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**ORGANIZATIONAL FACTORS AND THERAPIST
ATTITUDES IN THE PREDICTION OF MI ADOPTION**

by

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DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

**Doctor of Philosophy
Psychology**

The University of New Mexico
Albuquerque, New Mexico

December 2012

Organizational Factors and Therapist Attitudes in the Prediction of MI Adoption

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ABSTRACT

Dissemination efforts occur within a context. It is important to determine the individual and organizational factors that promote MI adoption. The present study had three goals: 1) to examine the four-factor structure of the Evidence-Based Practice Attitudes Scale (EBPAS) in a sample of substance abuse providers, 2) to examine the organizational and therapist attitude variables that predicted study attrition, and 3) to examine the organizational and therapist attitude factors that predicted MI skill levels at each of the three time points and the factors that predicted skill growth over time. While the factor-structure of the EBPAS was similar in this sample to a sample of general mental health practitioners, the model fit the data only marginally well. More positive therapist attitudes about EBP and positive organizational climate predicted submission of a three-month follow-up session. Institutional resources and training exposure and utilization predicted both skill growth over time and skill level at baseline, immediately post-training, and three-months post-training. In order to more effectively adopt MI, an organization needs to be appropriately funded and devote more resources to exposing therapists to continuing education opportunities.

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Organizational Factors and Therapist Attitudes in the Prediction of MI Adoption

The field of clinical psychology has gone through a revolution in the past 30 years in terms of identifying efficacious treatments for many psychological disorders. However, a science-service gap has been described across sub-specialties of clinical psychology. After an important American Psychological Association (APA) address in 1991 that emphasized this gap by then-president, Richard McFall, researchers turned their efforts towards distinguishing these empirically-supported treatments (ESTs) from treatment-as-usual. The addiction field, while initially behind the rest of the mental health field, has taken steps towards developing research-based treatments for substance abuse disorders. The next step is to determine the best ways to transport these treatments into community mental health and substance abuse treatment programs. This study will attempt to look at some of the factors related to successful dissemination of an EST for substance use disorders, Motivational Interviewing (MI).

Motivational Interviewing

MI is a psychosocial intervention used with individuals who are ambivalent about changing problematic behavior. According to Miller and Rollnick (2002), the goal of MI is to help the individual resolve his or her ambivalence about change in a supportive, collaborative, and empathic context. Several potential mechanisms have been theorized as leading to client outcomes in MI. Miller and Rose (2009) theorize that there are two important therapeutic components to MI: 1) a relational component in which there is a focus on therapist empathy and MI spirit in terms of providing a therapeutic environment for the client that is collaborative, evocative, and respectful of their autonomy, and 2) a technical component which emphasizes the use of MI-consistent and non-use of MI-

inconsistent techniques. These two components are theorized to lead to increased client verbalizations related to changing behavior, or change talk, and decreased verbalizations related to maintenance of the status quo, or sustain talk (Miller & Rose, 2009). Support has been found for a positive relationship between change talk and client outcomes (Moyers & Martin, 2006; Moyers, et al., 2007; Moyers, et al., 2009; Amrhein, et al., 2003). Moyers, Miller, and Hendrickson (2005) also found evidence for the relational component in that therapist interpersonal skills were related to client involvement in treatment. MI has been found to be an effective intervention with a variety of behaviors including alcohol, illicit drug use, HIV risk reduction, treatment adherence, gambling, water purification, diet, gambling, eating disorders, and exercise (Hettema, Steele, & Miller, 2005). A single session of MI has also been found to be effective as an introduction to other types of substance abuse treatment in terms of enhancing client outcomes, treatment retention, and therapist-perceived client motivation (Brown & Miller, 1993; Bien, Miller, & Boroughs, 1993). Despite the evidence that MI is an efficacious treatment for many problematic behaviors, little research has examined the process of diffusing MI into community settings and the factors that help or hinder that process.

It is helpful to take a step back and consider the history of the EST movement in order to understand the issues and barriers that currently confront the substance abuse field. A review of diffusion theory, along with a discussion of the factors that are related to this process, are important in determining the factors that may be important in the dissemination of MI into community settings.

The Scientist-Practitioner Model in Theory and Practice

The Boulder Conference in 1949 established the scientist-practitioner model of training in clinical psychology. This model set forth the notion that clinical psychologists should be both researchers and practitioners. However, as Peterson (2000) points out, the role of research and its importance in practicing psychology was up to interpretation. Many researchers began to notice the gap between the goal of the Boulder model and actual practice.

Even before McFall's 1991 manifesto, psychotherapy researchers had been calling for a unification of research and practice (Barlow, 1981; Sechrest, 1975). Studies examining the use of research by practicing psychotherapists found low rates of research use. In a survey of APA Division 29 (psychotherapy) members, Morrow-Bradley and Elliot (1986) found that in terms of research production, the modal number of research publications and presentations was zero. Measures of research consumption and utilization were equally dismal. Respondents reported a modal number of zero research articles or chapters read in the last month, research conferences attended, number of useful research articles read, number of useful research conferences attended, and number of difficult cases facilitated through research. The number one source of useful information reported was clinical experience. Cohen, Sargent, and Sechrest (1986) examined clinical psychologists' obstacles to use of research. They found that therapists' conversations with colleagues were perceived as a more useful source of information than research books and articles. They also believed that research questions were too irrelevant and simplistic to positively impact treatment. This disconnect between

researchers and practitioners would soon come to a head with McFall's (1991) manifesto and the ensuing EST movement within clinical psychology

In 1991, Richard McFall delivered his now infamous presidential address to the APA which all but demanded that clinical psychology practice be based on scientific evidence rather than clinical judgment. According to McFall, in the interest of public safety, interventions should not be delivered to the public unless they have been thoroughly evaluated for efficacy. While discontent had been growing for some time among psychotherapy researchers, McFall's address is seen as a turning point for the field.

