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Online Self-Administered Training of PTSD Treatment Providers in Cognitive–Behavioral Intervention Skills: Results of a Randomized Controlled Trial

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Despite potential advantages in scalability and efficiency of web-based training for trauma providers, few controlled trials of feasibility and effectiveness of web-based mental health training have been performed. Our study compared web-based training in 3 intervention skills (motivation enhancement [ME], goal setting [GS], behavioral task assignment [BTA]) with web-based training plus telephone consultation, and a no-training control. The primary outcome measures included objective measures of skills acquisition (standardized patient assessments). Results showed significant differences among the training conditions. The overall tests of differences among the groups were statistically significant for ME and BTA skills ($p < .001$ and $p = .005$, respectively), but not for GS ($p = .245$). The web training plus consultation group improved in ME skills by 0.35 units compared to 0.12 units in the web only group ($p < .001$) and no change in the control group ($p = .001$). For BTA skills, the web training plus consultation improved by 0.27 units compared to 0.17 units in the web only group ($p = .175$) and no change in the control group ($p = .004$). Overall, these findings support the use of web-based dissemination for large-scale training programs for trauma providers in health care delivery systems. Further studies are needed to clarify the specific role of consultation as an adjunct to web-based training.

Cognitive–behavioral therapy (CBT) interventions have been shown to be effective in the treatment of posttraumatic stress disorder (PTSD) and related psychological problems (Bradley, Greene, Russ, Dutra, & Westen, 2005; Foa, Keane, & Friedman, 2000). Despite their effectiveness, CBT interventions and the component skills which they comprise are not routinely delivered to individuals suffering with PTSD, including many veterans and military personnel (National Research Council, 2012; Rosen et al., 2004). Effective training and implementation methods represent essential missing links necessary to bring evidence-based treatments (EBTs) and the intervention skills that underlie them to the full range of providers treating veterans and others with PTSD.

Traditional continuing education training workshops are ineffective in accomplishing behavior change among practitioners (Davis et al., 1999; Saitz, Sullivan, & Samet, 2000). On the other hand, face-to-face training workshops supplemented by posttraining expert supervision have been shown to be effective (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Grol & Grimshaw, 2003; Lyon, Stirman, Kerns, & Bruns, 2011; Rakovshik & McManus, 2010), and recent programs to train Veterans Health Administration (VHA) clinicians in EBT protocols using these face-to-face training methods appear successful in achieving good patient outcomes (Eftekhari et al., 2013; Karlin et al., 2010). Despite these benefits, high-quality face-to-face training approaches have significant limitations: They present logistical and scheduling difficulties, are tied to specific locations, and are expensive to deliver. Therefore, they can be used only sparingly to address high-priority training objectives. Given the complexity of treatment of veterans and others with PTSD, the many co-occuring problems that need to be treated, and the range of potential skills and interventions that might be usefully delivered, the training needs of large mental health workforces are not likely to be comprehensively addressed via in-person training workshops. It is important to develop and deploy additional evidence-based training methods to

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supplement face-to-face trainings, which can be deployed more easily and at lower cost, made widely accessible, and designed to address a large number of posttrauma problems. Web-based training can potentially reduce the most significant costs associated with face-to-face workshops (i.e., transportation and accommodation), and provide a more cost-effective scalable means of training diverse mental health practitioners across practice settings and sites (Fairburn & Cooper, 2011).

Web-based instruction has been proposed as the basis for self-directed learning, with consultation or supervision to reinforce acquisition of new skills (Cucciare, Weingardt, & Villafranca, 2008). Online training may be an effective means to increase trainee knowledge and change clinician behavior, but may need to be reinforced and strengthened with direct feedback from designated supervisors to achieve higher levels of clinical skill or competence (Miller & Mount, 2001; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004). Our study specifically compared the effect of web-based training alone to web-based training plus small-group telephone consultation sessions.

