A META-ANALYSIS OF THERAPIST TRAINING IN EVIDENCE-BASED TREATMENTS

Allison Christian

A dissertation submitted in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

Department of Psychology

Central Michigan University
Mount Pleasant, Michigan
May 21, 2014

ACKNOWLEDGEMENTS

I wish to thank the numerous individuals who have supported me with my dissertation. I would like to thank the members of my dissertation committee for their expertise and guidance: Dr. Larissa Niec, Dr. Ignacio David Acevedo-Polakovich, and Dr. Kim O'Brien. I am extremely grateful to Dr. O'Brien for her support with statistical analyses. I would also like to thank David, Solomon, who volunteered his time and expertise as a coder. I am grateful to the psychology department's office manager and administrative secretary, Barb Houghton and Robin Decker, for their administrative support. I am also grateful to the numerous researchers who responded to requests for unpublished manuscripts and additional statistical information. Finally, I would like to thank my fellow graduate students, family, and friends. Without your constant support and encouragement, this project would not have been possible.

ABSTRACT

A META-ANALYSIS OF THERAPIST TRAINING IN EVIDENCE-BASED TREATMENTS

by Allison Christian

The continued call for dissemination of evidence-based treatments to community mental health has brought to light the lack of research-informed training methods (Gotham 2006; Rakovshik & McManus, 2012). A better understanding of what makes therapist training efficient and effective is necessary to improve dissemination and implementation of evidence-based practice in community settings (McHough & Barlow, 2010). A number of empirical studies and narrative reviews on therapist training exist; however, no meta-analyses have been conducted. The present components analysis sought to determine which methods of training are related to more successful training outcomes using meta-analytic techniques. Published and unpublished studies of training in evidence-based treatments among health service providers serving clinical and non-clinical populations from 1990 to 2014 were sought. Due to the low number of identified studies, a fixed effects model was utilized. A significant, positive overall effect size of therapist training in evidence-based treatments on therapist competence was found. This suggests that compared to no training and training as usual, augmented and novel training methods result in higher levels of therapist competence. Due to the low number of empirical studies, other outcomes and moderators (i.e., training components) were unable to be examined in analyses. However, exploratory analyses suggest that training components should be examined as moderators in future meta-analyses. There remains a need for continued empirical study of training methods in order determine which techniques are key to developing therapist competence and adherence, as well as desired client outcomes. Research in this area will inform

best practice guidelines for the training of community mental health providers in evidence-based treatments, with the long-term goal of improving client outcomes in community mental health.

TABLE OF CONTENTS

CHAPTER

CHAPTER 1

INTRODUCTION

There is a substantial gap between intervention research and typical practice in community mental health (Shafron et al., 2009; Stewart & Chambless, 2007). Evidence-based treatments are underutilized (Drake et al., 2001; Evans, Koch, Brady, Meszaros, & Sadler, 2012; Torrey et al., 2001), inadequately implemented, (Shafron et al., 2009), and associated with smaller effect sizes in community settings (Weisz, Weiss, & Donnenburg, 1992), which serve large numbers of people each year (National Advisory Mental Health Council [NAMHC], 2001, 2006; Ringel & Sturm, 2001). Currently, the field lacks best practices for dissemination of evidence-based treatments (McHugh & Barlow, 2010) and research-informed training methods (Gotham 2006; Rakovshik & McManus, 2012). As therapist training is a key component of treatment dissemination (McHugh &Barlow, 2010), establishing research-informed training methods may help to bridge the gap between research and practice.

A number of studies have experimentally evaluated the effectiveness of therapist training for various interventions (Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus, 2010). However, research varies widely in methodology (e.g., design, participants, training models examined; Rakovshik & McManus, 2012), which makes comparing results across studies challenging. It also remains unclear which specific components of training are important mechanisms of change (Beidas & Kendall, 2010), as few studies dismantle training models to compare components. The present component analysis sought to determine which training methods are related to more successful training outcomes using meta-analytic techniques in order to inform the development of more efficient and effective training models. Ultimately, such

knowledge could improve dissemination and implementation of evidence-based treatments to community mental health as well as outcomes for individuals and families.

The sections that follow include a review of the rationale for the present study, discussing the development of evidence-based treatments, the gap between research and practice, a definition of "successful" training, and the existing empirical research on therapist training.

Evidence-Based Practice

Research conducted during the 1950's and 1960's found that there was little difference in outcomes for individuals experiencing psychological difficulties who received psychotherapy compared to those who did not receive psychotherapy (Eysenck, 1952, 1966; Levitt, 1957, 1963). By the 1970's, meta-analytic reviews demonstrated that psychotherapy had some general benefits (Smith & Glass, 1977; Smith, Glass, & Miller, 1980), but psychopharmacology remained the preferred method of treatment (American Psychological Association [APA], 2006). In the last forty years, the psychology field has been moving from tradition- and lore-based practice to evidence-based practice (Chaffin & Friedrich, 2004). In 1995, two task forces of the APA, the Task Force on Psychological Intervention Guidelines and the Task Force on Promotion and Dissemination of Psychological Procedure, began efforts to identify and evaluate efficacious treatments for specific populations, coined, "empirically supported treatments" (Chambless & Hollon, 1998). The Clinical Psychology Division of the American Psychological Association (APA) continues to update that list based on controlled studies of treatment programs (SCP, 2013).

More recently, experts developed a rating scale to describe the strength of empirical evidence behind treatments. Evidence-based treatments—the current term for empirically supported treatments—are labeled well established, probably efficacious, or possibly efficacious

(SCP, 2013). A treatment is considered well established if two independent research groups have found that it produces significantly more positive outcomes as compared to medication, another treatment, or a control group. If the comparison treatment is already well established, then only equivalent effects are required. To be considered probably efficacious, two studies must demonstrate the treatment to be significantly superior to a control group or one study must meet the criteria for well established. Finally, a treatment is considered possibly efficacious if one research study has demonstrated significant and positive effects. The identification and rating of psychological treatments is a significant accomplishment for the mental health field. Unfortunately, research advancements are rarely reflected in community mental health (Shafron et al., 2009; Stewart & Chambless, 2007).

Gap between Research and Practice

Each year a large number of people seek treatment in community mental health settings (NAMHC, 2001, 2006; Ringel & Sturm, 2001). In 2008 alone over 17 million individuals received services in community settings (Wells, Morrissey, Lee, & Radford, 2010). Regrettably, controlled studies have demonstrated that usual community mental health services have little if any effectiveness (Weiss, Catron, Harris, & Phung, 1999; Weisz, 2004; Weisz, Donenberg, Han, & Weiss, 1995; Weisz, Weiss, & Donenberg, 1992). There is a substantial gap between intervention research and typical practice in community mental health (Rinaldi et al., 2007; Shafron et al., 2009; Stewart & Chambless, 2007). In community mental health, evidence-based treatments are underutilized (Drake et al., 2001; Evans, Koch, Brady, Meszaros, & Sadler, 2013; Shafron et al., 2009; Stewart & Chambless, 2007; Torrey et al., 2001), delivered inadequately (Shafron et al., 2009), and demonstrate weaker effect sizes (Weisz, Weiss, & Donnenburg, 1992), which translates to poorer outcomes for individuals and families.

There are a number of difficulties related to transporting interventions from research to community settings, which contributes to this gap between research and practice. Clinician training is time-consuming and costly (Sholomskas et al., 2005; Torrey et al., 2001). In addition, length of training is often insufficient for skill development or training is completely unavailable (Gunter & Whittal, 2010; Seng, Prince, & Saunders, 2006). Moreover, adoption of new treatments tends to be low (Jensen-Doss, Cusack, & de Arellano, 2008; Sholomskas et al., 2005; Zoellner, Feeny, & Rothbaum, 2006), which may be due to therapist wariness of manual-based therapies (Addis, Wade, & Hatgis, 2006) and clash between a new treatment and a therapist's primary theoretical orientation (Seng, Prince, & Saunders, 2006). Lack of agency support for novel treatment is also believed to impede adoption of evidence-based treatments (Hemmelgarn, Glisson, & James, 2006).

As therapist training is a key component of treatment dissemination (McHugh &Barlow, 2010), establishing research-informed training methods may help to address some of these barriers. The lack of research-informed training methods (Carroll, 2001; Fixsen, Naoom, Blase, Friedman & Wallace, 2005; Gotham 2004; Leffler, Jackson, West, McCarty, & Atkins, 2013) necessitates more research on efficient and effective therapist training.

"Successful" Training

In order to determine which training methods are most effective, it is necessary to first identify desired training outcomes. While there are a number of outcomes examined in relation to therapist training, competence appears to be key to implementing evidence-based practice in community settings. The term competence, used interchangeably with clinical expertise (APA, 2006), refers to implementing treatment skillfully and appropriately (Davidson & Scott, 2009). The APA's 2005 "Policy Statement on Evidence-Based Practice in Psychology" states that

competence is essential to the provision of effective treatment (APA, 2006). According to the report, competent therapists are able to draw upon and apply their knowledge of evidence-based practice flexibly and fluidly in order to achieve therapeutic goals (APA, 2006). Research has also identified therapist competence as a strong predictor of positive client outcomes (APA, 2006), which suggests its importance as an outcome measure in therapist training. Numerous studies have found a positive relationship between observer ratings of competence and positive client outcomes (Davidson et al., 2004; Davidson et al., 2006; Kingdon et al., 1996; Martino et al. 2008; Shaw et al., 1999; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004). Additionally, lower clinician competence significantly accounts for smaller treatment effects found in the dissemination of evidence-based treatments from research settings to community mental health (Davidson et al., 2004; Kingdon, Tyrer, Seivewright, Ferguson, & Murphy, 1996; Shaw et al., 1999).

