Therapist Self–Efficacy in Delivering Cognitive Processing Therapy in a Randomized Controlled Implementation Trial

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Efforts to improve the implementation of evidence-based treatments (EBT) have recently made important strides. One such example is understanding the vital role that weekly consultation plays as therapists learn to deliver an EBT. Because mechanism-based research can further support EBT implementation, the present study sought to examine the potential relationship between therapist self-efficacy in relation to treatment fidelity and outcomes.

We examined therapist self-efficacy ratings from 80 therapists working with 188 patients. These data were collected as part of a randomized controlled implementation trial testing cognitive processing therapy (CPT). Across post-workshop training conditions, we ran multilevel models to assess (1) changes in therapist self-efficacy, (2) therapist self-efficacy in relation to treatment fidelity, and (3) therapist-self-efficacy in relation to patient PTSD symptom outcomes.

We found that therapist self-efficacy significantly improved over the course of 6 months of CPT training. Baseline therapist self-efficacy was differentially associated with client outcomes based on post-workshop training condition. Specifically, therapists with low self-efficacy that did not receive post-workshop consultation tended to have poorer outcomes than therapists with low self-efficacy that received consultation. In the present sample, therapist self-efficacy was not related to treatment fidelity.

As this was the first study to examine therapist self-efficacy in the implementation of an evidence-based treatment, our findings suggest that self-efficacy may be an important implementation factor in treatment outcomes and worthy of ongoing research.

As cognitive processing therapy (CPT; Resick et al., 2016) has continued to accumulate evidence as a highly efficacious treatment for PTSD (Asmundson et al., 2019), a vital effort has been under way to understand best CPT dissemination and implementation practices (Chard et al., 2012; Karlin et al., 2010). Transporting a psychotherapy from the lab to a community setting can be laborious and time consuming, and may ultimately fall short of the ideal level of adoption by therapists over time (Becker et al., 2004; Finley et al., 2019; Rosen et al., 2016; Sayer et al., 2017). When

Finley et al. (2015) studied evidence-based psychotherapy (EBP) use in PTSD specialty clinics in the Veterans' Health Administration, therapists reported spending about only 5 hours per week delivering CPT. Other research on receipt of EBPs for PTSD indicates that a low percentage of U.S. veterans initiated PE or CPT 22.8%, and only 9.1% of them completed an EBP (Mott et al., 2014). Given our growing evidence of best practices, it is vital that these therapies broadly reach therapists and, more importantly, their patients. Thus, the aim of this paper was to examine therapist self-efficacy as a potential implementation factor in the delivery of CPT.

Implementation science, the scientific study of methods to promote the uptake of research findings into routine health care, has greatly expanded our understanding of factors that improve dissemination efforts (Brownson et al., 2018). The focus of implementation

science is to facilitate treatment fidelity and reach across disciplines, often through formulating the best ways to provide feedback to therapists (Dulko, 2007; Edmunds et al., 2013; Godley et al., 2011). Within EBPs, research has established that posttraining supervision and consultation are vital to maintain treatment fidelity and patient outcomes (Edmunds et al., 2013; Godley et al., 2011; Herschell et al., 2010). Specific to CPT, therapists that attended weekly consultation sessions yielded significantly better patient outcomes than those who solely attended the initial training workshop (Monson et al., 2018). Additionally, there is evidence that patients experience a greater symptom improvement when their therapists respond flexibly to their unique cases in a fidelity-consistent manner (Laska et al., 2013; Marques et al., 2019).

One important component to improving implementation efforts are mechanism-based models that conceptualize how consultation efforts influence therapist behavior and attitudes. Although previous implementation models have tended to be more theoretical, recent models have examined core mechanisms postulated to influence clinical behaviors (e.g., Bennett-Levy, 2006; Johnston & Milne, 2012). The most comprehensive of these models is the Longitudinal Education for Advancing Practice (LEAP) model that describes the implementation process from pretraining inputs, such as the organizational environment, to the therapist's long-term learning through consultation. Developed from research in industrial and organizational psychology, the LEAP model conceptualizes cognitive-, skills-, and attitude- and relationship-based mechanisms across the course of EBP implementation that are theorized to improve treatment fidelity and clinical outcomes (McLeod et al., 2018). However, empirical research of these purported mechanisms is needed.