We hypothesized that clinicians receiving web-based training would show improvements in skills acquisition relative to a no-training control group. Consistent with other research on mental health training (Fordis et al., 2005; Gega, Norman, & Marks, 2007; Miller et al., 2004), we further hypothesized that web-training combined with telephone consultation would result in greater increases in clinician skills compared to web-training alone, as measured by a standardized patient interview (role-play) assessment. We also hypothesized that improvements would be seen in each of the three broad intervention skills areas of focus: motivation enhancement (ME), goal setting (GS), and behavioral task assignment (BTA). Rather than focusing on complex multisession treatment protocols, we selected three highly generalizable intervention skills that are often included in manualized CBT protocols as ideal targets for our study. We reasoned that such intervention skills might be integrated into everyday clinical practice more readily than more time-consuming protocols, and would prove applicable to a wide range of PTSD-related problems. We also reasoned that these skills could complement delivery of evidence-based PTSD treatments being disseminated in the VHA by helping practitioners better address the large range of co-occurring problems also found and treated in PTSD patients (e.g., anger, social isolation, alcohol abuse) that are not the main focus of current PTSD protocols such as prolonged exposure treatment or cognitive processing therapy.

A randomized controlled trial (RCT) design was used to prospectively evaluate training effectiveness across three training conditions: (a) web-based training plus consultation, (b) web-based training only, or (c) no-training control. Details of the study design and intervention protocol have been previously described (Ruzek et al., 2012).

Method

Participants

Participants were fulltime VHA mental health clinicians with direct care responsibilities for veterans with PTSD in a clinic providing PTSD treatment. In addition to learning new techniques, all participants were offered the opportunity to earn 4 professional continuing education credits. Potential participants were contacted by e-mail and invited to access the study website, where they completed an informed consent process. Upon consent they were asked to complete a web-based questionnaire assessing demographic information, knowledge, and attitudes and a telephone-based standardized patient (SP) assessment. The Stanford University IRB and the New England Research Institutes (NERI) IRB provided approval for this study.

After completion of the baseline assessment, participants were stratified by self-rated degree of expertise in CBT (*low* = none or beginner; *high* = intermediate, advanced, or expert) and were randomly assigned to one of the three training conditions, in equal numbers using permuted blocks of $n = 9$ within each stratum by an automated randomization system.

Participants were recruited between October, 2009 and July, 2010 from a wide diversity of geographic locations at a national level. There were 353 potential participants who accessed the website and completed the screening questionnaire; 55 were ineligible. There were 298 eligible participants approached for the study, of whom 168 (56.4%) signed an informed consent, completed the baseline assessment, and were randomly assigned to training conditions (Figure 1); 139 participants (82.7%) completed the posttraining assessment.

Participants randomized to training were predominantly White (124 of 168; 73.8%), female (117 of 168; 69.6%), and most had either master's degrees (96 of 168; 57.1%) or doctoral-level training in mental health or related disciplines (61 of 168; 36.2%). African American participants comprised 11.3% of the sample (19 of 168) and 17.9% (30 of 168) were non-White, Hispanic, or other race. The mean age of the sample was 48.8 years ($SD = 10.4$). No significant differences were observed in baseline characteristics of subjects in the three training conditions prior to randomization (data not shown). Additionally, there were no differences in baseline characteristics among those who completed all study assessments ($n = 139$) compared to those who did not complete the study assessments ($n = 29$). Among subjects randomized to one of the two web conditions ($n = 88$), 53 completed at least three quarters of all web content available in all three modules. Among subjects randomized to the web plus consultation condition, 66.0% completed three or more consultation sessions out of a maximum of six sessions.