Another important measure of training success is adherence, or implementation of treatment in a manner consistent with the underlying theory and goals of the approach (Dumas et al., 2001). Most research suggests that therapist adherence is related to treatment completion as well as positive client outcomes (Barber, Crits-Christoph, & Luborsky, 1996; Hogue et al. 2008; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004), both during treatment (Strunk et al. 2010) and following treatment (Martino et al. 2008; Schoenwald et al. 2008). One study also found that better adherence was related to stronger therapeutic alliance (Loeb et al., 2005). Adherence appears to play an important role in positive client outcomes, and therefore is a critical training outcome.

Empirical Studies of Therapist Training

Empirical studies of therapist training vary widely in study design, treatment of interest, participants, and outcomes measured. Most of the empirical studies that compare training models have examined Motivational Interviewing (e.g., Baer et al., 2009), Cognitive-Behavioral Therapy, including exposure for anxiety among adults and children (Gega, Norman, & Marks, 2007), Dialectical Behavior Therapy (e.g., Dimeff et al., 2009), Parent-Child Interaction Therapy (Herschell et al., 2009), and Alternatives for Families: A Cognitive-Behavioral Therapy (e.g., Kolko et al., 2012). Non-experimental studies (lacking a control group) have examined training in Motivational Interviewing (Carroll et al., 2006) as well as Cognitive-Behavioral approaches, including Acceptance and Commitment Therapy (Strosahl, Hayes, Bergan, & Romano, 1999) and Parent-Child Interaction Therapy (Pearl et al., 2012). Most research on training in psychological treatment has focused on community clinicians as participants, however a limited number of studies include graduate students (Beidas, Barmish, & Kendall, 2009) and health care providers (e.g., palliative care workers; Mannix et al., 2006; McDonough & Marks, 2002).

A number of outcomes have been examined in relation to therapist training, including competence, adherence, knowledge, utilization, satisfaction, and attitudes (Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus, 2010). However, there are no common standards for measuring training outcomes, definitions of outcomes vary across studies, and few studies include all the aforementioned outcomes (Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus, 2010). This limits the ability to compare findings across studies.

The existing literature on therapist training has provided some insight into which methods of therapist training lead to desired training outcomes. The traditional approach to treatment dissemination is the provision of manuals and workshops (i.e., didactic lectures) to therapists

(hereafter referred to as "training as usual"). Yet these methods may not lead to changes in therapist behavior (Beidas and Kendall, 2010). A narrative review of the literature on training in psychosocial treatments concluded that written materials, self-directed trainings, and workshops do not lead to successful training (Hershell, Kolko, Baumann, & Davis, 2010). According to a systematic review of workshops for psychosocial substance abuse treatment, although manuals and workshops may improve skills immediately following training, these improvements diminish over time (Walters, Matson, Baer, & Ziedonis, 2005). Manuals and lectures appear insufficient to achieve long-term, positive outcomes in trainees (i.e., competence and adherence; e.g., Rakovshik & McManus, 2010; Sholomskas et al., 2005). Rather, continued contact and feedback via consultation or supervision may be necessary for maintaining skills over time (Walters, Matson, Baer, & Ziedonis, 2005). This finding has led the manual-workshop-supervision model to be considered the "gold standard" in training (Sholomskas et al., 2005).

Compared to other training methods, extensive, multi-component trainings have generally demonstrated more positive outcomes (Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus, 2010) and client outcomes (Rakovshik & McManus, 2010). However, the specific training models examined in any given study vary widely and most studies do not dismantle training models to compare specific components (Rakovshik & McManus, 2010). Multi-component trainings often include theoretical instruction, self-guided study, manual/written materials, computer/online resources, didactic lectures, active learning, such as role-playing, modeling and coaching, case studies, and consultation/supervision. It remains unclear which components are necessary mechanisms of change in training and what length of training is optimal (Beidas & Kendall, 2010). More extensive, multi-component trainings are also expensive and time-consuming for trainers, agencies, and trainees (Rakovshik & McManus,

2010). More efficient and effective training models would decrease time and cost barriers associated with training.

What might be essential in multi-component training? One narrative review concluded that theoretical education was critical for initial training (Rakovshik & McManus, 2010). A study of training in the behavioral parent-training program Parent-Child Interaction Therapy also found that knowledge of the underlying theory predicted knowledge of the treatment protocol following training (Christian, Niec, & Kassab, unpublished manuscript). Workshops and self-guided book or web-based materials appear equally effective when followed by interactive, experiential training methods (Rakovshik & McManus, 2010). This research suggests that some instruction in theory is necessary, and can be provided via lecture or self-guided study. While manuals and didactic lectures may improve knowledge, Beidas and Kendall (2010) state that active learning is necessary for behavior change.

Inclusion of active learning techniques, which employ interaction and reflection, seem essential to acquiring skills (Cross, Matthieu, Cerel, & Knox, 2007) and contribute to change in practice (Beidas and Kendall, 2010). Active learning can include modeling, role-playing with monitoring and feedback, group discussion of case studies, and interaction among trainees (Rakovshik & McManus, 2010). In particular, behavioral role-playing may be a key mechanism of change, as a study on training in a suicide prevention program suggests (Wyman et al., 2008). It has been argued that future training efforts should focus on active learning and behavioral rehearsal with less emphasis on didactics (Beidas & Kendall, 2010).

Another potentially essential element of training is clinical consultation/supervision. Reviews of the therapist training literature have concluded that consultation/supervision is important for maintaining skills over time (Rakovshik & McManus, 2010; Walters, Matson,

Baer, & Ziedonis, 2005). One study found that knowledge, skills, and confidence in implementing Cognitive-Behavioral Therapy increased among palliative caregivers with ongoing supervision and decreased without supervision (Mannix et al. 2006). In fact, supervision following training appears to have had an additive effect according to a review focused on training in drug abuse treatments (Walters, Matson, Baer, & Ziedonis, 2005). Unsurprisingly, therapist adherence is associated with more competent consultants (Schoenwald, Sheidow, & Letourneau, 2004). Collectively, this research suggests that not only is provision of supervision important, but also length of supervision and clinical expertise of the supervisor.

Finally, computer-based training, a novel method of training therapists in evidence-based practice, has some initial support as an effective method of training. Most empirical studies of training that include computer-based modules have demonstrated positive effects compared to control conditions (e.g., Dimeff et al., 2009; Dimeff et al., 2011; Gega et al., 207; Harned et al., 2001; Sholomskas et al., 2006). These positive effects, in combination with the potential of computer-based modules to address cost, time, and distance barriers to training, imply that computer-based training may be a useful component of training.

Current Study

Empirical studies vary widely in study design, treatment of interest, participants, outcomes measured, and specific training components examined. Additionally, as many studies examine training models that incorporate multiple components (e.g., theoretical instruction and didactics compared to theoretical instruction, didactics, and active learning) it is challenging to evaluate the unique contribution of each component. In fact, after conducting a review of studies on training in Cognitive-Behavioral Therapy, Rakovshik & McManus (2010) concluded, "we still know little about efficacious training and effective dissemination practices" and called for

research identifying “active ingredients” of training (p. 514). A dismantling of training models is necessary to understanding the mechanisms of change in training.

The present study sought to move the literature forward with a components analysis examining which models of therapist training in evidence-based treatments are related to greater therapist adherence and competence, as well as client outcomes, using meta-analytic techniques. Search parameters and inclusion criteria were selected to ensure studies included a variety of training models while maintaining common outcome measures. Studies were coded for specific methods of training (i.e., theoretical instruction, self-guided, manual/written materials, computer/online, didactic, active learning/experiential, consultation, and consultation/supervision).

It was hypothesized that there would be an overall significant, positive effect of augmented or novel training on therapist competence in and adherence to the interventions. In addition, instruction in theory, active learning components, continued trainer contact (via consultation/supervision), and computer-based modules were predicted to be associated with larger effect sizes related to therapist competence and adherence.

CHAPTER II

METHOD

Methods were designed based on the recommendations of Lipsey and Wilson (2001). Statistics were calculated using Microsoft Excel 2008 for Mac. Information reported within the present document followed the Journal Article Reporting Standards (JARS) of the American Psychological Association (APA, 2008).

Document Search

Searches using Psychological Abstracts (PsycINFO), Educational Resources Information Center (ERIC) database, and Medline was used to identify relevant studies from 1990 forward. To err on the side of over-inclusion, broad keywords were used as search terms (e.g., adherence, community, community clinician, community therapist, competence, continuing education, dissemination, empirically supported, evidence-based, fidelity, implementation, intervention, mental health, outcomes, therapist training, transporting, treatment, workshop). When relevant articles were identified, the "cited by" option and the article's reference list were used as an additional search method. Such techniques have been referred to as "snowballing" (Greenhalgh et al., 2004). Relevant outcome studies in evidence-based treatments were also reviewed to determine if those publications evaluated the training and could be included. In addition, seventy-four researchers that publish in the field of treatment dissemination were contacted in order to ascertain whether they had relevant unpublished manuscripts.