The relationship between attitude- and relationship-based mechanisms and treatment fidelity and outcomes comprises one potential vital link in the LEAP model, specifically the role of therapist self-efficacy. Outside of psychotherapy research, higher self-efficacy has been related to improved outcomes in domains such as academic performance (Chemers et al., 2001), weight management (Roach et al., 2003), and world-class athletic performance (Hays et al., 2007). Psychotherapy studies of self-efficacy have focused on both the patient and the therapist. In patient studies, cognitive-behavioral interventions aimed at improving patient self-efficacy have shown to be related to improved treatment outcomes for panic disorder (Gallagher et al., 2013) and social anxiety disorder (Goldin et al., 2012). In therapist studies, counselors who received regular clinical supervision indicated a higher level of self-efficacy in their counseling skills (Cashwell & Dooley, 2001). In another study, changes in therapists' self-efficacy were shown to be related to the performance feedback they received in supervision (Daniels & Larson, 2001). However, no research to date has examined the potential role of therapist self-efficacy in the delivery of EBPs.

Given the dearth of research on the LEAP model's hypothesized mechanisms, the present study sought to test the pathway between therapist self-efficacy and treatment fidelity and outcomes. Our first aim was to assess whether therapist self-efficacy improved over the course of delivering CPT. Given the evidence supporting the role of self-efficacy and feedback in psychotherapy (Holloway & Neufeldt, 1995; Ladany et al., 1999), we hypothesized that self-efficacy would improve over time and that this improvement would be significantly greater for therapists receiving expert feedback in consultation versus no consultation after workshop training (Hypothesis 1). Second, we sought to examine if therapist self-efficacy was related to greater treatment fidelity (i.e., adherence and competence). We hypothesized that self-efficacy would be significantly related to therapist adherence and competence (Hypothesis 2). Finally, we were interested in the potential relationship between self-efficacy and treatment outcomes. Following the LEAP model, self-efficacy would be related to performance and therapeutic outcomes (McLeod et al., 2018). We hypothesized that therapist self-efficacy would be positively associated with patient treatment outcomes, and that this effect would be significantly greater for those in consultation (Hypothesis 3).

Method
Participants and Procedures

Data for the current study originated from a randomized clinical trial of CPT consultation strategies (Monson et al., 2018). The overall aim of the parent study was to determine the best way to support therapists in their CPT delivery after they attended a standard 2-day CPT training workshop. Following the initial training, therapists were randomly assigned to one of three consultation conditions: Standard Consultation, Consultation Including Audio Review, and No Consultation. Therapists in the two consultation conditions (Standard and Audio Review) attended weekly 1-hour consultation groups, where a CPT expert discussed case conceptualization, addressed barriers to fidelity, and supported treatment planning. In addition to the standard consultation elements, therapists in the Consultation Including Audio Review condition

reviewed 5–10 minutes of therapy session audio-recordings with their expert consultants. Study investigators reviewed consultation sessions monthly and provided feedback to consultants every 4–6 weeks in an effort to maintain consultation fidelity.

A total of 134 therapists were recruited from Veterans Affairs Canada Operational Stress Injury Clinics, Canadian Forces mental health services, and the broader Canadian community. Given the current study's aim of addressing self-efficacy on treatment fidelity and outcome, we focused on the subsample of 80 therapists who enrolled one or more patients and thus provided patient outcome data in the parent study. All therapists were licensed providers with a broad range of prior experience. A total of 188 patients participated in the study and were required to have a PTSD diagnosis made by themselves or a referring clinician, and a score greater than 50 on the Posttraumatic Stress Disorder Checklist–Fourth Edition (PCL-IV; Weathers et al., 1993). In total, there were 30 therapists working with 61 clients in Standard Consultation, 30 therapists and 74 clients in Consultation Including Audio Review, and 20 therapists and 53 clients in the No Consultation condition. On average, therapists treated 2.35 patients (SD = 1.1, range = 1–8, Mdn = 2) and delivered 22.2 sessions across study participants (SD = 11.3, range = 1–54, Mdn = 25). For further study details see the primary outcome paper by Monson et al. (2018).

All participants provided voluntary informed consent after a clear description of the Research Ethics Board (REB) approved study procedures. Approval for this study was obtained from the parent REB at Ryerson University. Eleven REBs from sites across Canada with which therapists were affiliated also provided approval for the study.