Procedure

The training interventions have been previously described (Ruzek et al., 2012), but are briefly outlined here. Three modular web-based training courses focused on: (a) motivational

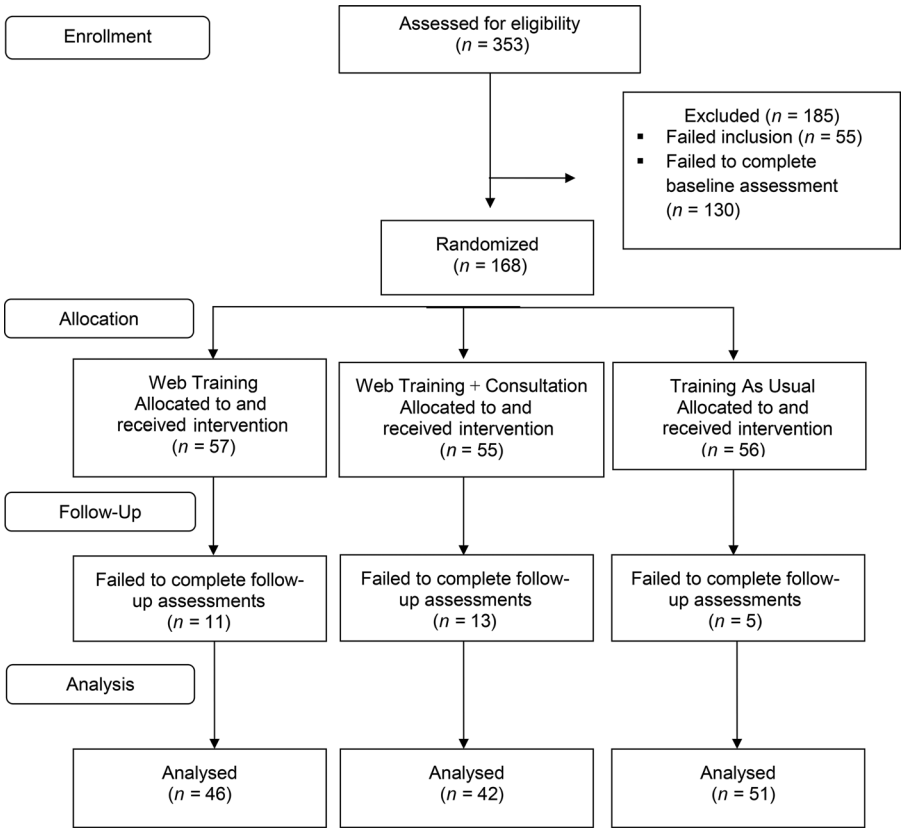

Figure 1. Participant flow.

enhancement, (b) goal setting, and (c) behavioral task assignment. These core intervention skills were selected as common elements in many CBT treatment protocols for PTSD and related disorders, as potentially useful to practitioners of multiple disciplines, and as broadly applicable to a wide range of clinical settings and patients. We reasoned that such versatile behavior change methods as goal setting and use of between-session homework tasks could potentially improve treatment, regardless of the nature of the treatment provider, target, or setting. We reasoned as well that these core intervention skills might be readily integrated into clinical practice without displacing other elements of intervention, and might be generally acceptable to clinicians from different backgrounds and specialties. Web modules included interactive exercises, audiostreamed skills demonstrations, downloadable materials, and bibliographies. Case examples were used throughout.

A telephone-based, manualized small-group consultation process was developed specifically for the study (Ruzek et al., 2012). In brief, up to six weekly consultation sessions were provided, each lasting 45–60 minutes with a maximum of four participants. Clinicians were asked to apply the skills with their PTSD cases, and with other patients as deemed appropriate.

Control group participants were free to participate in any training activities they would otherwise receive, including local continuing education activities, conferences, or other formal training programs.

Measures

Our primary outcome measure was intervention skills acquisition, as defined by standardized patient (SP) evaluation. SP evaluation was selected as an efficient means for objective assessment of clinical skills, with specific advantages for evaluating outcomes of CBT training (Fairburn & Cooper, 2011). Actors portraying SPs were selected and trained to perform a specific case scenario and to deliver a set of uniform stimulus prompts and scripted responses according to a manualized protocol (Ruzek et al., 2012). Background information about the patient was provided to actors to enable flexible responses to questions. Participating clinicians were instructed to actively engage in a role-play with the patient (i.e., actor), to demonstrate their intervention skills in addressing a series of specific therapeutic tasks. SPs were evaluated approximately 1 month after initial baseline data collection to reassess script fidelity of their performances, and to encourage adherence to SP manual procedures. Both SP actors and raters were blinded to the training condition of participants.