Document Review and Retrieval

The present meta-analysis included studies of training in evidence-based treatments (well-established and probably efficacious only) among health service providers (e.g., social workers,

counselors, nurses, and psychologists, including studies in these fields) serving clinical and non-clinical populations from 1990 to 2014. Additionally, seventy-four researchers who publish in the area of dissemination and implementation were contacted in order to identify unpublished empirical studies. The response rate exceeded 69%.

The literature search and "snowballing" techniques yielded 85 published articles on therapist training in mental health services. Two unpublished studies were identified through author contact. The full text of each article was reviewed in order to determine study eligibility. Eleven studies were included in the present meta-analysis. A total of 76 were excluded. Study exclusion proceeded as follows: Studies without comparison groups were excluded as computing the customary effect size for meta-analysis relies on the standardized mean difference between groups (50). Two studies were excluded due to being qualitative in nature. Twelve studies did not examine a specific evidence-based treatment and were therefore excluded. Another two studies were excluded because it measured outcomes that were not of interest in the current study. One study that measured trainee adherence and three studies that measured client outcomes were excluded, as they were insufficient in number to make for meaningful meta-analyses. Two studies were excluded due to redundant samples (i.e., the studies were secondary analyses of other studies already identified in the present search). A final four studies were excluded due to insufficient information provided in the articles (the authors of these articles did not respond to requests for information). The study search resulted in nine randomized control studies and two quasi-experimental studies examining trainee competence following training.

Data Abstraction

Two doctoral graduate students in clinical psychology served as data abstractors. They were trained to above 95% agreement on 10 studies not included in the study sample to establish

overall inter-rater reliability (95.00%). The data abstractors subsequently coded the 11 study articles. Percent agreement was calculated to infer inter-rater reliability (95.45%). Coding forms were designed to summarize study design via continuous scales on study rigor/quality (a priori hypotheses, random assignment to group, equivalence of groups, method of measuring outcomes), training method/components (theoretical instruction, manual/written materials, didactic, modeling/demonstration by the trainer, online module, active learning/experiential, consultation/supervision), and outcomes (i.e., trainee adherence, trainee competence, client outcomes; see Appendices A, B, and C). As described above, if data for coding forms was missing from the full text of the article, authors were contacted in order to obtain the information. When attempts to contact authors for missing information proved unsuccessful, those studies were excluded (4).

Effect Size Calculation

Traditionally, the standardized mean difference between the treatment and control group, divided by the pooled standard deviation, is used to calculate effect size in outcome studies (Hedges & Olkin, 1985). In the present study, the treatment group was operationalized as the augmented or novel training condition. For the outcome of interest, competence effect sizes were calculated using unadjusted means, standard deviations, and sample sizes for the treatment and comparison groups, post-training (i.e., after the entire training experience, including supervision/consultation). The standardized mean difference was available for all studies, so other statistics (e.g., independent samples *t* test or the *F* statistic from an analysis of variance) were not utilized. Studies often included multiple outcomes, time points, and treatment conditions. Only one effect size per study was included in each analysis to avoid violating the statistical independence assumption (Lipsey & Wilson, 2001). When studies reported several

time points, the post-training effect sizes were used. Post-training was defined as following completion of the entire training experience. Multiple effect sizes within one study were calculated separately and aggregated for inclusion in analyses. For studies that included more than two conditions or lacked a control, the effect size of interest was between the control and "treatment" group or the training as usual and the "treatment" group. A 99% confidence interval was calculated using the standard error of the mean effect size.

Fixed Effect Model

Although a random effects model is appropriate for most meta-analytic research, it is prone to Type I errors among small samples of studies (i.e., less than 15-30; Field, 2001). Therefore, a fixed effects model was selected for the present study, which included 11 studies.

CHAPTER III

RESULTS

Document Review and Retrieval

Eighty-seven studies on therapist training were identified via a literature search, "snowballing," and contact with authors who publish on treatment, training, and dissemination. A total of 76 were excluded, many of which met multiple exclusion criteria. The most common reasons for exclusion were lack of a comparison group, focus on a treatment not classified as evidence-based, non-clinical trainees as participants, absence of therapist competence and fidelity as outcomes, and incomplete statistical information. More than half of the studies lacked a comparison group (50; 57.47%). Eighteen studies did not examine an evidence-based treatment (20.69%). Other common issues included failure to measure the outcomes of interest (i.e., trainee competence, trainee adherence, client outcomes; 21; 24.14%) or being insufficient in number to make for meaningful analyses (5; 5.75%). Other studies were qualitative in nature (3; 3.45%), included non-clinical participants (4; 4.60%), and had redundant samples (2; 2.30%). One study examined "pay for performance" as a means of enhancing treatment implementation rather than training methods (1.15%). Finally, five studies provided insufficient statistical information necessary for meta-analysis (6.58%). The study search resulted in nine randomized control studies and two quasi-experimental studies examining trainee competence following training.

Table 1. *Characteristics of Trainee Competence Studies Included in Meta-Analysis*						
Citation	EBT	Groups	Sample	Method	Effect Size	Rating of Study Rigor (29-point scale)
Beidas et al. (2012)	CBT	1. Novel training: Computer-based training plus three months of weekly consultation 2. Augmented Training: 6 hour workshop focused on active learning plus three months of weekly consultation* 3. Training as usual: 3 hour workshop without active learning plus three months of weekly consultation**	*N* = 115 Community therapists	SR	-0.31	15.5
Dimeff et al. (2009)	DBT	1. Novel training: Computer-based training* 2. Training as usual: 2-day workshop 3. Control: Manual**	*N* = 174 Community therapists	BO, SR	0.52	20
Dimeff et al. (2011)	DBT	1. Novel training: Computer-based training* 2. Control: Attention control (E-control)** 3. Control: Manual	*N* = 132 Community therapists	SR	3.44	19
Gega et al. (2007)	CBT	1. Novel training: Computer-based training* 2. Training as usual: Didactic**	*N* = 92 Mental health nursing students	SR	0.14	12
Harned et al. (2011)	CBT	1. Novel training: Computer-based training* 2. Novel training: Computer-based training plus motivational interviewing 3. Control: Attention Control**	*N* = 46 Community therapists	SR	2.19	20

Table 1. *Characteristics of Trainee Competence Studies Included in Meta-Analysis(continued)*

Herschell et al. (2009)	PCIT	1. Augmented training: Experiential workshop* 2. Training as usual: Didactic workshop**	*N* = 42 Community therapists	BO, SR	0.40	19
Kolko et al. (2012)	AF-CBT	1. Augmented training: Workshop and consultation visits* 2. Control: No training provided**	*N* = 182 Community therapists	SR	0.66	20.5
McDonough et al. (2002)	CBT	1. Novel training: Computer-based training* 3. Control: Manual**	*N* = 37 Medical students	SR	-0.07	14
Miller et al. (2004)	MI	1. Augmented training 1: Workshop incorporating live feedback 2. Augmented training 2: Workshop plus individual coaching sessions 3. Augmented training 3: Workshop incorporating live feedback plus individual coaching sessions* 4. Training as usual: Workshop 5. Control: Waitlist control with self-guided training**	*N* = 140 Community therapists	BO	1.08	17
Sholomskas et al. (2005)	CBT	1. Augmented training: Manual, workshop, and supervision* 2. Novel training: Manual plus online training 3. Control: Manual**	*N* = 78 Community therapists	BO, SR	1.17	16
Sholomskas et al. (2006)	TSF	1. Novel training: computer-based training* 2. Control: Manual**	*N* = 28 Community therapists	BO, SR	1.11	17.5

Summary of Included Studies

The present meta-analysis included eleven experimental studies. Evidence-based treatments examined by the studies included Cognitive Behavioral Therapy (5), Dialectical Behavior Therapy (2), Motivational Interviewing (1), Parent-Child Interaction Therapy (1), Alternatives for Families: A Cognitive Behavior Therapy (1), and Twelve Step Facilitation (1). Most of the studies included community therapists as trainees (9). The remaining two studies included students in the health care field.

In the present study, the "treatment" group was operationalized as the augmented or novel training condition. Of the eleven studies, four evaluated training augmented by experiential learning (2), supervision/consultation (1), and experiential learning in combination with supervision/consultation (1). Six studies examined a novel method of training: computer-based training.

Methodological rigor varied widely across studies. Random assignment to group was employed in nine studies (81.82%). The remaining two studies were quasi-experimental (18.18%). Eight of the studies assessed equivalence of groups and specified a priori hypotheses (72.73%). With regards to comparison groups, true controls were utilized in eight studies (72.73%), including attention control (2), manual-only (4), wait-list (1), and no training (1). Three studies utilized "training as usual" as the control (27.27%). Sample size also varied across studies. Four studies had sample sizes under 50 (36.36%), two had sample sizes between 50 and 100 (18.18%), three had sample sizes between 100 and 150 (27.27%), and two had sample sizes between 150 and 200 (27.27%).