Measures

Therapist Self-Efficacy

Therapists completed monthly surveys throughout the 6-month training period. These surveys included a number of items about the therapist's experience providing CPT, including the following item related to their self-efficacy: "*Thinking back over the past month, how confident were you in your delivery of cognitive processing therapy?*" Therapists' responses were anchored on a 4-point Likert scale: (1) *Not at all confident*, (2) *A little confident*, (3) *Quite confident*, and (4) *Very confident*. This single item is similar to items found in other therapist self-efficacy measures, such as Counseling Self-Estimate Inventory (Larson et al., 1992). The response rate of these surveys was high across the entire sample (M = 5.6, SD = 1.6, range = 1 to 8, Mdn = 6).

Posttraumatic Stress Disorder Checklist–Fourth Edition (PCL-IV)

At pretreatment and prior to each CPT session, patients completed the well-validated 17-item self-report questionnaire PCL-IV (Weathers et al., 1993). Each item of PTSD symptom severity was anchored on a 5-point Likert scale: (1) *Not at all*, (2) *A little bit*, (3) *Moderately*, (4) *Quite a bit*, and (5) *Extremely* and are consistent with the DSM-IV criteria for PTSD (American Psychiatric Association, 2000). A cut-score ≥ 50 is indicative of likely having PTSD (Weathers et al., 1993). The internal consistency of the PCL-IV was high in the current study (α = 0.94).

CPT Treatment Fidelity

Each therapist's audio recorded CPT sessions were randomly selected at four time points across the 6-month consultation period. Trained independent raters followed the modified CPT fidelity measure from previous clinical trials (Resick et al., 2008) to rate the selected tapes for treatment fidelity. Therapist's adherence to specific CPT interventions was anchored on a 4-point Likert scale: (0) *Incomplete*, (1) *Slightly complete*, (2) *Mostly complete*, and (3) *Fully complete*, and therapist's competence on a 7-point Likert scale from (0) *Not competent* to (6) *Outstandingly competent*. Adherence and competence scores for unique CPT interventions in each session were separately averaged to determine that session's fidelity scores. Two studies have found high inter-rater agreement for these fidelity scores (Resick et al., 2008, 2002), and high inter-rater agreement was high in the current study (Monson et al., 2018).

Analytic Plan

Given the parent trial found differences in outcomes across the three consultation conditions, we sought to examine each group separately and compared across groups. We analyzed all data in the R programming language (R Core Team, 2019) using the *lme4* (Bates et al., 2014) and *lmerTest* (Kuznetsova et al., 2017) multilevel modeling packages. In the cases of missing data, the *lme4* package defaults to maximum likelihood estimation. For each multilevel model, we estimated the effect sizes of the fixed effects using partial regression coefficients (small = 0.10, medium = 0.24, large = 0.37; Kirk, 1996).

Aim 1: Self-Efficacy Over Time

We evaluated two longitudinal multilevel models to assess if therapist self-efficacy changed over the course of the CPT training. These models accounted for the nesting of repeated observations within therapists.

First, we modeled change in therapist self-efficacy over the course of consultation. In the second model, we added consultation condition and consultation-by-time interaction effect as predictors to assess whether change in self-efficacy differed between therapists in each of the three consultation conditions. Since all therapists began the training at the same time, time in months was included as a predictor in both models to assess change over time.

Aim 2: Self-Efficacy and Treatment Fidelity

To examine whether therapist self-efficacy was related to their treatment fidelity, we evaluated two multilevel models nesting fidelity ratings within therapists. Our predictor of interest was the monthly therapist self-efficacy rating, and our dependent variable was their observer-rated adherence and competence rating from the same month. We included CPT session number as a covariate because previous research has suggested that treatment fidelity decreases over the course of a cognitive behavioral therapy protocol (Boswell et al., 2013), similar to trends observed in the randomly selected sessions that were rated for the primary outcome paper of the current study (Monson et al., 2018). In a separate model, we added consultation condition as a moderator to assess whether the consultation condition affected the relationship between self-efficacy and treatment fidelity.

Aim 3: Self-Efficacy and Clinical Outcomes

We investigated the association between self-efficacy and clinical outcomes in two ways. First, we assessed the relationship between therapist baseline self-efficacy and the trajectory of patient outcomes (i.e., added therapist baseline self-efficacy as a therapist-level predictor). Second, we examined the therapist's self-efficacy rating prior to each patient beginning therapy as a patient-level predictor of treatment outcome, given that patients began treatment at various points throughout the consultation. In these models, we included a three-way interaction effect (*Time * Self-Efficacy * Consultation*) to assess if the therapist's self-efficacy and their consultation condition significantly predicted their patient's PTSD symptom change. To assess the significance of using a three-way interaction term, we first evaluated a model with a two-way interaction (*Time * Consultation*) and compared this model to the more complex three-way interaction model.