The SP interviews were conducted at baseline and post-training for all study participants. Clinical psychology graduate students who had worked in a VHA treatment setting and performed well on a practice role play were selected as actors. Each actor completed a 2-day training workshop that included overview of the study protocol, video footage

of veterans with PTSD, question-and-answer with a veteran who had recently graduated from a local inpatient PTSD program, and numerous role-plays of all aspects of the interview process.

A 3-point rating of skills adherence (*full adherence*, *partial adherence*, *no adherence*) was developed for evaluating acquisition of intervention skills within each training module (ME, BTA, GS; see Appendix A for listing of domain-specific skills items). Blind ratings were performed by trained graduate student research staff. To assess reliability of the ratings, one in five transcripts were randomly selected for independent rating by a second, blinded rater. Interitem reliability of the ME and BTA domain scores was satisfactory to good (Cronbach's $\alpha = .74$ and .83, respectively), although interitem reliability for the GS scale was less than adequate (Cronbach $\alpha = .57$. Interrater reliability of the ME and BTA summary scores was satisfactory or better (intraclass correlation coefficients [ICC] = .80 and .83, respectively); however, interrater reliability of the GS domain scores was again less than satisfactory: ICC = .43.

A study-specific online self-report questionnaire was developed for assessing other training outcomes (Ruzek et al., 2012): knowledge of the intervention skills (ME, GS, BTA), perceived self-efficacy in use of these skills, and self-reported frequency of implementation of the specific skills with PTSD patients. These endpoints were exploratory and secondary to our main skills (SP) outcome, due to lack of prior validation data of these measures.

Knowledge was assessed using 12 multiple-choice questions assessing knowledge and understanding of core content in the three skills areas, as applied in general with mental health patients. We computed a total knowledge score comprising the number of correct responses out of 12 possible items for the total, and subscale scores: ME (four items), GS (two items), and BTA (six items).

Perceived self-efficacy was measured using a 12-item Likert-type 10-point scale, related to use of skills across their patient workload (e.g., "How confident would you say you are, that if you decided to give specific homework tasks or practice exercises to do at home with each of the patients you see, that you could do it?"). Response options ranged from 0 = *Not at all confident* to 5 = *Moderately confident* to 10 = *Extremely confident*. A score measuring overall self-efficacy was computed based on the mean of the 12 individual item scores (Ruzek et al., 2012).

For self-reported implementation of skills, participants indicated how often during the past 30 days they had used 12 specific subskills (e.g., "Use open-ended questions to elicit patient's reasons for wanting to change") in the clinical management of PTSD patients. Responses were rated on a 5-point scale from 1 = *Almost never* to 5 = *Very often*. We developed an overall implementation of skills scale, computed as the mean of the 12 items, in addition to subscale scores: ME (three items), GS (three items), and BTA (six items).

Data Analysis

Based on the results of Sholomskas et al. (2005), we estimated that approximately 15% of controls, 48% of the web training group, and 54% of the web training plus consultation group would show training-related skills improvement, as measured by our primary outcome measure. Power calculations using these estimates indicated that 40 participants per group ($n = 120$) would provide 79% power to detect a successful adherence rate of 48% in the web-based training (without consultation) group, compared to 15% in the no-training (control) group and 91% power to detect a rate of 54% in the web-based training plus consultation group compared to 15% in the no-training (control) group, both at the .025 significance level. To protect against attrition bias, complete case analysis was used without multiple imputation for missing data.

For each outcome measure, we compared the performance of participants in the no-training (control) and web-based training groups using the analysis of covariance (ANCOVA) of posttest scores, adjusting for pretest scores and randomization stratum. If the null hypothesis of no difference among the three groups was rejected, we computed preplanned comparisons of mean differences between groups using Tukey's studentized range test, which adjusts for multiple comparisons. All participants were analyzed in the training group to which they were randomly assigned, regardless of their compliance with the assigned training method. All analyses were carried out using SAS statistical software, version 9.2.

