levels of experience can be trained to provide PE effectively. Our results should be considered in light of several limitations. First, the observed mean improvement of 14 points on the PTSD Checklist indicates clinically meaningful improvement; however, it is important to note that nearly half the veterans still had post-treatment PCL-S scores over 50, a threshold for a likely PTSD diagnosis (Eftekhari et al., 2013). Given that these were early cases for clinicians, it is possible that better outcomes would be obtained with later cases. Second, these clinical outcomes were obtained while providers were receiving case consultation from PE experts. We could not assess whether uniform consultation contributed to the consistency of results across providers. Future work should examine the role of consultation and the maintenance of skills following the completion of consultation. Additionally, even though the current outcomes were consistent with those in previous PE trials (Foa et al., 2005; Schnurr et al., 2007), there was no "treatment as usual" control group to which outcomes could be compared. Furthermore, we did not have patient perspectives regarding their experience in exposure therapy. Finally, we had no information on what other treatments (skills groups, medications, etc.) patients may have

previously or concurrently received. Future research should consider what role other preparatory or ancillary treatments may have on patients' response to PE.

In sum, our results suggest that the intensive, competency-based training model used in the VA PE training program was effective in training VA clinicians of widely varying backgrounds to deliver PE effectively. These findings are particularly compelling given that evidence-based treatments are often viewed as difficult to implement in real-world settings that may differ from those targeted in many academic clinical trials. Research demonstrating continued effectiveness following the completion of posttraining consultation is warranted, as is research to determine strategies (e.g., peer consultation, periodic booster training, communities of practice) for sustaining clinician skills and treatment fidelity.

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