Results
Self–Efficacy Over Time

There was no significant difference, $F(2, 77) = 1.60$, $p = .21$, between baseline therapist self-efficacy scores for those in the standard consultation ($M = 2.23$, $SD = 0.57$), those in the consultation including audio review ($M = 2.50$, $SD = 0.68$), and those not in consultation ($M = 2.25$, $SD = 0.64$). Therapist self-efficacy significantly improved over the course of training (estimate = 0.12, $t[386.83] = 9.50$, $p < .001$, $pr = 0.41$) regardless of consultation condition (i.e., the interaction term was not significant, all $ps > 0.29$, all $prs < 0.05$; see Figure 1). On average, therapists reported monthly improvements in self-efficacy across groups, and the overall average improvement was about 1 point on the 4-point scale. Of note, no random slopes were included in this model or the following models that included time as a predictor due to model
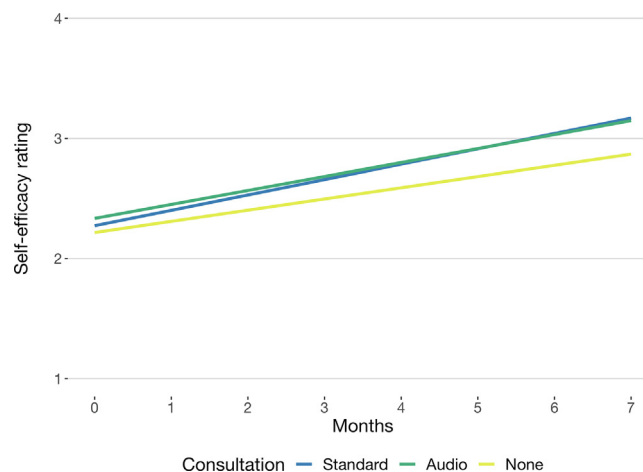

Fig. 1. Overall regression lines depicting consultation condition differences in therapist self-efficacy over the six months delivering CPT. Higher ratings of self-efficacy indicated perceived improvement in self-efficacy. Audio = Consultation Including Audio Review. Please refer to online article for color version

fit concerns, specifically fitting model multiple random effects given the sample size.

Self–Efficacy and Treatment Fidelity

There was no significant relationship between therapist self-efficacy ratings and their observer-rated treatment fidelity ratings (adherence: estimate = −0.01, $t[138.54] = −0.05$, $p = .96$, $pr < 0.01$; competence: estimate = −0.02, $t[167.07] = −0.12$, $p = .90$, $pr = −0.01$), indicating that a therapist's self-efficacy was not associated with their treatment fidelity. Session number, however, was negatively associated with fidelity (adherence: estimate = −0.05, $t[171.95] = −3.11$, $p = .002$, $pr = −0.23$; competence: estimate = −0.06, $t[166.72] = −2.31$, $p = .02$, $pr = − = −0.17$), and the consultation condition did not significantly moderate these relationships (adherence: all $ps > 0.14$, all $prs < 0.11$, competence: all $ps > 0.31$, all $prs < 0.08$).

Self–Efficacy and Clinical Outcomes

A log-likelihood test comparing the two-way and three-way interaction models suggested that the inclusion of consultation comparisons significantly improved the model fit and that patient outcomes varied across groups based on their therapist's level of self-efficacy (low to high; $\chi^2(6) = 29.05$, $p < .001$). As depicted in Figure 2, patients tended to improve across all therapists and consultation conditions. However, baseline therapist self-efficacy did not predict patient symptom trajectory in the Standard Consultation condition (estimate = −0.02, $t[1598.49] = −1.46$, $p = .14$, $pr = −0.04$). In contrast, symptom trajectories signifi-

cantly varied in the Consultation Including Audio Review condition (estimate = 0.03, $t[1621.33] = 3.00$, $p = .003$, $pr = 0.07$) and No Consultation condition (estimate = −0.06, $t[1589.21] = −0.02$, $p < .001$, $pr = −0.08$) based on baseline therapist self-efficacy.

To illustrate these relationships via PCL point change within each group, there was a small difference in pre-post symptom change between high and low self-efficacy therapists in the Standard Consultation (difference = 3.7; high = 18.5; low = 14.8). Whereas for the Consultation Including Audio Review condition (difference = 5.4; high = 8.6; low = 14.0) and No Consultation condition (difference = 9.0; high = 14.9; low = 5.9) were larger within each condition.