Results

Table 1 presents baseline and posttraining scores for the objective, standardized patient (SP) ratings across all modules (motivational enhancement, behavioral task assignment, goal setting) and training conditions (web plus consultation, web only, control). Both active training conditions improved significantly compared to controls on two of the three training modules (ME and BTA; $p < .001$; see Table 1). In contrast, our SP measure was relatively unchanged in the control group across the different modules. Web training plus supervision resulted in significantly greater improvement in performance than web training alone on the motivation enhancement module and showed a similar trend towards increased performance in the task assignment module.

Table 2 shows baseline and posttraining changes for secondary outomes, including CBT knowledge, perceived self-efficacy, and self-rated implementation of skills. Significant between-group differences ($p < .001$) were observed on the key secondary measures of total CBT knowledge and knowledge changes on two specific modules (ME, BTA). Similar to the primary outcome, the GS module did not differentiate the effects of the different training conditions (pairwise comparisons: web plus consultation vs. control, $p < .001$; web only vs. control, $p = .007$; web plus consultation vs. control, $p < .001$; web only vs. control, $p < .001$).

Table 1
Mean and Standard Deviation by Study Group of Baseline and Posttest, and Difference on Standardized Patient Skills Assessment

	Training assignment					
	None $n = 50$		Web $n = 45$		Web/Consult $n = 43$	
Time/status	*M*	*SD*	*M*	*SD*	*M*	*SD*
Motivation enhancement						
Baseline	0.49	0.26	0.57	0.28	0.58	0.33
Post	0.48	0.25	0.69	0.34	0.93	0.37
Improvement	−0.01		+0.12		+0.35	
Goal setting						
Baseline	0.74	0.36	0.84	0.32	0.81	0.36
Post	0.84	0.40	0.88	0.46	0.99	0.35
Improvement	+0.10		+0.04		+0.18	
Behavioral task assessment						
Baseline	0.67	0.40	0.62	0.34	0.65	0.32
Post	0.65	0.40	0.79	0.41	0.92	0.44
Improvement	−0.02		+0.17		+0.27	

Knowledge scores increased on our standardized measure by 0.26, 1.26, and 1.72 units across the three conditions; this difference was significant for each of the two active training conditions compared to controls ($p < .001$), but was not significant for posttraining differences between active training conditions. For the module-specific subscale score for BTA, the web plus consultation group had superior scores to both of the other two groups. Similar results were observed for the other modules (see Table 2).

Self-efficacy ratings similarly improved significantly in the two active training groups compared to controls ($p < .001$). Results again trended higher in the web-training plus supervision condition compared to web-only training (see Table 2). On the self-report measure of skills implementation, no between-group differences were observed, although all three groups reported increased utilization of skills following training.

Table 2
Mean and Standard Deviation at Baseline and Posttest, and Difference by Study Group on Three Variables

	Training assignment					
	None $n = 51$		Web $n = 46$		Web/Consult $n = 42$	
Time/status	*M*	*SD*	*M*	*SD*	*M*	*SD*
CBT knowledge						
Baseline	7.76	1.88	7.59	1.89	7.95	1.97
Post	8.02	2.09	8.85	1.91	9.67	1.65
Improvement	+0.26		+1.26		+1.72	
Perceived self-efficacy						
Baseline	7.09	1.61	7.16	1.74	7.21	1.76
Post	7.30	1.51	8.24	1.02	8.49	0.97
Improvement	+0.21		+1.08		+1.28	
Self-reported skills implementation						
Baseline	3.49	0.83	3.58	0.72	3.50	0.72
Post	3.69	0.75	3.95	0.66	3.73	0.79
Improvement	+0.20		+0.37		+0.23	

Note. CBT = cognitive behavioral therapy.