In 1993, David Barlow, then-president of APA Division 12 (clinical psychology), formed a task force, chaired by Dianne Chambless, which was charged with the goal of developing criteria to identify ESTs and make recommendations for the dissemination of these treatments. The 1995 Division 12 task force report on the Promotion and Dissemination of Psychological Procedures recommended that clinicians focus on interventions with a sound research base. In line with this recommendation, the task force criteria determined that psychological interventions that show significantly better outcomes compared to control conditions or other types of treatment in randomly-controlled trial (RCT) designs be considered "well-established treatments" (Chambless & Ollendick, 2001). Today, Division 12 of the APA, the Society of Clinical Psychology, keeps a website with an up-to-date listing of 60 recommended ESTs for various disorders.

These recommendations have been met with much controversy over the last 15 years. Much of this debate has come from those who believe that clinical psychology is

more of an art than a science (Benjamin, 2005). Many practitioners and researchers believe that the EST movement does not give enough credence to nonspecific therapy factors such as the relationship between the client and therapist (Norcross, 2001). Some researchers point to studies that show that these relationship factors account for much of the change in client outcomes (Wampold, 2001; Luborsky, et al., 2002). These criticisms have led to a focus on Evidence-Based Practice in Psychology (EBPP), which emphasizes both research evidence and clinical expertise with regard to patient characteristics (APA Task Force, 2005). While many of the proponents of the EST movement initially saw this as a potential step backwards for clinical psychology as a scientific enterprise, EBPP has become synonymous with the use of ESTs in practice.

Currently, much of the controversy over the value of empirically-based treatments has lessened, and many specialties within clinical psychology have made it a priority to identify the most effective treatments for patients. Barlow (1996) points to the influence of managed care in the promotion of evidence-based practice guidelines. Today, many insurance companies and federally-funded agencies require therapists to use empirically-validated treatments in order to receive government funding or reimbursement for services. Research priorities have shifted to identifying the best ways to integrate these treatments into practice.

Research and Practice within the Addictions Field

While McFall (1991) noted the gap between science and practice in clinical psychology as a whole, special attention has been paid to the addictions field. Some researchers have suggested that this disparity between research and standard treatment is particularly wide in substance abuse treatment (Sorensen & Midkiff, 2000; Morgenstern,

Morgan, McCrady, Keller, & Carroll, 2001). Miller, Sorensen, Selzer and Brigham (2006) suggest that this is likely due to the fact that the addictions field evolved through the provision of services by those in recovery themselves, which occurred primarily outside of mainstream mental health care (Guydish, 2003; White, 1998). However, like the general mental health field, the provision of most substance abuse services depends on funding from the government or reimbursement from insurance companies. It was only a matter of time before this science-service gap was noted and quality assurance procedures implemented.

In 1998, the Institute of Medicine issued a report geared toward closing the science-service gap through the development of innovative research strategies aimed at examining the dissemination of ESTs into community mental health centers (IOM, 1998). The National Institute on Drug Abuse (NIDA), through the Clinical Trials Network (CTN), has made research on the dissemination of ESTs into community treatment programs a priority. In 2001, NIDA and the Substance Abuse and Mental Health Services Administration (SAMHSA) joined together to form the Blending Initiative. The goal of this endeavor is to diffuse research results from CTN and NIDA studies to community practitioners through three strategies: 1) blending conferences, 2) the formation of blending teams consisting of researchers, SAMHSA trainers, and practitioners, and 3) the development of blending products which consist of specialized training products. Another goal of the Blending Initiative is to form relationships with state agencies in order to further advance the adoption of ESTs at the level of state-wide system. A large amount of government resources has been devoted to finding the best ways of

disseminating ESTs in the substance abuse field. In order to completely address this issue, the barriers to dissemination attempts must be well understood.

Initial Understandings of Barriers to EBP Dissemination

Changes in managed care requirements and governmental agency practice guidelines have forced a change in treatment-as-usual across specialties of clinical psychology, including substance abuse. Therapists who were accustomed to using their own preferred methods of treatment were faced with learning and implementing unfamiliar interventions. One proposed method of exposing therapists to ESTs and monitoring their adherence was the treatment manual, a tool that up to that point had been primarily used in psychotherapy research trials. Morgenstern, Morgan, McCrady, Keller, and Carroll (2001) examined the ability of front-line substance abuse clinicians to use manual-guided training to develop skillfulness in an EST, cognitive-behavioral therapy for substance use problems. They found that 90 percent of their sample reached adequate levels of skillfulness in CBT, as assessed by ratings of video-taped therapy sessions. Manual-based training represented a viable means towards enhancing adherence and skillfulness in an EST, which would hopefully translate to better client outcomes.

While manual-based training may be a feasible way to enhance adherence to an EST, practitioners' attitudes towards treatment manuals are likely to influence their desire to seek training and actually use a particular EST. In the late 1990s and early 2000s, much attention was focused on changing the assumed negative attitudes of clinicians (Addis, 1997; Parloff, 1998). Strosahl (1998) pointed out that manuals were developed in a very different context than the typical clinical practice and explained that clinicians were likely feeling that manuals took away their ability to make decisions about their

clients' treatment in a flexible manner. He also explained that clinicians complained that manuals were too academic, and thus not easily usable. Addis, Wade, and Hatgis (1999) added that clinicians believed that manuals could negatively affect the development of a good therapeutic relationship, that they likely could not meet the needs of complex clients, and that many clinicians did not believe in the potential effectiveness of ESTs with their clients. Therefore, blame for the failure of dissemination attempts was placed almost completely on the backs of individual therapists.