Training components included in each study varied widely. The most commonly included component was active learning (9; 81.81%). Didactic instruction was included in seven studies

(63.63%). All but three studies included a manual or written materials (8; 7.72%). Six studies included a computer-based module (54.54%). Trainees received consultation/supervision in four studies (36.36%). Finally, one study indicated that theoretical instruction was provided to trainees (9.09%).

Regarding outcome measures, four of the studies utilized multiple methods (i.e., self-report and behavioral observation; 36.36%). Self-report alone was used in six studies (54.54%) and the remaining study used behavioral observation only (9.09%). Five studies reported strong psychometric properties for their measures (45.45%). The remainder reported poor psychometrics (3; 27.27%) or neglected to provide information regarding psychometrics (3; 27.27%).

There were two indicators of study rigor that did not differ greatly across studies. First, all eleven studies provided sufficient details of training methods. Second, all but one study failed to assess fidelity of training to the training model.

The rating criteria coding sheet (Appendix C) yielded an overall value of methodological rigor based on a prior hypotheses, random assignment to group, equivalence of groups, description of the training, psychometric properties of measures, outcomes measured, and fidelity to training model. Of a possible 29 points, studies included in the present meta-analysis ranged from 12 to 20.5. Five studies yielded scores of 19 or above (i.e., Dimeff et al., 2009; Dimeff, Woodcock, Harned & Beadnell, 2011; Harned, Dimeff, Woodcock & Skutch, 2011; Herschell et al., 2009; Kolko et al., 2012).

Statistical Analyses

It was hypothesized that there would be an overall significant, positive effect of augmented or novel training on therapist competence and adherence levels. Results were partially consistent

with this hypothesis. The overall weighted effect size of therapist competence for the final 11 studies was 0.68 (95% CI = 0.52 - 0.84). This reflects a significant mean difference between the augmented/novel training and comparison groups post-training, of medium magnitude. Due to the existence of only one empirical study measuring therapist adherence, this outcome had to be excluded from analyses.

It was also predicted that instruction in theory, active learning components, continued trainer contact (via consultation/supervision), and computer-based modules would be associated with larger effect sizes related to therapist competence. Due to the small number of empirical studies on therapist training, moderators, such as training components, were unable to be tested.

Exploratory Analyses

Because moderators could not be tested using traditional meta-analytic techniques, exploratory analyses were conducted. For each potential moderator (training component), studies were separated into one of two groups, based on level of the moderator (i.e., inclusion or exclusion of the training component). The overall weighted effect size and confidence intervals of both groups for each component were calculated in order to compare confidence interval overlap. Studies were excluded from the analysis if both the "tx" and control group within a study included the training component of interest (e.g., trainees in both conditions received consultation/supervision), because study-level effect sizes depend on group comparison. Five training components were examined: Provision of a manual/written materials, didactic instruction, inclusion of an online module, active learning, and consultation/supervision.

The weighted effect size for studies that included written materials in the "tx" group was 0.86 (95% CI = 0.54 – 1.18; 2 studies) and studies that excluded written materials in the "tx" group was -0.24 (95% CI = -0.60 – 0.12; 2 studies).

The weighted effect size for studies that included didactic instruction in the "tx" group was 0.75 (95% CI = 0.56 - 1.12; 2 studies) and studies that excluded didactic instruction in the "tx" group was 1.42 (95% CI = 1.14 – 1.70; 5 studies).

The weighted effect size for studies that included a computer module in the "tx" group was 0.78 (95% CI = 0.53 – 1.03; 5 studies) and studies that excluded a computer module in the "tx" group was 0.50 (95% CI = 0.46 – 0.90; 5 studies).

The weighted effect size for studies that included active learning in the "tx" group was 0.81 (95% CI = 0.63 – 0.99; 8 studies) and studies that excluded active learning in the "tx" group was 0.35 (95% CI = -0.04 – 0.74; 2 studies).

The weighted effect size for studies that included consultation/supervision in the "tx" group was 0.78 (95% CI = 0.48- 1.08; 2 studies) and studies that excluded consultation/supervision in the "tx" group was 0.91 (95% CI = 0.69 – 1.13; 7 studies).

There were varying degrees of overlap between confidence intervals for most training components, which suggests that examination of these components as moderators may be warranted.

CHAPTER IV

DISCUSSION

Previous research has suggested that extensive, multi-component trainings generally demonstrate more positive training outcomes (Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus, 2010). With regards to specific training components, instruction in theory, active learning components, and continued trainer contact (via consultation/supervision) have been linked to training success in a handful of studies (Beidas and Kendall, 2010; Cross, Matthieu, Cerel, & Knox, 2007; Rakovshik & McManus, 2010; Walters, Matson, Baer, & Ziedonis, 2005). However, studies vary widely in methodology (e.g., design, participants, training models examined; Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus, 2012), which makes comparing results across studies challenging. The present meta-analysis sought to combine results from multiple studies in order to identify the true effect size of augmented and novel training on therapist competence and adherence. In addition, the study sought to include a components analysis examining which models of therapist training in evidence-based treatments are related to better outcomes.

Analyses revealed a significant, positive mean effect size of augmented and novel training in evidence-based practice on therapist competence. This suggests that augmented training (i.e., active learning components and/or continued trainer contact via supervision/consultation) and novel training (i.e., computer-based training) are significantly more effective at increasing therapist competence than training as usual or no training. This is consistent with past research that has found traditional methods of training—provision of manuals and didactic workshops—to be insufficient and ineffective methods of therapist change (Beidas and Kendall, 2010; Hershell, Kolko, Baumann, & Davis, 2010; Rakovshik & McManus,

2010; Sholomskas et al., 2005; Walters, Matson, Baer, & Ziedonis, 2005). The association between augmented/novel training and higher levels of competence is important because therapist competence has been consistently related to positive client outcomes (APA, 2006; Davidson et al., 2004; Davidson et al., 2006; Kingdon et al., 1996; Martino et al. 2008; Shaw et al., 1999; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004) and treatment effect sizes in community mental health (Davidson et al., 2004; Kingdon, Tyrer, Seivewright, Ferguson, & Murphy, 1996; Shaw et al., 1999)—the ultimate goals of training therapists in evidence-based practice and dissemination efforts in general.

As only one study examining training on therapist adherence was identified, a weighted mean effect size could not be calculated.

A components analysis was also not feasible, as the small number of studies identified for use in the present meta-analysis prevented examination of moderators. However, exploratory analyses were conducted for each potential moderator (training component). Studies were separated into one of two groups for each training component, based on whether they had included or excluded the training component of interest. The weighted effect size and confidence intervals were subsequently calculated for each group. Confidence intervals were compared for studies that included and excluded each training component.

There was no overlap between confidence intervals of studies that included and excluded provision of manuals/written materials and didactic instruction. This suggests that provision of manuals/written materials and didactic instruction may be moderators. Because the weighted effect size of studies that included manuals was greater than studies that excluded manuals, this component of training may be related to better trainee competence outcomes. Though manuals prove insufficient means of training to proficiency in evidence-based treatments (Rakovshik &

McManus, 2010; Sholomskas et al., 2005), manuals may be a useful or even necessary component of training. It should be noted that both the "inclusion" and "exclusion" groups for this component each included only two studies. The weighted mean effect size of studies that included didactic instruction was larger than studies that excluded this component. This is consistent with past research that has found didactic instruction to be insufficient for behavior change (Hershell, Kolko, Baumann, & Davis, 2010). However, it must be noted that only two studies included didactic instruction, and thus, the weighted mean effect size for the "inclusion" group was based on two studies.

Comparison of studies that included and excluded the remaining potential moderators—computer modules, active learning, and consultation/supervision—demonstrated varying degrees of confidence interval overlap. Because the confidence intervals did not overlap completely, it would be fruitful to examine these training components as potential moderators in future research.

Inclusion of active learning in training was also related to a greater weighted effect size. This is consistent with past research, which has linked active learning with skill acquisition and change in practice (Beidas and Kendall, 2010; Cross, Matthieu, Cerel, & Knox, 2007; Rakovshik & McManus, 2010; Wyman et al., 2008) as well as study hypotheses.

Studies that included computer-based training modules produced greater mean effect sizes than studies that excluded this component. This implies that computer-based training modules may be related to better training outcomes and is consistent with past research demonstrating positive effects of computer-based training (e.g., Dimeff et al., 2009; Dimeff et al., 2011; Gega et al., 207; Harned et al., 2001; Sholomskas et al., 2006). This result was consistent with study hypotheses.

Contrary to past research and study hypotheses, consultation/supervision was related to poorer effect sizes compared to studies that excluded consultation/supervision. Continued trainer contact has consistently been linked with better training outcomes (e.g., Walters, Matson, Baer, & Ziedonis, 2005). Therefore, these results are surprisingly. It should be noted that only two of the eleven studies included consultation/supervision, and thus the weighted mean effect size for the "inclusion" group was based on two effect sizes.

Being exploratory in nature, all aforementioned results must be interpreted with caution. While inclusion and exclusion of various training components may have affected training outcomes, until more experimental studies on therapist training are conducted—and thus more reliable and meaningful meta-analytic techniques can be employed—firm conclusions cannot be made.

Limitations and Future Directions

The present study was greatly limited by the small number of included studies. The total sample size of therapists across studies fell just over 1,000. The small number of studies prevented us from examining moderators, specifically training components, which was a main goal of the present meta-analysis.