Discussion

We performed a randomized, controlled trial of training effectiveness in 168 VHA mental health providers who treat veterans with PTSD. Three web-based training modules (ME, GS, BTA) were evaluated using objective skills, knowledge acquisition (multiple choice questions), self-rated implementation, and self-efficacy measures. We achieved our recruitment target ahead of schedule and had a relatively high rate of study retention (82.7%). For the primary outcome measure of skills acquisition, the combination of web training and consultation resulted in superior performance compared to web training alone or a no-training control condition for the ME module, and a similar trend was observed for BTA. Improvements in knowledge acquisition were observed on the ME and BTA learning modules for the two web training conditions relative to controls, and web plus consultation was associated with superior knowledge acquisition for the ME module, compared to the web only and control conditions. Both web training conditions resulted in improved self-efficacy compared to controls, with a trend towards greater improvement on the web plus consultation condition (see Table 2). Our findings show that web-based training performed comparably with web-training plus consultation on most study measures, particularly knowledge and self-effiacy ratings. This component of training is cost effective to deliver, and unlike consultation activities, demands few ongoing resources in the form of personnel time or availability of experts. Therefore, future research should more closely examine the relative impact of web-based training alone or in combination with consultation.

Regarding meaningfulness—statistical or clinical—of our main findings, no absolute criterion of performance is available for our SP measure, although the relative magnitude of change can be approximated. For example, for the first component of ME skills, baseline mean values were in the range of 0.55 (see Table 1). Compared to no change in the control group, the web-only group showed an improvement of approximately 0.4 *SD* units versus an improvement of approximately 1 *SD* unit in the web plus consultation group. An improvement of 1 *SD* is typically regarded as evidence for a moderate degree of change in most outcome meaures. Similarly, in the behavioral task assignment condition, the web-only group showed an average of 0.50 *SD*s of change, whereas the web plus consultation group had improvement of approximately 0.75 *SD*s. These changes are indicative of a moderate degree of absolute change relative to controls. We saw additional evidence of the benefit of web plus consultation versus web-only training in a secondary completer analysis of participants who completed at least three sessions of consultation. In this analysis, participants who completed at least three sessions of consultation had significantly better performance across modules in the web plus consultation condition compared to the web-only condition, providing incremental support for the role of consultation (data not shown). In contrast to the other two modules, we did not observe differences among conditions in changes in goal-setting skills. A specific challenge to measuring goal setting was the difficulty of operationalizing the relevant skills and providing decision rules for raters. For example, many of the performance elements involved in goal setting are verbal reframing tasks (e.g., restate as a behavioral goal, restate in terms of the patient's own behavior) and the verbal nuances of this intervention skill are more difficult to operationalize than the more concrete behaviors of "assign a behavioral task" or "assign self-monitoring of tasks" (BTA) or "responds to change-talk" and "asks open-ended questions about change talk" (ME). Even if we had measured goal setting reliably, it is possible that our module did not produce measurable changes in this intervention skill, or that there may have been ceiling effects in our relatively experienced group of clinicians. In the absence of a reliable SP measure of this skill, we were unable to assess whether measurement error or lack of GS training efficacy was the reason for this lack of change.