Research examining practitioner attitudes towards manuals found a somewhat different story. Najavits, Weiss, Shaw, and Dierberger (2000) found mostly positive attitudes towards treatment manuals in a survey of cognitive-behaviorally oriented therapists. Addis and Krasnow (2000) surveyed a large sample of licensed clinicians randomly selected from the APA membership database on their attitudes toward treatment manuals. They found that less than 50 percent of practitioners reported having a clear idea of what treatment manuals are, and on average, endorsed views of manuals very different from how they had been conceptualized by researchers. However, they also found that practitioners in their sample were as likely to have positive attitudes as they were to have negative attitudes about manuals. While many researchers assumed that most clinicians had negative attitudes about manuals, it seemed that the problem really lay in the translation of manuals into practice. Rogers (2003) calls this the "individual-blame" bias, or the tendency to blame the individual for a failure to adopt an innovation rather than to examine the individual within a context that may be affecting the diffusion process. Researchers began to look towards models of innovation diffusion, particularly

how diffusion occurs within organizations, to help explain the slow diffusion of ESTs to the community.

Models of Diffusion

While models of diffusion have recently gained attention in the literature, ways in which new treatments come to be adopted by practitioners has always been a topic of interest for innovators of psychological treatments. As most community mental health practitioners typically operate within larger organizations, it becomes increasingly important to view this process as one that occurs collectively within large groups of individuals. A 1986 article by Backer, Liberman, and Kuehnel articulated features related to the innovative treatment, the organization that is attempting to adopt the treatment, and the actual adoption effort itself by integrating diffusion recommendations from a variety of sources. They also examined several dissemination case studies and identified six factors related to successful dissemination efforts. These recommendations included: 1) maintaining interpersonal contact with the developers of the innovation, 2) obtaining outside consultation on the adoption efforts, 3) encouraging widespread organizational support for the innovation, 4) championing of the innovation by agency staff, 5) allowing ways that the innovation may be adapted to the agency's context, and 6) providing evidence that the innovation is successful. While these findings and recommendations were useful, they do not speak to the actual process that an organization must go through in order to adopt an innovation. A theory of diffusion would allow one to predict the efforts that are most beneficial at different points in the diffusion process that lead to successful implementation of a treatment.

Diffusion of Innovations. Perhaps the most widely used model of diffusion is Rogers' (2003) Diffusion of Innovations theory. The first conceptualization of Rogers' theory was published in 1962 and his *Diffusion of Innovations* is currently in its fifth edition. According to Rogers, diffusion of an innovation is a type of communication that occurs within a social context. There are certain characteristics of the innovation, the individual adopter, the process that occurs over time, and the context of the adoption that influence the diffusion process. In terms of innovation characteristics, Rogers identified five factors that may influence the decision to adopt an innovation or may affect the rate of the diffusion process. An innovation that has more relative advantage, or a perception that the innovation is an improvement over the status quo, will be adopted more quickly. Also, an innovation that is more compatible with current values, experiences, and needs of the adopters and is more trialable, or easily experimented with, will be more rapidly adopted. The ability of potential adopters to see the results or outcomes of the innovation, or observability, is also a characteristic that enhances the rate of adoption. The perception that the innovation is difficult to understand or use, or the complexity of an innovation, tends to inhibit the speed of adoption. Therefore, to enhance the diffusion rate of an innovation, such as an empirically-supported treatment, the change agent should attempt to affect potential adopters' perceptions of these innovation characteristics.

According to Rogers (2003), the diffusion process can occur within individuals or within cohesive groups of individuals, such as tight-knit communities or organizations. Within an organization, diffusion is a more complex process involving communication across some number of individuals that may have different ideas about the specific innovation or change in general. Also, organizations may have different structures which

include the overall mission, roles of organization members, authority structures, rules and regulations, and patterns that may either facilitate or hinder the adoption of an innovation.

According to Rogers' theory (2003), the innovativeness of an organization is related to an organization's internal structural characteristics, characteristics of the individuals within the organization including the leaders, and external characteristics of the organization. A complex interplay exists between these characteristics that may promote or hinder the adoption and implementation of innovations. Individuals will differ in their attitudes and openness about change in general and ideas about the specific proposed innovation. The more positive individual attitudes are about the proposed innovation and about change in general, the more innovative an organization is likely to be. Also, the openness of a system, in terms of the links between members of an organization and external sources, is likely to enhance the flow of ideas and thus innovation. Structurally, the power of an organization may be more or less centralized into the hands of few leaders. With only a few in power, innovativeness tends to suffer. Higher complexity of an organization, or the level of knowledge or expertise of the organization as a whole, may positively enhance overall innovativeness. When an organization is highly formalized or emphatic about its members following procedures, innovations may be less likely to be attempted; however, if such innovations are attempted, they are more likely to be implemented. Higher levels of interconnectedness between members of an organization may promote communication of new ideas and enhance innovativeness. A larger amount of available resources, or organizational slack, will also enhance innovation. Rogers hypothesizes that these factors may be more or less important at different points in the diffusion process.

Rogers' (2003) theory posits that diffusion within an organization occurs through the linear progression of five stages within two phases. During the *initiation* phase, an organization goes through the planning stages in order to decide whether or not to adopt an innovation. The first stage involves agenda-setting in which a problem is identified that creates a perceived need for change. During this stage, an organization identifies problems and needs, prioritizes them, and searches for innovations that may address these needs. The next stage, matching, occurs when an innovation is found that fits with the needs of the program. Organization members identify barriers that might be in place or problems that might arise, along with potential benefits that might occur if the innovation is adopted. The goal of this stage is to determine the feasibility of adopting the innovation and to make a decision about whether or not to adopt. The proposed innovation will either be discarded or implementation efforts will begin.