Looking closer at the relationship between therapist self-efficacy and patient outcomes, we also tested the therapist's self-efficacy rating at patient treatment start. The self-efficacy (patient-level) by consultation by time three-way interaction was not significant (all $ps > 0.38$, all $prs < 0.02$), indicating that a therapist's self-efficacy rating at the beginning of their patient's treatment was unrelated to patient outcomes.

Discussion

Although previous research has examined therapist-level factors associated with clinical and implementation outcomes, to our knowledge, this is the first study to examine the role of therapist self-efficacy in treatment fidelity and outcomes in the context of a training and implementation. Our examination revealed three main findings: (1) on average, therapist self-efficacy significantly improved across all consultation conditions in our sample, (2) therapist self-efficacy ratings
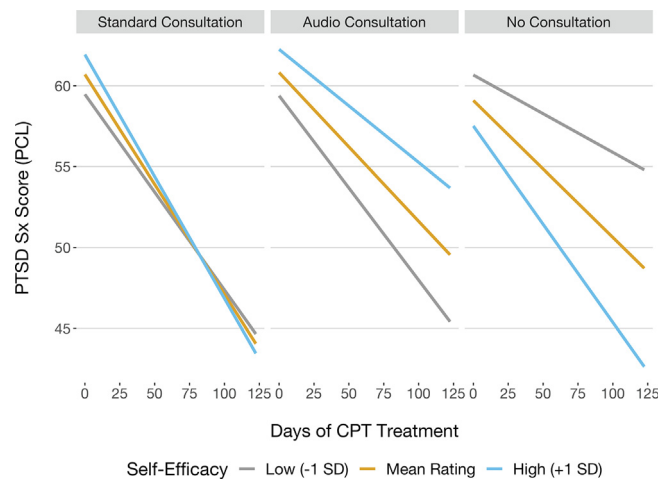

Fig. 2. Predicted regression lines for therapists abrian@lyssn.iot varying levels of self-efficacy at training baseline based on consultation condition. Therapist mean self-efficacy rating (orange) and one standard deviation above the mean (blue) and below the mean (grey) are depicted over the average course of a patient's CPT treatment. Audio Consultation = Consultation Including Audio Review. Please refer to online article for color version

were unrelated to randomly selected observer ratings of therapist treatment fidelity (adherence and competence), and (3) therapist baseline self-efficacy was related to patient improvement, and consultation seemed to be a beneficial factor for therapists with lower levels of self-efficacy.

Over time, therapists delivering CPT experienced increasing self-efficacy, although notably, this improved confidence occurred for therapists receiving consultative support and those without. There is likely some level of exposure and learning involved over the course of delivering CPT that leads to increased confidence regardless of receiving consultation (Bandura, 1993). Confidence in describing the theory and rationale for the trauma-focused treatment may be a critical factor in engaging patients in the treatment (Wampold & Imel, 2015). However, therapists in the Standard Consultation condition achieved consistently better patient outcomes across levels of self-efficacy versus those in the other consultation conditions. The most notable of these relationships was among low self-efficacy therapists, who, if provided with consultation, had much larger patient improvement than those without consultation. Furthermore, the observed difference in treatment gains between therapists with high and low self-efficacy in the Standard Consultation condition was smaller than those in the other conditions. As such, consultation seems to be a protective factor for therapists with low self-efficacy when they begin providing CPT. Self-efficacy may, therefore, be an important factor to consider when attempting to identify therapists who may need or benefit from more intensive consultation.

Surprisingly, patients of therapists with high self-efficacy in the Consultation Including Audio Review condition tended to have less client improvement than therapists with low self-efficacy. One possible explanation is that therapists in Consultation Including Audio Review were asked to play short audio recordings of their sessions. This process may have introduced unintended pressure of feeling monitored by their consultants and other therapists. To avoid negative judgment related to deviating from the treatment guideline, therapists with high self-efficacy who would have normally tailored their treatment for each patient might have adhered to the protocol more rigidly, lessening the potential benefits of treatment adaptation (Marques et al., 2019). Future research should more closely examine the interaction between therapists' perception of monitoring in consultation and their choices to adapt the treatment.

While the therapist's baseline self-efficacy was associated with patient treatment outcomes across the training, there was no significant relationship between therapist self-efficacy at patient baseline and the patient's treatment outcome. One possible explanation for the nonsignificant finding is that by the time therapists started treatment for patients enrolled later in the study, they had already experienced increased self-efficacy from exposure to the treatment. Given that therapist self-efficacy consistently improved over time regardless of their consultation condition, therapists' self-efficacy ratings converged toward the high value on the scale. Limited variability in therapist self-efficacy, partially due to the range restriction of our single-item self-efficacy measure, thus could have contributed to this nonsignificant finding.