There was a low number of studies in the present meta-analysis because: (1) there is a general dearth of randomized control trials evaluating training in evidence-based treatment, (2) a number of studies failed to report one or more basic statistic(s) necessary for inclusion (i.e., unadjusted means, standard deviations, and sample sizes for the treatment and control group), which resulted in their exclusion, (3) some studies did not focus on evidence-based practice, and (4) measured outcomes differed substantially across studies. More randomized control trials comparing augmented and novel training to training as usual and controls are necessary to

furthering our understanding of effective and efficient training. In addition, empirical research should examine evidence-based treatments, include multiple outcomes (specifically competence, adherence, and client outcomes), and report simple statistical information required for inclusion in a meta-analysis.

Future evaluations of therapist training in evidence-based treatments should also include: (1) basic demographic information of trainees, (2) a description of trainee recruitment and assignment to group, (3) thorough information on training, including details of specific training components, length of training, and format of training, and (4) a clear description of attrition and how missing data was handled. Inclusion of the information described above in future empirical studies will allow results to be combined across studies.

Another limitation of the present study was the methodological rigor of the eleven included studies. While all studies provided a thorough description of training, Even the most methodologically rigorous studies omitted at least two of the following: clear a prior hypotheses, random assignment to groups, assessment of group equivalence, measures demonstrating strong psychometric properties, multiple methods of assessment, and assessment of training fidelity. The type of control group among the studies also varied widely (i.e., from "training as usual" to true, placebo attention control). Additionally, only one of the studies assessed the fidelity of training to the training model. Though rigorous research has increased the quality of evidence-based treatments, we are yet to apply the same standard to how we disseminate these treatments. Future experimental studies on therapist training in evidence-based treatment must adhere to more rigorous methodologies in order to be useful.

Conclusions

The substantial gap between research and practice necessitates continued research in the area of therapist training. Future research may focus on examining training components as moderators in order to elucidate the conditions under which training is successful. A better understanding of which training components are essential to successful training will improve dissemination and implementation of evidence-based practice in community settings. Ultimately, these efforts could result in better treatment outcomes for individuals and families in community mental health.

REFERENCES

Addis, M. E., Wade, W. A., & Hatgis, C. (1999). Barriers to dissemination of evidence- based practices: Addressing practitioners' concerns about manual- based psychotherapies. *Clinical Psychology: Science and Practice*, *6*(4), 430-441.

American Psychological Association (APA). (2006). Evidence-based practice in society. *American Psychologist, 61*(4), 271–28.

American Psychological Association (APA). (2008) Reporting standards for research in psychology. *American Psychologist, 63*(9), 839–851. doi: 10.1037/0003-066x.63.9.839

Baer, J. S., Rosengren, D. B., Dunn, C. W., Wells, E. A., Ogle, R. L., & Hartzler, B. (2004). An evaluation of workshop training in motivational interviewing for addiction and mental health clinicians. *Drug and alcohol dependence*, *73*(1), 99-106.

Baer, J. S., Wells, E. A., Rosengren, D. B., Hartzler, B., Beadnell, B., & Dunn, C. (2009). Agency context and tailored training in technology transfer: A pilot evaluation of motivational interviewing training for community counselors. *Journal of Substance Abuse Treatment, 37*(2), 191-202.

Barber, J. P., Crits-Christoph, P., & Luborsky, L. (1996). Effects of therapist adherence and competence on patient outcome in brief dynamic therapy. *Journal of Consulting and Clinical Psychology*, *64*(3), 619.

Barwick, M. A., Peters, J., & Boydell, K. (2009). Getting to uptake: do communities of practice support the implementation of evidence-based practice?. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *18*(1), 16-29.

Beidas, R. S., Barmish, A. J., & Kendall, P. C. (2009). Training as usual: Can therapist behavior change after reading a manual and attending a brief workshop on cognitive behavioral therapy for youth anxiety?. *Behavior Therapist, 32*(5), 97.

Beidas, R. S., Edmunds, J. M., Marcus, S. C., & Kendall, P. C. (2012). Training and consultation to promote implementation of an empirically supported treatment: A randomized trial. *Psychiatric Services*, *63*(7), 660-665.

Beidas, R. S., Mychailyszyn, M. P., Edmunds, J. M., Khanna, M. S., Downey, M. M., & Kendall, P. C. (2012). Training school mental health providers to deliver cognitive-behavioral therapy. *School Mental Health*, *4*(4), 197-206.

Bennett-Levy, J., Turner, F., Beaty, T., Smith, M., Paterson, B., & Farmer, S. (2001). The value of self-practice of cognitive therapy techniques and self-reflection in the training of cognitive therapists. Behavioural and Cognitive Psychotherapy, 29, 203–220.

Britt, E., & Blampied, N. M. (2010). Motivational interviewing training: a pilot study of the effects on practitioner and patient behaviour. *Behavioural and cognitive psychotherapy*, *38*(02), 239-244.

Brooker, C., Falloon, I., Butterworth, A., Goldberg, D., Graham-Hole, V. I. C. T. O. R., & Hillier, V. A. L. E. R. I. E. (1994). The outcome of training community psychiatric nurses to deliver psychosocial intervention. *The British Journal of Psychiatry*, *165*(2), 222-230.

Brookman-Frazee, L. I., Drahota, A., & Stadnick, N. (2012). Training community mental health therapists to deliver a package of evidence-based practice strategies for school-age children with autism spectrum disorders: A pilot study. *Journal of autism and developmental disorders*, *42*(8), 1651-1661.

Buckelew, S. M., Adams, S. H., Irwin Jr, C. E., Gee, S., & Ozer, E. M. (2008). Increasing clinician self-efficacy for screening and counseling adolescents for risky health behaviors: results of an intervention. *Journal of Adolescent Health*, *43*(2), 198-200.

Carpenter, K. M., Cheng, W. Y., Smith, J. L., Brooks, A. C., Amrhein, P. C., Wain, R. M., & Nunes, E. V. (2012). "Old dogs" and new skills: How clinician characteristics relate to motivational interviewing skills before, during, and after training. *Journal of consulting and clinical psychology*, *80*(4), 560.

Carroll, K. M., Ball, S. A., Nich, C., Martino, S., Frankforter, T. L., Farentinos, C., ... & Woody, G. E. (2006). Motivational interviewing to improve treatment engagement and outcome in individuals seeking treatment for substance abuse: A multisite effectiveness study. *Drug and alcohol dependence*, *81*(3), 301-312.

Carroll, K. M., Steinberg K., Nich C., Roffman R. A., Kadden, R. M., Miller M., et al. (2001). *Treatment process, alliance, and outcome in brief versus extended treatments for marijuana dependence.* Unpublished manuscript.

Chaffin, M., & Friedrich, B. (2004). Evidence-based treatments in child abuse and neglect. *Children and youth services review*, *26*(11), 1097-1113.

Chagnon, F., Houle, J., Marcoux, I., & Renaud, J. (2007). Control- Group Study of an Intervention Training Program for Youth Suicide Prevention. *Suicide and Life-Threatening Behavior*, *37*(2), 135-144.

Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of consulting and clinical psychology*, *66*(1), 7.

Christian, A. S., Niec, L., & Kassab, V. Dissemination of an Evidence-Based Parenting Program: Clinician Factors That Influence Training Outcomes. Unpublished manuscript.

Crits-Christoph, P., Siqueland, L., Chittams, J., Barber, J. P., Beck, A. T., Frank, A., ... & Woody, G. (1998). Training in cognitive, supportive-expressive, and drug counseling therapies for cocaine dependence. *Journal of Consulting and Clinical Psychology*, *66*(3), 484.

Cross, W., Matthieu, M. M., Cerel, J., & Knox, K. L. (2007). Proximate outcomes of gatekeeper training for suicide prevention in the workplace. *Suicide and Life-Threatening Behavior*, *37*(6), 659-670.

Davidson, K., & Scott, J. (2009). Does therapists' competence matter in delivering psychological therapy?. *Psychiatric Bulletin*, *33*(4), 121-123.

Davidson, K., Scott, J., Schmidt, U., Tata, P., Thorton, S., & Tyrer, P. (2004). Therapist competence and clinical outcome in the prevention of parasuicide by manual assisted cognitive behaviour therapy trial: the POPMACT study. *Psychological Medicine, 34,* 855– *863.*

DeViva, J. C. (2006). The effects of full-day and half-day workshops for health care providers in techniques for increasing resistant clients' motivation. *Professional Psychology: Research and Practice*, *37*(1), 83.

Dimeff, L. A., Koerner, K., Woodcock, E. A., Beadnell, B., Brown, M. Z., Skutch, J. M., ... & Harned, M. S. (2009). Which training method works best? A randomized controlled trial comparing three methods of training clinicians in dialectical behavior therapy skills. *Behaviour Research and Therapy*, *47*(11), 921-930.

Dimeff, L. A., Woodcock, E. A., Harned, M. S., & Beadnell, B. (2011). Can dialectical behavior therapy be learned in highly structured learning environments? Results from a randomized controlled dissemination trial. *Behavior therapy*, *42*(2), 263-275.