The first stage of the *implementation* phase is the redefining/restructuring stage. This involves adapting the innovation to more closely fit the needs of the organization and restructuring the organization so as to accommodate the new innovation. The clarifying stage involves more widespread use of the innovation within the organization. The goal is to uncover any barriers or misunderstandings among organization members and enhance the clarity and meaning of the innovation. This is accomplished through trial and error use of the innovation and communication between organization members. The last stage of the diffusion process within organizations, routinizing, involves the melding of the innovation into the culture of the organization where it becomes routinely used. Rogers hypothesizes that when more members of an organization are involved in this process, the routinization and maintenance of an innovation is more likely to occur. Also,

when an innovation is reinvented by organization members, and adapted to the point where it takes on special qualities of that organization, this is also hypothesized to assist in the maintenance of an innovation (Rogers, 2003). While these organizational processes are important in diffusion efforts, individual attitudes and behaviors may also play an important role in shaping the adoption process.

Certain individuals may have more sway over the decision of whether to adopt an innovation. Rogers (2003) defines an opinion leader as someone within a social network who effectively influences the attitudes or behaviors of others. When proposing an innovation, it pays to have opinion leaders on board as they help to convince other community members to use the innovation. Innovation champions, similar to opinion leaders, are individuals who actively promote innovation within organizations by openly supporting adoption efforts. Identifying an innovation champion within a mental health organization may speed the adoption process of an EST by getting more people interested and invested in implementing the treatment.

Rogers' theory has been very influential in the understanding of EST dissemination. In a case study of the diffusion of an EST into a children's mental health center, Schmidt and Taylor (2002) found that Rogers' framework fit nicely with the experiences of the agency in adopting and implementing a new psychosocial treatment. Rogers' model has also influenced the development of newer diffusion models. While the newer models tend to reflect organizational attributes inherent within the populations examined, each maintains Rogers' focus on characteristics of the innovation, the adopting organization, and the individuals within the adopting organization.

Process of Change Model. Simpson's (2002) model of innovation diffusion has recently been gaining attention, especially among addictions researchers. The Process of Change Model was developed within the substance abuse field, and the innovations discussed refer specifically to clinical assessments and interventions that an organization or individual may adopt (Simpson, 2009). Simpson based the model on theories of diffusion, including Rogers' (2003) theory, and research that has examined the organizational factors that promote adoption and implementation of innovations. His model focuses on the process of program change and how this occurs within an organization.

Within the Process of Change model, diffusion is thought to occur through a series of linear stages. The first step in this process is the *training* stage, or the *exposure* stage in earlier model conceptualizations, in which therapists learn of an innovative treatment and seek some kind of training (Simpson, 2002). At the *adoption* stage, two processes occur: a formal decision about whether or not to adopt is made, and individuals make commitments as to whether or not the innovation will be attempted. In a later version of the model, Simpson (2009) also explains that an initial trial run may occur in which an action plan is formulated, outcomes are examined, and barriers are identified and addressed. If an innovation is determined to have relative advantage over current treatments, is compatible with norms, gains leadership support, and is determined to be adaptable to the specific context, a decision to implement the innovation is much more likely. During the *implementation* stage, the goal is to conduct a more extensive trial and assess whether or not the innovation will be sustainable, feasible, and effective enough to be accepted into standard practice. At the *practice* stage, an innovation is incorporated

into regular practice and maintained (Simpson, 2002). In line with Rogers' theory (2003), the important role of opinion leaders is emphasized throughout progression through the stages (Simpson & Flynn, 2007). At any point in this process, breakdown may occur and the innovation may be abandoned.

At each of these stages, different organizational factors predict whether or not the next stage will be reached. Initially, perceptions of the relevance of an innovation, how accessible and convenient the training is, and an offer of credentials may impact the decision to seek training (Simpson & Flynn, 2007). Organizational motivation, in terms of organizational needs and pressures, and individual therapist attitudes will also predict training attendance. At the *adoption* stage, three organizational factors are considered to be most important: institutional resources, staff attributes, and program climate (Simpson, 2009). Institutional resources refer to staffing, resources allocated for training and office, internet, and equipment availability. Important staff attributes include perception of opportunities for professional growth, confidence, staff perceptions of support, and staff adaptability or flexibility to accept change. Clarity of mission, organization cohesion, individual autonomy, adequacy of communication, perceived stress, and organizational openness to change all relate to organizational climate. Resources and staff attributes are likely to be most important when making a decision to adopt while staff attributes and climate are most important during the trial of the innovation. During the *implementation* stage, program climate is the most important organizational characteristic in predicting success. Simpson's research team developed a series of questionnaires that measure program training needs and organizational readiness for change (Simpson, 2009). These

measures were designed to be used for both research purposes and in actual dissemination attempts to provide feedback to organization leadership and staff.

The fact that Simpson's model incorporates much of the leading research and theory on diffusion and was developed within an addictions context has made it widely used in the substance abuse field. Simpson's organizational readiness to change (ORC) measure has been embraced by NIDA and SAMHSA's Addiction Technology Transfer Center (ATTC) as a useful way to examine the likelihood of technology transfer to particular agencies and promote change within agencies (Fornili, 2005). This has made the ORC a popular tool for researchers examining organizational factors. Simpson, Joe, and Rowan-Szal (2007) report that as of the date of publication, the ORC has been used in over 650 organizations and over 4,000 ORC surveys had been administered.

Simpson's Process of Change model (2002) has been used to examine characteristics that predict an agency's ability to adopt innovative treatments. In a qualitative study of change in the tobacco policy of a program that serves pregnant, substance-abusing women, the Process of Change model and indices from the ORC were examined in terms of likelihood of policy adoption (Jessup, 2007). Investigators found evidence for the agency's progression through the stages of change linearly, the importance of opinion leaders in influencing adoption, and the influence of the organization's clarity of mission and an open climate.