Our trainings focused on acquisition of specific intervention skills as core components of CBT, rather than larger, multicomponent EBT protocols. We selected intervention skills that could complement delivery of PTSD treatments being disseminated in VHA by addressing a range of problems also found and treated in PTSD patients (e.g., anger, social isolation, alcohol abuse) that are not the main focus of current PTSD protocols. These component intervention skills are often included in EBT protocols. For example, PE and CPT actively incorporate behavioral task assignments and goal setting. Clinicians trained in EBTs are not likely to begin to apply these components outside of the context of the EBT. When conducting case management or educational/support groups, for example, they may not alter their practice to set specific goals or assign homework tasks unless explicitly trained to do so. Thus, we hypothesize that training in component CBT skills will improve performance of clinicians. Training in relatively simple intervention skills might be accomplished with a brief time investment, as suggested in the current study, and might improve practitioner ability to implement more complex CBT protocols. Currently, this approach to modular skills-focused training is primarily available in CBT-oriented graduate training programs, but is not widely accessible by clinicians in the VHA or other treatment systems. A conceptual model of modular skills sets has been proposed for management of anxiety disorders (e.g., Roth & Pilling, 2008), and evidence exists for benefits of training component skills for treating children with anxiety disorders (Chorpita, Bernstein, & Daleiden, 2011; Chorpita & Weisz, 2009; Weisz et al., 2012). Morever, Borntrager, Chorpita, Higa-McMillan, and Weisz (2009) reported that, compared with training in standard evidence-based child interventions, training in modular skills was associated with greater increases in positive attitudes towards evidence-based practices generally. Further research is required to examine the clinical outcomes associated with training clinicians in component intervention skills (along with decision rules for application of those components) for treating adult patients, and to determine whether such training might enhance clinicians' ability to deliver EBTs more effectively (e.g., via improved skills for dealing with noncompliance or engaging

patients in treatment) or enhance acceptance or implementation of manualized treatments for PTSD and related disorders. Although the current study did not compare in-person training in more complex EBT protocols with web-based training, comparisons of alternative modes of delivery of the workshop component of training are also needed.

Study results support the feasibility of SP assessment in measuring skills acquisition. This approach has been used extensively to measure medical diagnostic skills, but has rarely been used to assess outcomes of trials of mental health training interventions. Compliance was satisfactory as more than four fifths of participants completed both assessments. Relationships between simulated interview performance and actual therapist behavior have received little investigation to date; one available study has suggested that performance in the two situations may differ significantly (Decker, Carroll, Nich, Canning-Ball, & Martino, 2013). More research is needed to investigate the external validity of this method for assessing clinical skills.

Our findings are consistent with results from other studies that have examined acquisition of CBT-related knowledge and self-efficacy following web-based training (Beidas, Koerner, Weingardt, & Kendall, 2011; Dimeff et al., 2009; Gega et al., 2007; Kemper, Gardiner, Gobble, Mitra, & Woods, 2006; Sholomskas & Carroll, 2006; Sholomskas et al., 2005; Weingardt, 2004; Weingardt, Cucciare, Bellotti, & Lai, 2009). On the other hand, we observed limited additive benefits of consultation in our study, in contrast to findings from other studies of consultation combined with either web-based (Dimeff et al., 2009; Fordis et al., 2005; Gega et al., 2007; Sholomskas & Carroll, 2006) or face-to-face training (Miller et al., 2004). Several factors may account for these differences, including the relatively small number of consultation sessions and limited duration of training, in addition to ceiling effects due to the relatively high level of prior training and experience of most participants.

Neither web training alone nor web training plus consultation were associated with significantly increased self-reported implementation of intervention skills relative to the control condition, although findings were in the expected direction and approached significance. Self-reported implementation improved in all conditions, including the no-training control. We did not monitor additional trainings or self-instruction that may have accounted for improved ratings of skills implementation across conditions. It is also possible that training did not actually affect implementation, despite improvements in knowledge and skills. Self-ratings of implementation may also be subject to expectancy effects and demand characteristics, especially for broad skills like BTA and GS. Interestingly, similar results were reported in a comparison of traditional didactic lectures, online training, and use of a written manual for training dialectical behavior therapy, in which all three groups reported similar increases in skills implementation (Dimeff et al., 2009). Strengths of the study include the use of a randomized controlled design and an objective measure of skills acqusition. Study limitations include recruitment of a self-selected, albeit large and highly heterogenous sample of VHA clinicians. Although results should be generalized only to clinicians who are sufficiently interested and available to participate in web-based training, we did not see evidence of other forms of selection bias in our sample. Participants were simultaneously delivering other interventions for their patients, and were drawn from multiple settings and treatment contexts. Because the skills selected are easily integrated with current practices and are suitable for use with most patients, we believe that these differences in settings and caseloads are unlikely to have impacted clinicians' ability to learn and apply the skills. Clinicians assigned to the no-training condition were aware that they would not be receiving web-based training or consultation activities; thus expectations for benefit may have differed across conditions and influenced study results. We did not measure participant expectations directly, and this is a further limitation of the study.