Drake, R. E., Goldman, H. H., Leff, H. S., Lehman, A. F., Dixon, L., Mueser, K. T., & Torrey, W. C. (2001). Implementing Evidence-Based Practices in Routine Mental Health Service Settings. *Psychiatric Services, 51*, 179-182.

Ducharme, J. M., & Feldman, M. A. (1992). Comparison of staff training strategies to promote generalized teaching skills. *Journal of Applied Behavior Analysis*, *25*(1), 165-179.

Dumas, J. E., Lynch, A. M., Laughlin, J. E., Phillips Smith, E., & Prinz, R. J. (2001). Promoting intervention fidelity: Conceptual issues, methods, and preliminary results from the EARLY ALLIANCE prevention trial. *American journal of preventive medicine*, *20*(1), 38-47.

El-Tannir, A. A. (2002). The corporate university model for continuous learning, training and development. *Education+ Training*, *44*(2), 76-81.

Eysenck, H. J. (1952). The effects of psychotherapy: an evaluation. *Journal of Consulting Psychology*, *16*(5), 319.

Eysenck, H. J. (1966). *The effects of psychotherapy*. New York: International Science Press.

Evans, S. W., Koch, J. R., Brady, C., Meszaros, P., & Sadler, J. (2012). Community and school mental health professionals' knowledge and use of evidence based substance use prevention programs. *Administration and Policy in Mental Health and Mental Health Services Research*, 1-12.

Fadden, G. (1997). Implementation of family interventions in routine clinical practice following staff training programs: a major cause for concern. *Journal of Mental Health*, *6*(6), 599-612.

Field, A. P. (2001). Meta-analysis of correlation coefficients: A Monte-Carlo comparison of fixed- and random-effects methods. *Psychological Methods, 6*, 161-180.

Forsberg, L., Forsberg, L. G., Lindqvist, H., & Helgason, A. R. (2010). Research Clinician acquisition and retention of Motivational Interviewing skills: a two-and-a-half-year exploratory study.

Funderburk, B., Chaffin, M., Bard, E., Shanley, J., Bard, D., & Berliner, L. Comparing client outcomes for two evidence-based treatment consultation strategies. Unpublished manuscript.

Garner, B. R., Hunter, B. D., Godley, S. H., & Godley, M. D. (2012). Training and retaining staff to competently deliver an evidence-based practice: The role of staff attributes and perceptions of organizational functioning. *Journal of substance abuse treatment*, *42*(2), 191-200.

Gega, L., Norman, I. J., & Marks, I. M. (2007). Computer-aided vs. tutor-delivered teaching of exposure therapy for phobia/panic: randomized controlled trial with pre-registration nursing students. *International Journal of Nursing Studies*, *44*(3), 397-405.

Gleacher, A. A., Nadeem, E., Moy, A. J., Whited, A. L., Albano, A. M., Radigan, M., ... & Hoagwood, K. E. (2011). Statewide CBT training for clinicians and supervisors treating youth: the New York State evidence based treatment dissemination center. *Journal of Emotional and Behavioral Disorders*, *19*(3), 182-192.

Gotham, H. J. (2004). Diffusion of mental health and substance abuse treatments: Development, dissemination, and implementation. *Clinical Psychology: Science and Practice*, *11*(2), 160-176.

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Quarterly*, *82*(4), 581-629.

Gunter, R. W., & Whittal, M. L. (2010). Dissemination of cognitive-behavioral treatments for anxiety disorders: Overcoming barriers and improving patient access. *Clinical Psychology Review, 30*(2), 194-202.

Harned, M. S., Dimeff, L. A., Woodcock, E. A., & Skutch, J. M. (2011). Overcoming barriers to disseminating exposure therapies for anxiety disorders: A pilot randomized controlled trial of training methods. *Journal of anxiety disorders*, *25*(2), 155-163.

Hawkins, K. A., & Sinha, R. (1998). Can line clinicians master the conceptual complexities of dialectical behavior therapy? An evaluation of a State Department of Mental Health training program. *Journal of Psychiatric Research*, *32*(6), 379-384.

Hedges, L. V., Olkin, I., Statistiker, M., Olkin, I., & Olkin, I. (1985). Statistical methods for meta-analysis.

Hemmelgarn, A. L., Glisson, C., & James, L. R. (2006). Organizational culture and climate: Implications for services and interventions research. *Clinical Psychology: Science and Practice*, *13*(1), 73-89.

Henggeler, S. W., Schoenwald, S. K., Liao, J. G., Letourneau, E. J., & Edwards, D. L. (2002). Transporting efficacious treatments to field settings: The link between supervisory practices and therapist fidelity in MST programs. *Journal of Clinical Child and Adolescent Psychology*, *31*(2), 155-167.

Henggeler, S. W., Sheidow, A. J., Cunningham, P. B., Donohue, B. C., & Ford, J. D. (2008). Promoting the implementation of an evidence-based intervention for adolescent marijuana abuse in community settings: Testing the use of intensive quality assurance. *Journal of Clinical Child & Adolescent Psychology*, *37*(3), 682-689.

Henry, W. P., Strupp, H. H., Butler, S. F., Schacht, T. E., & Binder, J. L. (1993). Effects of training in time-limited dynamic psychotherapy: Changes in therapist behavior. *Journal of consulting and clinical psychology*, *61*(3), 434-440.

Hepner, K. A., Hunter, S. B., Paddock, S. M., Zhou, A. J., & Watkins, K. E. (2011). Training addiction counselors to implement CBT for depression. *Administration and Policy in Mental Health and Mental Health Services Research*, *38*(4), 313-323.

Herschell, A. D., Kolko, D. J., Baumann, B. L., & Davis, A. C. (2010). The role of therapist training in the implementation of psychosocial treatments: A review and critique with recommendations. *Clinical psychology review*, *30*(4), 448-466.

Herschell, A. D., McNeil, C. B., Urquiza, A. J., McGrath, J. M., Zebell, N. M., Timmer, S. G., & Porter, A. (2009). Evaluation of a treatment manual and workshops for disseminating, Parent–Child Interaction Therapy. *Administration and Policy in Mental Health and Mental Health Services Research*, *36*(1), 63-81.

Hogue, A., Henderson, C. E., Dauber, S., Barajas, P. C., Fried, A., & Liddle, H. A. (2008). Treatment adherence, competence, and outcome in individual and family therapy for adolescent behavior problems. *Journal of consulting and clinical psychology*, *76*(4), 544.

Hunter, S. B., Watkins, K. E., Wenzel, S., Gilmore, J., Sheehe, J., & Griffin, B. (2005). Training substance abuse treatment staff to care for co-occurring disorders. *Journal of Substance Abuse Treatment*, *28*(3), 239-245.

Huppert, J. D., Bufka, L. F., Barlow, D. H., Gorman, J. M., Shear, M. K., & Woods, S. W. (2001). Therapists, therapist variables, and cognitive-behavioral therapy outcome in a multicenter trial for panic disorder. *Journal of Consulting and Clinical Psychology*, *69*(5), 747-755.

Jensen-Doss, A., Cusack, K. J., & de Arellano, M. A. (2008). Workshop-based training in trauma-focused CBT: An in-depth analysis of impact on provider practices. *Community mental health journal*, *44*(4), 227-244.

Karlin, B. E., Ruzek, J. I., Chard, K. M., Eftekhari, A., Monson, C. M., Hembree, E. A., ... & Foa, E. B. (2010). Dissemination of evidence- based psychological treatments for posttraumatic stress disorder in the Veterans Health Administration. *Journal of traumatic stress*, *23*(6), 663-673.

Karlin, B. E., Brown, G. K., Trockel, M., Cunning, D., Zeiss, A. M., & Taylor, C. B. (2012). National dissemination of cognitive behavioral therapy for depression in the Department of Veterans Affairs health care system: therapist and patient-level outcomes. *Journal of consulting and clinical psychology*, *80*(5), 707.

Kanter, J. W., Tsai, M., Holman, G., & Koerner, K. (2013). Preliminary data from a randomized pilot study of web-based functional analytic psychotherapy therapist training. *Psychotherapy*, *50*(2), 248.

Kelly, J. A., Somlai, A. M., DiFranceisco, W. J., Otto-Salaj, L. L., McAuliffe, T. L., Hackl, K. L., ... & Rompa, D. (2000). Bridging the gap between the science and service of HIV prevention: Transferring effective research-based HIV prevention interventions to community AIDS service providers. *American Journal of Public Health*, *90*(7), 1082.

Kearley, K., & Croft, A. (2010). Cognitive-behavioural skills training for medical students: development and evaluation. *The Psychiatrist*, *34*(6), 251-256.

Kennedy, T., Regehr, G., Rosenfield, J., Roberts, S. W., & Lingard, L. (2004). Exploring the gap between knowledge and behavior: a qualitative study of clinician action following an educational intervention. *Academic Medicine*, *79*(5), 386-393.

King, M., Davidson, O., Taylor, F., Haines, A., Sharp, D., & Turner, R. (2002). Effectiveness of teaching general practitioners skills in brief cognitive behaviour therapy to treat patients with depression: randomised controlled trial. *BMJ: British Medical Journal*, *324*(7343), 947.