The indices of the ORC measure have also been used to examine predictors of policy adoption. Gotham, Claus, Selig, and Homer (2010) examined factors that were related to substance abuse and mental health agencies' change in capability to treat clients with comorbid conditions over a two-year period. Structural characteristics that

predicted increased capability included smaller size and being a single-service agency. In terms of ORC, programs with higher needs and pressures to change showed increased capability to provide services for comorbid clients. Staff attributes and organizational climate were actually negatively related to change in capability. The authors hypothesize that perhaps in those organizations that were more actively working towards change, perceptions of climate and staff attributes were more negative due to higher levels of stress and pressure. When the contribution of the ORC scores were examined at the study end point, the ORC significantly increased predictive power above and beyond capability two years earlier (Gotham, et al., 2010). Depending on the context of the diffusion attempt, organizational characteristics that are beneficial in some cases may be harmful to an adoption effort in other cases.

Measures of organizational readiness have been associated with client functioning. Higher scores on the ORC have been found to predict client engagement in treatment in terms of ratings of rapport, treatment satisfaction, and participation in treatment (Greener, et al., 2007). Specifically, perceptions of lower program needs, higher ratings of resources, more positive organizational climates, and higher ratings of personal influence were associated with better client engagement. This provides some evidence for clinical utility of the organizational factors measured by the ORC in terms of important client outcomes.

It has been suggested that funding sources take an organization's likelihood of adopting ESTs into practice into account when determining resource allocation. One research study examined ORC in terms of its ability to add to current need-based algorithms used to determine funding allocation to substance abuse treatment programs

(Minugh, Janke, Lomuto, & Galloway, 2007). These researchers found that when ORC was added into the algorithm along with estimates of treatment need and crime data, priority ranking for funding allocation shifted. They concluded that adding ORC enhanced the picture of a treatment center's need and their readiness to adopt ESTs, which would likely predict their ability to successfully use funding to enhance treatment services.

Simpson's model seems to be a useful framework for examining the diffusion process within substance abuse treatment centers. A 2008 review of measures of organizational readiness reports that the ORC is one of few measures for which there is evidence for reliability and construct, translation, and criterion-related validity (Weiner, Amick, & Lee, 2008). Simpson's Process of Change model and the ORC scale are useful ways to conceptualize and measure an organization's characteristics that relate to EST adoption.

Currently, efforts are underway to develop an empirically-supported, organization-level diffusion intervention that is based on Simpson's model of program change. The New England chapter of the ATTC has developed the Science to Service Laboratory (SSL), a model aimed at preparing community substance abuse treatment to adopt and implement ESTs (Squires, Gumbley, & Storti, 2008). The SSL is based upon seven principles: 1) a new intervention must be relevant to the organization's needs, 2) introduction of new interventions should be timed appropriately, 3) complexity of the innovation and diffusion process should be minimized, 4) change agents should be credible, 5) intervention efforts should operate at different levels, 6) adoption efforts should be reinforced until they become standard practice, and 7) communication should

occur between both change agents and potential adopters. In line with Rogers' (2003) recommendations, the SSL appoints outside consultants to serve as diffusion advisors and agency innovation champions. Ongoing support is provided throughout the diffusion process. Squires, Gumbley, and Storti (2008) conducted an evaluation of diffusion rates among programs that took part in the SSL model. Of agencies that completed all SSL components, 96 percent successfully adopted and implemented contingency management (CM) into routine practice. The SSL is currently undergoing a revision to provide more EST options to agencies and implement more intensive supervisory support that will include the provision of supervision and feedback (Squires, Gumbley, & Storti, 2008). This intervention seems to be a promising avenue for disseminating ESTs into community settings.

While focusing on organizational factors, Simpson's model (2002) also emphasizes the importance of factors related to training and individual therapist attitudes. Research has examined the impact of these factors on the diffusion of new treatments into practice.

Therapist Training

Training in psychosocial interventions may be an important way in which therapists are exposed to ESTs. However, Addis (2002) points to practical barriers, such as cost, that may make it difficult for community therapists to receive such training. Additionally, some research has shown that training has not been effective in changing therapist behavior (VandeCreek, Knapp, & Brace, 1990).

The results of research examining the effects of therapist training on skill acquisition and client outcomes have been mixed. Morgenstern, et al. (2001) found that

training community practitioners in CBT for substance abuse was mostly successful, with 90 percent of counselors attaining adequacy in the provision of the treatment as judged by independent raters. However, training methods were intensive and unlikely to be used in actual clinical settings.

In line with Rogers' (2003) hypothesis that characteristics of individual treatments are important in their diffusion, training effects have differed depending on the treatment being trained. Crits-Cristoph, et al. (1998) examined the utility of a training protocol that included the provision of treatment manuals, a two-day training seminar that included both didactic presentations and practice and four training cases in which the therapist was given supervision and specific feedback. The purpose of the study was to assess training outcomes in three different types of therapy for cocaine dependence: supportive-expressive dynamic therapy (SE), cognitive therapy (CT), and individual drug counseling (ID). Only in the CT training condition did researchers find that therapists were able to transfer learning from the training cases to new therapy cases. They also found significant variability in the performance of individual therapists (Crits-Cristoph, et al., 1998). These findings give credence to the idea that individual therapist factors and factors related to the treatment may influence the ability of the treatment to be adopted by therapists after training. Also, this was a relatively high level of training which included the provision of individualized feedback and supervision. Similar to conclusions made by Morgenstern, et al. (2001), these resources may not be available to clinicians attempting to use ESTs in community settings.