Other limitations included the use of study-specific measures of knowledge, self-efficacy and self-reported implementation, lack of follow-up assessment, and focus on measurement of adherence to skills steps in SP assessment rather than broader clinical competence in skills delivery, as defined by Fairburn and Cooper (2011). In the current study, we developed our own SP and knowledge measures to match the specifics of our training content. Although there are existing measures of related clinical skills (e.g., motivational enhancement; Madson & Campbell, 2006), none of these measures adequately captured the specific content of our training material and were accordingly not used in the current study. We are addressing some of these measurement limitations in ongoing work and research is needed to better establish the reliability and validity of measures of training outcomes.

Despite study limitations, findings of the current investigation are consistent with suggestions that online training represents a cost-effective and scalable approach to effective clinician training, especially when supplemented with case consultation (Fairburn & Cooper, 2011). Future research should compare the cost and effectiveness of face-to-face versus web-based training methods, and further explore the differential utility of specific elements of the training modalities (e.g., in-person role-plays, didactic instruction) and their impact on knowledge and skills acquisition, implementation of skills, and ultimately, on patient outcomes.

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Appendix A

Skills Items for Rating Adherence

Motivation Enhancement

1. Statement

"I don't know doc, I wish I didn't have to drive in here today . . . I mean, I know things have been getting worse with my PTSD and my wife is worried . . . I've gone through counseling so I don't see what good this is going to do . . . I mean it's up to me to just get myself together again."

(a) Responding to change talk

(b) Open-ended questions re: change talk

(c) Responding to counter-change talk

2. Statement

"You know my wife is the one who really wants me to come back into counseling . . . I kind of wish she'd just back off and leave me alone and give me time to work things out . . . I know I'm spending a lot of time by myself now, which I shouldn't be doing and I know I shouldn't be thinking about drinking again . . . I think I'm still freaked out from my heart attack."

(a) Responding to change talk

(b) Open-ended questions re: change talk

(c) Responding to counter-change talk

3. Statement

"I do want things to be different . . . but I'm still not sure I need counseling . . . It did do me some good before, especially talking to the other guys but maybe I'll be OK just working on myself . . . I mean no one else can do it for you."

(a) Responding to change talk

(b) Open-ended questions re: change talk

(c) Responding to counter-change talk

4. Personal Ruler Exercise

(a) Present rationale

(b) Ask 3 initial questions with (0–10) rating response (How important is it for you? How confident are you? How ready are you?)

(c) Correct handling of patient ratings

(d) Ask 2 follow-up questions (Why are you at a __ [current] and not a zero? What would it take to get you from a __ [current] to a __ [higher score]?)

5. Decisional Balance Exercise

(a) Present rationale

(b) Ask patient to identify the following, in this order: pros of staying the same, cons of changing, cons of staying the same, pros of changing

(c) Ask questions to explore responses

6. Summarizing

Behavioral Task Assignment

1. Present rationale for BTA
2. Explore reactions to BTA rationale
3. Frame as an experiment
4. Generate potential tasks
5. Be specific, detailed, and concrete
6. Identify potential barriers
7. Troubleshoot potential barriers
8. Determine which tasks are feasible
9. Assign behavioral task
10. Present rationale for self-monitoring
11. Assign self-monitoring of task(s)
12. Specify what to monitor
13. Specify when to make the record
14. Specify measurement/rating method
15. Specify recording method

Goal Setting

1. Goal confirmation
2. Frame or restate as a behavioral goal
3. Frame or restate in terms of patient's own behavior
4. Frame or restate as an approach goal
5. Set implementation intention for a behavioral goal
6. Establish personal meaningfulness of goal(s)
7. Plan logical steps
8. Specify a monitoring plan to track goal progress