Kingdon, D., Tyrer, P., Seivewright, N., Ferguson, B., & Murphy, S. (1996). The Nottingham Study of Neurotic Disorder: influence of cognitive therapists on outcome. *The British Journal of Psychiatry*, *169*(1), 93-97.

Kobak, K. A., Craske, M. G., Rose, R. D., & Wolitsky-Taylor, K. (2013). Web-based therapist training on cognitive behavior therapy for anxiety disorders: A pilot study. *Psychotherapy*, *50*(2), 235.

Kolko, D. J., Baumann, B. L., Herschell, A. D., Hart, J. A., Holden, E. A., & Wisniewski, S. R. (2012). Implementation of AF-CBT by Community Practitioners Serving Child Welfare and Mental Health A Randomized Trial. *Child maltreatment*, *17*(1), 32-46.

Kolko, D. J., Iselin, A. M. R., & Gully, K. J. (2011). Evaluation of the sustainability and clinical outcome of Alternatives for Families: A Cognitive-Behavioral Therapy (AF-CBT) in a child protection center. *Child abuse & neglect*, *35*(2), 105-116.

Larson, M. J., Amodeo, M., LoCastro, J. S., Muroff, J., Smith, L., & Gerstenberger, E. (2013). Randomized Trial of Web-Based Training to Promote Counselor Use of Cognitive Behavioral Therapy Skills in Client Sessions. *Substance Abuse*, *34*(2), 179-187.

Leffler, J. M., Jackson, Y., West, A. E., McCarty, C. A., & Atkins, M. S. (2013). Training in evidence-based practice across the professional continuum. *Professional Psychology: Research and Practice*, *44*(1), 20.

Levitt, E. E. (1957). The results of psychotherapy with children: an evaluation. *Journal of Consulting Psychology*, *21*(3), 189.

Levitt, E. E. (1963). Psychotherapy with children: A further evaluation. *Behaviour Research and Therapy*, *1*(1), 45-51.

Liddle, H. A., Rowe, C. L., Gonzalez, A., Henderson, C. E., Dakof, G. A., & Greenbaum, P. E. (2006). Changing provider practices, program environment, and improving outcomes by transporting multidimensional family therapy to an adolescent drug treatment setting. *The American Journal on Addictions*, *15*(s1), s102-s112.

Lim, A., Nakamura, B. J., Higa-McMillan, C. K., Shimabukuro, S., & Slavin, L. (2012). Effects of workshop trainings on evidence-based practice knowledge and attitudes among youth community mental health providers. *Behaviour research and therapy*, *50*(6), 397-406.

Lovell, K., Cox, D., Garvey, R., Raines, D., Richards, D., Conroy, P., & Repper, D. (2003). Agoraphobia: nurse therapist- facilitated self- help manual. *Journal of Advanced Nursing*, *43*(6), 623-630.

Luoma, J. B., & Vilardaga, J. P. (2013). Improving Therapist Psychological Flexibility While Training Acceptance and Commitment Therapy: A Pilot Study. *Cognitive behaviour therapy*, *42*(1), 1-8.

Loeb, K. L., Wilson, G. T., Labouvie, E., Pratt, E. M., Hayaki, J., Walsh, B. T., ... & Fairburn, C. G. (2005). Therapeutic alliance and treatment adherence in two interventions for bulimia nervosa: a study of process and outcome. *Journal of consulting and clinical psychology*, *73*(6), 1097.

Mannix, K. A., Blackburn, I. M., Garland, A., Gracie, J., Moorey, S., Reid, B., ... & Scott, J. (2006). Effectiveness of brief training in cognitive behaviour therapy techniques for palliative care practitioners. *Palliative Medicine*, *20*(6), 579-584.

Martino, S., Ball, S. A., Nich, C., Frankforter, T. L., & Carroll, K. M. (2008). Community program therapist adherence and competence in motivational enhancement therapy. *Drug and alcohol dependence*, *96*(1), 37-48.

Matthieu, M. M., Cross, W., Batres, A. R., Flora, C. M., & Knox, K. L. (2008). Evaluation of gatekeeper training for suicide prevention in veterans. *Archives of Suicide Research*, *12*(2), 148-154.

Maunder, L., Milne, D., & Cameron, L. (2008). Pilot evaluation of brief training in CBT for primary care practitioners. *Behavioural and Cognitive Psychotherapy*, *36*(03), 341-351.

McCart, M. R., Henggeler, S. W., Chapman, J. E., & Cunningham, P. B. (2012). System-level effects of integrating a promising treatment into juvenile drug courts. *Journal of substance abuse treatment*, *43*(2), 231-243.

McDonough, M., & Marks, I. M. (2002). Teaching medical students exposure therapy for phobia/panic–randomized, controlled comparison of face- to- face tutorial in small groups vs. solo computer instruction. *Medical Education*, *36*(5), 412-417.

McHugh, R. K., & Barlow, D. H. (2010). The dissemination and implementation of evidence-based psychological treatments: a review of current efforts. *American Psychologist*, *65*(2), 73.

Miller, W. R., & Mount, K. A. (2001). A small study of training in motivational interviewing: Does one workshop change clinician and client behavior?. *Behavioural and Cognitive Psychotherapy*, *29*(04), 457-471.

Miller, W. R., Yahne, C. E., Moyers, T. B., Martinez, J., & Pirritano, M. (2004). A randomized trial of methods to help clinicians learn motivational interviewing. *Journal of consulting and Clinical Psychology*, *72*(6), 1050.

Milne, D. L., & James, I. A. (2002). The observed impact of training on competence in clinical supervision. *British Journal of Clinical Psychology*, *41*(1), 55-72.

Morgenstern, J., Morgan, T. J., McCrady, B. S., Keller, D. S., & Carroll, K. M. (2001). Manual-guided cognitive-behavioral therapy training: A promising method for disseminating empirically supported substance abuse treatments to the practice community. *Psychology of Addictive Behaviors*, *15*(2), 83.

Moyers, T. B., Manuel, J. K., Wilson, P. G., Hendrickson, S. M., Talcott, W., & Durand, P. (2008). A randomized trial investigating training in motivational interviewing for behavioral health providers. *Behavioural and Cognitive Psychotherapy*, *36*(02), 149-162.

Murrihy, R., & Byrne, M. K. (2005). Training models for psychiatry in primary care: a new frontier. *Australasian Psychiatry*, *13*(3), 296-301.

McVey, G. L., Davis, R., Kaplan, A. S., Katzman, D. K., Pinhas, L., Geist, R., ... & Forsyth, G. (2005). A community- based training program for eating disorders and its contribution to a provincial network of specialized services. *International Journal of Eating Disorders*, *37*(S1), S35-S40.

National Advisory Mental Health Council [NAMHC]. (2006). *The Road Ahead: Research Partnerships to Transform Services: A Report by the National Advisory Mental Council's Workgroup on Services and Clinical Epidemiology*. Bethesda, MD: National Institutes of Health, National Institute of Mental Health.

National Advisory Mental Health Council [NAMHC]. (2001). Blueprint for Change: Research on Child and Adolescent Mental Health. *A Report by the National Advisory Mental Health Council's Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment.* Bethesda, MD: National Institutes of Health, National Institute of Mental Health.

Newton, J. R., & Yardley, P. (2007). Evaluation of CBT training of clinicians in routine clinical practice. *Psychiatric Services*, *58*(11), 1497-1497.

Oordt, M. S., Jobes, D. A., Fonseca, V. P., & Schmidt, S. M. (2009). Training mental health professionals to assess and manage suicidal behavior: Can provider confidence and practice behaviors be altered?. *Suicide and Life-Threatening Behavior*, *39*(1), 21-32.

Palinkas, L., Schoenwald, S., Hoagwood, K., Landsverk, J., Chorpita, B., & Weisz, J. (2008). An ethnographic study of implementation of evidence-based treatments in child mental health: First steps. *Psychiatric services*, *59*(7), 738-746.

Pearl, E., Thieken, L., Olafson, E., Boat, B., Connelly, L., Barnes, J., & Putnam, F. (2012). Effectiveness of community dissemination of parent–child interaction therapy. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(2), 204.

Rakovshik, S. G., & McManus, F. (2010). Establishing evidence-based training in cognitive behavioral therapy: A review of current empirical findings and theoretical guidance. *Clinical Psychology Review, 30*, 495–516.

Resko, S. M., Walton, M. A., Chermack, S. T., Blow, F. C., & Cunningham, R. M. (2012). Therapist competence and treatment adherence for a brief intervention addressing alcohol and violence among adolescents. *Journal of substance abuse treatment*, *42*(4), 429-437.

Richards, R., Oliver, J. E., Morris, E., Aherne, K., Iervolino, A. C., & Wingrove, J. (2011). Acceptance and Commitment Therapy training for clinicians: an evaluation. *The Cognitive Behaviour Therapist*, *4*(03), 114-121.

Ringel, J. S., & Sturm, R. (2001). National estimates of mental health utilization and expenditures for children in 1998. *Journal of Behavioral Health Services and Research, 28*(3), 319-332.

Rubel, E. C., Sobell, L. C., & Miller, W. R. (2000). Do continuing education workshops improve participants' skills? Effects of a motivational interviewing workshop on substance-abuse counselors' skills and knowledge. *The Behavior Therapist*, 23(4), 73-77.