Researchers interested in MI have taken a particular interest in the provision of therapist training. Training could enhance therapist effectiveness in terms of client

outcomes through the improvement of therapist adherence and skillfulness. Miller and Mount (2001) examined therapist acquisition of skill in MI after a workshop training. Skillfulness was assessed in terms of self-report measures of skill, knowledge assessments, a recorded session with a standardized actor, and a recorded session with an actual client four months post-training. Results indicated that improvements were made in terms of self-reported skill, responses to knowledge assessments, and ratings of skill by independent judges post-training. However, self-reported skill and observed skill in terms of ratings by independent judges were not related. Also, there was no change in within-session client change talk from pre- to post-training. At the follow-up point, many skill indices tended to return to pre-training levels (Miller & Mount, 2001). When one-shot training is provided without the additional supervision and feedback that typically accompanies training in treatment outcome studies, there tends to be little change in meaningful clinician behavior.

Baer, et al. (2004) attempted to examine skill acquisition in addiction counselors, rather than parole officers as used in the Miller and Mount (2001) study, after a two-day workshop training in MI. They used a pen and paper knowledge test and recordings of sessions with standardized patients to assess skillfulness. According to independent ratings of skill, at the pre-training assessment point, two out of nineteen therapists were proficient in MI, based on defined standards in a proficiency rating system. At post-training, ten clinicians were proficient and at two months post-training, this number decreased to eight. Compared to the resources associated with attending training, therapist behavior seems to change little in response to a one-shot training. Also, it seems that acquired skill quickly deteriorates after training. In terms of observer ratings at two

months post-training, there was only one significant pre-training to follow-up difference as opposed to three significant skill differences immediately following the training. The researchers attempted to collect actual client sessions to examine client language outcomes but very few recordings were submitted (at follow-up, only ten out of 22 therapists turned in recorded sessions). This low follow-up rate could reflect a threat to the generalizability of skill from standardized patients to actual patients.

Due to these relatively dismal findings regarding training effects in MI, researchers began to examine training methods that predict better skill acquisition and maintenance post-training, as determined by independent observers. Similar to findings in the studies of CBT training described above, some evidence suggests that making training more intensive predicts better maintenance of MI skills. The purpose of Project EMMEE (Miller, et al., 2004) was to compare skill acquisition and maintenance in five training conditions: 1) a workshop-only condition, 2) a workshop plus feedback condition in which therapists received individualized feedback of their skill ratings, 3) a workshop plus coaching condition in which therapists received up to six individual coaching calls with an MI expert, 4) a workshop plus feedback and coaching condition, and 5) a wait-list control. Immediately post-training, there was a significant difference between the wait-list group and the remaining four groups who received training. Those in the workshop-only condition showed significant gains in skill immediately after training but evidenced significant skill decline at four months post-training. Participants that received feedback, coaching, or both were more likely to meet proficiency standards at four and eight months post-training. However, only the group with both training enhancements actually showed differences in client speech during post-training sessions (Miller, et al.,

2004). These training enhancements seem to facilitate the adoption and implementation of an EST in terms of better treatment fidelity. Also, the more intensive the training, the more likely one is to see changes in client outcomes.

Since Project EMMEE, several studies have examined training enhancements and their influence in different populations of treatment providers. Moyers, et al. (2008) examined the effect of intensive training on MI skill acquisition in a sample of less educated, experienced, and motivated behavioral health providers in the United States Air Force. They found that while significant increases in skill post-training did occur, this increase was of lower magnitude than that seen in Project EMMEE participants, a group with initially more MI skill and motivation (Miller, et al., 2004). Skill tended to decline four months post-training and individualized feedback and coaching calls did not seem to lessen this decline. However, participants completed relatively few coaching calls. Also, participants in both the workshop-only and enhanced conditions evidenced low follow-up rates at eight and 12 months post-training. Surprisingly, once the wait-list control received training, they outperformed the workshop only and enriched training conditions in terms of competence. The authors hypothesize that being forced to wait for the training may have enhanced their motivation to engage in the training (Moyers, et al., 2008). Similarly, a recent study by Mitcheson, Bhavsar, and McCambridge (2009) found that when participants used fewer offered supervision sessions, they improved less. Motivation may be a factor in the diffusion process in that individuals with low motivation to change current practice, or individuals within organizational contexts characterized by low motivation to change, may be less likely to engage in training and adopt a treatment with appropriate fidelity. Compliance with training enhancements may

be an indicator of this motivation. Also, compliance in terms of submission of follow-up recordings may also be an indicator of lower motivation. Organizational factors and individual attitudes may affect therapist attrition rates which could impair the generalizability of findings.

Other types of training enhancement strategies have been developed in an attempt to facilitate therapist skill maintenance over time. Bennett, et al. (2007) examined the effects of a work-place intervention designed to maintain skills learned in a workshop MI training. Participants in the THEME intervention (Twelve Hours to Enhance Motivational Effectiveness) were sent an informational worksheet each week with which they were to listen to an audio recording of one of their own sessions and monitor a specific aspect of their MI practice. Participants were then asked to submit the session to a research assistant for coding. Participants received individualized feedback on submitted sessions and were offered three 30-minute coaching phone calls. They also participated in a six-hour MI booster training. Rates of submitted sessions, coaching call attendance, and worksheet completion were very low. Researchers did find that participants in the intervention group were more likely to improve in MI spirit after the training and become more competent in MI than those in the control group. However, at the assessment following the intervention, no therapists were deemed competent in MI based on proficiency standards (Bennett, et al., 2007). It is difficult to make conclusions regarding the efficacy of an intervention when adherence rates were so low. Therapist compliance in training and training enhancements are likely to influence skill maintenance. According to these findings, it also seems as though self-teaching is more

likely to result in lower compliance. More systemic organizational policies that enhance accountability regarding training might be necessary to impact therapist behavior.