Counter to our hypothesis, there was no significant relationship between therapist self-efficacy and treatment fidelity. The regression coefficients for both the quantity (adherence) and quality (competence) of CPT delivered in relation to therapist self-efficacy were near zero and not significant. Understanding of the relationship between treatment fidelity and psychotherapy process and outcome has been rather elusive. A comprehensive meta-analysis found no aggregate relationship between treatment fidelity and patient outcome and significant heterogeneity of effect sizes (Webb et al., 2010). It is a question that circles back to the importance of common versus specific factors (Wampold & Imel, 2015; Webb et al., 2010). Yet, some components of CPT may be more important than others (i.e., skillful Socratic dialogue, prioritizing assimilation before overaccommodation) and when skillfully delivered have been shown related to decreased PTSD symptoms (Farmer et al., 2017). Few would argue that therapists must always rigidly adhere to EBP protocol (APA Presidential Task Force on Evidence-Based Practice, 2006; Cook et al., 2017). Rather, it is important to deliver treatment flexibly and adapt when necessary while still preserving the core components of the intervention (Marques et al., 2019). In the present study, range restriction in both the measure of self-efficacy and fidelity rating (e.g., adherence high across therapists) may account for some attenuation of a possible relationship. Additionally, while self-efficacy may not be associated with fidelity in this current study, given that adherence to the protocol was high it may be the case that self-efficacy is a potential fidelity mechanism and that low self-efficacy is moderated by receiving a consultation.

Limitations and Future Directions

Further work clarifying the role of therapist self-efficacy in delivering CPT would benefit from addressing some of the limitations in the present study. First, due to notable concerns regarding survey burden, we

assessed self-efficacy via a single item. Of note, there is a precedent for using fewer items in psychotherapy process-outcome research to reduce survey burden (Imel et al., 2013) as well as single-item assessment (Hornsey et al., 2012). In one study, a single self-efficacy item predicted patient drinking outcomes beyond a field standard 20-item measure (Hoeppner et al., 2011). Nevertheless, psychometric concerns such as the inability to measure internal consistency random measurement error exist. Additionally, there is potential range restriction in the item we utilized given the 4-point response, yet despite this restriction, we still detected some consistent trends. Future work would benefit from additional self-efficacy items that would widen the response options and reduce range restriction.

Another important limitation is the low level of granularity of data regarding the relationship between self-efficacy and patient outcomes. The present study was only able to assess self-efficacy at training baseline and patient treatment start in relation to patient outcomes. Because patients filled out weekly symptom measures and therapists filled out monthly surveys, we were only able to provide a high-level view of self-efficacy as an implementation factor. We were unable to construct week-by-week cross-lagged models to assess whether changes in self-efficacy ratings were related to subsequent patient improvement or vice-versa (Selig & Little, 2012).

Similarly, because sessions were randomly selected at the therapist level across the course of the phase, we had limited time points for self-efficacy data in comparison to treatment fidelity ratings and thus were unable to evaluate their temporal dynamics through cross-lagged models. There were also some limitations in the CPT fidelity measures as we took the mean of individual protocol items to create a composite score for each session. Farmer et al. (2017) suggested that certain elements of CPT might be more important than others. For example, Socratic dialogue and addressing assimilation before overaccommodation predicted greater change in PTSD symptoms than others. Future research could investigate the relationship between self-efficacy and fidelity ratings for those key items in the protocol.

Conclusion

Highly effective psychotherapy treatments exist and it is vital that these treatments are adopted into the repertoire of a clinician's evidence-based practice. The field of implementation science aims to improve the transportability of treatments to community settings. One aspect no longer missing from implementation efforts is a clear and testable mechanism-based implementation model. The present study sought to begin the process of understanding the ways in which one aspect of the LEAP model (McLeod et al., 2018), therapist self-efficacy, is related to treatment fidelity and clinical outcomes. As clinicians deliver CPT, their self-efficacy tends to increase. Although this increase of self-efficacy appears unrelated to our measure of treatment fidelity, it was related to improved patient outcomes for those that receive consultation. The importance of consultation in implementing evidence-based interventions continues to build important research support and clinician self-efficacy is likely an important therapist factor related to improving our implementation efforts.

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