Russell, M. C., Silver, S. M., Rogers, S., & Darnell, J. N. (2007). Responding to an identified need: A joint department of defense/department of veterans affairs training program in eye movement desensitizati on and reprocessing (EMDR) for clinicians providing trauma services. *International Journal of Stress Management, 14*(1), 61-71.

Saitz, R., Sullivan, L. M., & Samet, J. H. (2000). Training community-based clinicians in screening and brief intervention for substance abuse problems: Translating evidence into practice. *Substance Abuse, 21*(1), 21-31.

Sanders, M. R., Murphy-Brennan, M., & McAuliffe, C. (2003). The development, evaluation and dissemination of a training programme for general practitioners in evidence-based parent consultation skills. *International Journal of Mental Health Promotion, 5*(4), 13-20.

Sanders, M. R., Prinz, R. J., & Shapiro, C. J. (2009). Predicting utilization of evidence-based parenting interventions with organizational, service-provider and client variables. *Administration and Policy in Mental Health and Mental Health Services Research*, *36*(2), 133-143.

Schoenwald, S. K. (2008). Toward evidence-based transport of evidence-based treatments: MST as an example. *Journal of Child & Adolescent Substance Abuse*, *17*(3), 69-91.

Schoenwald, S. K., Carter, R. E., Chapman, J. E., & Sheidow, A. J. (2008). Therapist adherence and organizational effects on change in youth behavior problems one year after multisystemic therapy. *Administration and Policy in Mental Health and Mental Health Services Research*, *35*(5), 379-394.

Schoenwald, S. K., Sheidow, A. J., Letourneau, E. J., & Liao, J. G. (2003). Transportability of multisystemic therapy: Evidence for multilevel influences. *Mental health services research, 5*(4), 223-239.

Schoenwald, S. K., Sheidow, A. J., & Letourneau, E. J. (2004). Toward effective quality assurance in evidence-based practice: Links between expert consultation, therapist fidelity, and child outcomes. *Journal of Clinical Child and Adolescent Psychology, 33*(1), 94-104.

Seng, A. C., Prinz, R. J., & Sanders, M. R. (2006). The role of training variables in effective dissemination of evidence-based parenting interventions. *International Journal of Mental Health Promotion, 8*(4), 20-28.

Shafron, R., Clark, D. M., Fairburn, C. G., Arntz, A., Barlow, D. H., Ehlers, A., …Wilson, G. T. (2009). Mind the gap: Improving the dissemination of CBT. *Behavior Research and Therapy, 47*, 902-909.

Shaw, B. F., Elkin, I., Yamaguchi, J., Olmsted, M., Vallis, T. M., Dobson, K. S., ... & Imber, S. D. (1999). Therapist competence ratings in relation to clinical outcome in cognitive therapy of depression. *Journal of Consulting and Clinical Psychology*, *67*(6), 837.

Sholomskas, D. E., & Carroll, K. M. (2006). One small step for manuals: Computer-assisted training in twelve-step facilitation. *Journal of studies on alcohol*, *67*(6), 939.

Sholomskas, D. E., Syracuse-Siewert, G., Rounsaville, B. J., Ball, S. A., Nuro, K. F., & Carroll, K. M. (2005). We don't train in vain: a dissemination trial of three strategies of training clinicians in cognitive-behavioral therapy. *Journal of consulting and clinical psychology*, *73*(1), 106.

Sholomskas, D. E., Syracuse-Siewert, G., Rounsaville, B. J., Ball, S. A., Nuro, K. F., & Carroll, K. M. (2005). We don't train in vain: a dissemination trial of three strategies of training clinicians in cognitive-behavioral therapy. *Journal of Consulting and Clinical Psychology*, *73*(1), 106.

Simons, A. D., Padesky, C. A., Montemarano, J., Lewis, C. C., Murakami, J., Lamb, K., ... & Beck, A. T. (2010). Training and dissemination of cognitive behavior therapy for depression in adults: a preliminary examination of therapist competence and client outcomes. *Journal of Consulting and Clinical Psychology*, *78*(5), 751-756.

Smith, J. L., Carpenter, K. M., Amrhein, P. C., Brooks, A. C., Levin, D., Schreiber, E. A., ... & Nunes, E. V. (2012). Training substance abuse clinicians in motivational interviewing using live supervision via teleconferencing. *Journal of consulting and clinical psychology*, *80*(3), 450.

Smith, M. L., & Glass, G. V. (1977). Meta-analysis of psychotherapy outcome studies. *American psychologist*, *32*(9), 752.

Smith, M. L., Glass, G. V., & Miller, T. I. (1980). *The benefits of psychotherapy*. Baltimore: Johns Hopkins University Press.

Society of Clinical Psychology (SCP), APA Division 12. (2013). Empirically Supported Treatments. Retrieved from http://www.div12.org/publications/ESTs

Stewart, R. E., & Chambless, D. L. (2007). Does psychotherapy research inform treatment decision in private practice? *Journal of Clinical Psychology, 63*, 267–281.

Strosahl, K. D., Hayes, S. C., Bergan, J., & Romano, P. (1999). Assessing the field effectiveness of Acceptance and Commitment Therapy: An example of the manipulated training research method. *Behavior Therapy*, *29*(1), 35-63.

Strunk, D. R., Brotman, M. A., & DeRubeis, R. J. (2010). The process of change in cognitive therapy for depression: Predictors of early inter-session symptom gains. *Behaviour research and therapy*, *48*(7), 599-606.

Torrey, W. C., Drake, R. E., Dixon, L., Burns, B. J., Flynn, L., Rush, A. J., Clark, R. E., & Klatzer, D. (2001). Implementing evidence-based practices for persons with severe mental illnesses. *Psychiatric Services, 51*, 45-50.

Trepka, C., Rees, A., Shapiro, D. A., Hardy, G. E., & Barkham, M. (2004). Therapist competence and outcome of cognitive therapy for depression. *Cognitive Therapy and Research*, *28*(2), 143-157.

Vismara, L. A., Young, G. S., Stahmer, A. C., Griffith, E. M., & Rogers, S. J. (2009). Dissemination of evidence-based practice: Can we train therapists from a distance?. *Journal of Autism and Developmental Disorders*, *39*(12), 1636-1651.

Wainer, A. L., & Ingersoll, B. R. (2013). Disseminating ASD interventions: a pilot study of a distance learning program for parents and professionals. *Journal of autism and developmental disorders, 43*(1), 11-24.

Walters, S. T., Matson, S. A., Baer, J. S., & Ziedonis, D. M. (2005). Effectiveness of workshop training for psychosocial addiction treatments: A systematic review. *Journal of Substance Abuse Treatment*, *29*(4), 283-293.

Webster-Stratton, C., Hurlburt, M., Reid, J., & Marsenich, L. Improving Therapist Fidelity During Evidence-based Practice Implementation. Unpublished manuscript.
Weisz, J. R., Weiss, B., & Donenberg, G. R. (1992). The lab versus the clinic: effects of child and adolescent psychotherapy. *American Psychologist, 47(12),* 1578-1585.

Weisz, 1. R. (2004). *Psychotherapy for children and adolescents.* New York: Cambridge University Press.
Weisz, J. R., Donenberg, G. R., Han, S. S., & Weiss, B. (1995). Bridging the gap between laboratory and clinic in child and adolescent psychotherapy. *Journal of consulting and clinical psychology*, *63*(5), 688.

Weisz, J. R., Weiss, B., & Donenberg, G. R. (1992). The lab versus the clinic: Effects of child and adolescent psychotherapy. *American Psychologist*, *47*(12), 1578.

Wells, R., Morrissey, J. P., Lee, I. H., & Radford, A. (2010). Trends in behavioral health care service provision by community health centers, 1998–2007. *Psychiatric Services*, *61*(8), 759.

Westbrook, D., McManus, F., Clark, G., & Bennett-Levy, J. (2012). Preliminary evaluation of an online training package in cognitive behaviour therapy: Satisfaction ratings and impact on knowledge and confidence. *Behavioural and cognitive psychotherapy*, *40*(04), 481-490.

White, S. W., Ollendick, T., Albano, A. M., Oswald, D., Johnson, C., Southam-Gerow, M. A., ... & Scahill, L. (2013). Randomized controlled trial: multimodal anxiety and social skill intervention for adolescents with autism spectrum disorder. *Journal of autism and developmental disorders*, *43*(2), 382-394.

Wiborg, J. F., Knoop, H., Wensing, M., & Bleijenberg, G. (2012). Therapist effects and the dissemination of cognitive behavior therapy for chronic fatigue syndrome in community-based mental health care. *Behaviour research and therapy*, *50*(6), 393-396.

Wilson, D. B. & Lipsey, M. W. (2001). *Practical meta-analysis* (Vol. 49). Sage.

Wyman, P. A., Brown, C. H., Inman, J., Cross, W., Schmeelk-Cone, K., Guo, J., & Pena, J. B. (2008). Randomized trial of a gatekeeper program for suicide prevention: 1-year impact on secondary school staff. *Journal of consulting and clinical psychology*, *76*(1), 104.

Zoellner, L. A., Feeny, N. C., & Rothbaum, B. O. (2006). Special section: Dissemination: Transforming lives through transforming care. *Journal of traumatic stress*, *19*(5), 567-570.