As discussed previously, individual and organizational factors likely influence therapist engagement in training and subsequent skill acquisition and maintenance. Changing the organizational context within which the newly trained therapist returns may facilitate maintenance of skill over time. Baer, et al. (2009) examined a training method aimed at enhancing dissemination of MI into an organizational context. The researchers compared a typical two-day workshop training in MI to a context-tailored training (CTT) method. The CTT method took place at the work-setting using a team-based approach. Simulated patients (SPs) were used to practice and evaluate competence and training took place more frequently, and at shorter intervals. Personalized feedback was given often. Also, in line with recommendations from many models of diffusion, the research team identified “MI champions” at each site that would work to maintain interest and training in MI. The focus of this approach was to base skill building around more practical and relevant clinical concerns. In terms of clinician skillfulness post-training, Baer and colleagues (2009) found few differences between groups at the three month follow-up point. Because the CTT model was so much more expensive to implement, the authors concluded that the standard training method was the most cost-effective treatment.

When conditions were collapsed, certain organizational factors were related to skill acquisition (Baer, et al., 2009). Organizational climate was conceptualized as variation on ORC indices between agencies and an agency mean was determined by averaging scores across counselors. Therapists in agencies that scored higher on indices of staff autonomy and efficacy actually showed less retention of skill three months post-

training. In agencies that were more open to change, therapists retained more skill at the three month follow-up time point. It seems that more oversight of clinicians is a necessary factor in predicting skill maintenance. Baer, et al. (2009) also found that in agencies where “MI champions” carried out more support activities, skill levels were higher at three months post-training. They also found that agencies that were more open to change used more support activities, which predicted greater levels of therapist skill at the follow-up. While the full CTT model might not be cost-effective in terms of enhancing skill acquisition and maintenance, certain practices such as increased staff oversight and the provision of more support activities may enhance the diffusion process. It is important to note that these findings fit within Simpson’s process of change model. At the stages where therapists are beginning to implement MI, organizational climate characteristics were found to be most important in predicting treatment fidelity.

It is clear that researchers are still working to identify the factors that influence successful training and therapist implementation of ESTs. A comprehensive model of therapist training in EBP may help identify those practices that facilitate skill acquisition and maintenance. Beidas and Kendall (2010) propose that training be conducted from a systems-contextual perspective in which therapist, organization, training, and client outcome variables are all taken into account. In an extensive review of the training literature, the authors conclude that therapist knowledge and self-report of behavior often change after training. However, most often, therapists do not reach proficiency in terms of adherence or competence after training and client outcomes are not influenced. When therapists do reach levels of proficiency, it is likely that skill will deteriorate as time from training increases. When all levels of the systems-contextual approach are examined, it is

more likely that therapists will reach proficiency after training and then changes in client outcomes will be observed. In terms of strategies used in training, Beidas and Kendall (2010) recommend research that examines both organizational factors and therapist attitudes, as these two factors have been understudied within the training literature. Simpson's model of program change seems to fit within the systems-contextual model in terms of its focus on these different levels of analysis within an organizational context.

Along with organizational factors and characteristics of the training, therapist attitudes are likely to play a role in the decision to seek training and to adopt and maintain use of an EST.

Therapist Attitudes about EBP

While it is important to remember that clinicians work within a larger context, individual therapist attitudes are still likely to play a role in adoption of ESTs. According to Simpson (2002), within an organization, certain individuals' perceptions may be more influential in affecting diffusion and collectively, these perceptions among staff members are likely to affect organizational climate. An examination of therapist attitudes about the adoption of EBP and the relationship between attitudes and organizational characteristics may allow for better prediction of actual use of EBP.

Aarons (2004) developed the evidence-based practice attitude scale (EBPAS) to examine the individual attitudes of front-line clinicians, who most likely practice within organizational systems, with the goal of making dissemination efforts more successful. Therapists' perception of the appeal of the innovation, the degree to which they are likely to follow organizational requirements to use a specified innovation, their degree of openness to change, and their perception of a divergence between the proposed

innovation and current practice are likely to affect the implementation of new ESTs. Several exploratory and confirmatory factor analyses have found support for this four-factor structure among samples of community mental health providers (Aarons, 2004; Aarons, McDonald, Sheehan, & Walrath-Greene, 2007).

Aarons (2004) explains that these individual attitudes will likely interact with organizational factors and other therapist characteristics, such as education and experience. Little evidence has been found to suggest differences in attitudes about EBP across mental health specialties (Aarons, 2004), though a recent study found more favorable attitudes about EBP among practitioners of early interventions for autistic children (Stahmer & Aarons, 2009). However, relationships have been found between other professional characteristics and attitudes. In an initial examination of validity of the EBPAS, Aarons (2004) found that intern status was associated with greater appeal of EBP, more general openness to innovation, less divergence from regular practice, and more positive attitudes about EBP in general. Higher levels of education were also related to higher ratings of appeal. Organization type was related to scores on the subscales of the EBPAS. Practitioners in case management organizations tended to have lower scores on appeal while those in wraparound programs had higher openness scores and more positive attitudes of EBP. Those in day-programs were likely to report less resistance to implementing EBP if required to do so by their organization. A higher level of organizational bureaucracy was associated with lower openness, more resistance to requirements to adopt EBP, and more negative views of EBP in general. Clinicians in programs with written practice policies were more likely to score higher in appeal, openness, and general views of EBP (Aarons, 2004). Certain agency structural factors,

type of program and level of bureaucracy, and individual factors such as education level and intern status are likely to influence individual therapist attitudes about EBP.

Organizational culture and climate may also be associated with individual provider attitudes about EBP. Aarons and Sawitzky (2006) used hierarchical linear modeling to explore the relationship between individual practitioner demographics and professional characteristics, organizational culture and climate, and attitudes about EBP. They found that a more constructive organizational culture in terms of norms associated with achievement and motivation, supportiveness, and individualism were associated with higher ratings of appeal and a more positive view of EBP in general. Clinicians in organizational climates that were associated with more burnout, depersonalization, and conflict tended to perceive more divergence between EBP and routine practice (Aarons & Sawitzky, 2006). Altering organizational culture and climate may influence therapist attitudes which could lead to improved diffusion efforts.

The relationship between organizational readiness to adopt an innovation, in terms of scores on the ORC scale, and therapist attitudes about EBP could allow an examination of how attitudes could be influential within Simpson's (2002) process of change model. Saldana, Chapman, Henggeler, and Rowland (2007) examined this relationship in a sample of substance abuse practitioners that were in the process of adopting CM. Upon examination of the pattern of results, they found that the ORC scores tended to operate mainly at the agency level, meaning that therapists from the same agency tended to respond similarly to the ORC scale. Therapist attitudes about EBP and the use of treatment manuals, however, tended to operate at the individual level, meaning individual therapist scores on the ORC indices better predicted their attitudes than the

combined agency ORC scores. The authors concluded that during diffusion efforts, it is important to keep individual therapist attitudes in mind rather than focus on agency-level measures of attitudes. When examining the associations between the ORC indices and practitioner attitudes, Saldana, et al. (2007) found that higher ratings of motivational readiness and more training exposure on the ORC were associated with higher ratings of appeal, openness, and more favorable perceptions of treatment manuals. Therapists with more positive attitudes about EBP were more likely to report readiness to adopt EBP in practice. However, associations between therapist attitudes and ORC indices related to resources, staff attributes, and organizational climate were less straightforward in this sample. These factors may be more important in terms of implementation of an EST, rather than initial adoption (Saldana, et al, 2007). A more meaningful approach might be to examine the influence of attitudes and organizational factors at different stages of diffusion.

The goal of training is to enhance the therapists' skill and adherence to a treatment in order to lead to better client outcomes. Attitudes about EBP may influence both the decision to seek training and skill acquisition and maintenance. However, the relationship between treatment fidelity and client outcomes is murky at best.

Therapist Fidelity in the Delivery of ESTs

Initially, treatment research focused on identifying psychosocial treatments that showed evidence of efficacy in a laboratory setting. As the research focus shifted from studies of efficacy to the effectiveness of interventions, or how these interventions work outside of the research laboratory and in more realistic treatment settings, treatment integrity became a major concern. Treatment integrity refers to whether the treatment was

delivered both adequately and as it was intended (Barber, Foltz, Crits-Cristoph, & Chittams, 2004). Both therapists' adherence to a treatment and their competence in treatment delivery are important for the preservation of treatment integrity. Adherence refers to the use of techniques that define the treatment and the non-use of techniques that define other treatments. Competence refers to therapists' skillfulness in delivering the treatment (Waltz, Addis, Koerner, & Jacobson, 1993). According to Moncher and Prinz (1991), treatment integrity is best upheld by using treatment manuals, developing guidelines in selecting and training therapists, and monitoring therapist adherence and competence. Waltz, et al. (1993) recommended that an appropriate adherence check that monitors the discriminability of the treatment would include an assessment of: 1) therapist behaviors deemed necessary and unique to the specific treatment, 2) therapist behaviors that are necessary but not unique to the specific treatment, 3) therapist behaviors that are allowed within the treatment but are not necessary nor unique to the specific treatment, and 4) therapist behaviors that should not be used within the specific treatment. If these factors are not assessed, there is no guarantee that the intervention is actually being delivered as intended and that the intervention is directly influencing the outcomes observed. Both Project MATCH and the NIDA Collaborative Cocaine Treatment Study, two large, randomized-controlled trials examining treatment efficacy, used these criteria set forth by Waltz, et al. (1993) in order to examine internal validity in terms of treatment integrity and discriminability of treatments (Carroll, et al., 1998; Barber, et al., 2004).

Modes of assessing treatment integrity have varied from therapist-report and reports from the therapist's supervisor to ratings by objective judges. However, in an

analysis of treatment integrity of RCTs across treatment modalities, Perepletchikova, Treat, and Kazdin (2007) found that integrity was addressed adequately in less than four percent of the literature reviewed. In order to determine the role of therapist competence and adherence in predicting treatment outcome, it is important that researchers adequately assess measures of treatment integrity in their research. The monitoring of treatment adherence has also become an important issue in dissemination research.

In line with further recommendations from Waltz, et al. (1993), many studies define competence and adherence as specifically related to the treatment being examined through specialized rating systems and the use of independent, extensively trained raters to assess treatment integrity. Within the MI literature, the most widely used tools for assessing MI integrity are the Motivational Interviewing Skill Code (MISC) and the Motivational Interviewing Treatment Integrity scale (MITI). The MISC was developed to evaluate clinician competence in delivering MI and the relationships between therapist and client behavior within a therapy session (Miller, Moyers, Ernst, & Amrhein, 2003). Coding with this system includes global ratings of therapist empathy, acceptance, evocation, collaboration, and autonomy-support and client self-exploration. Behavior counts of certain therapist and client behaviors are conducted. The MITI is a less complex coding system that also uses global ratings and behavior counts and has been used to determine therapist competence in delivery of MI (Moyers, et al., 2005). These coding systems allow independent, expert raters to provide proficiency and competency ratings of therapists with less bias than those from the therapists themselves or their supervisors.

As would be expected, a number of studies have found that competence in delivery of a treatment predicts better outcomes. In MI, therapist competence has reliably predicted client substance abuse outcomes in the literature (Gaume, Gmel, Faouzi, & Daepfen, 2009; Moyers, et al., 2007; Moyers & Martin, 2006; Moyers, Miller, & Hendrickson, 2005). Shaw, et al. (1999) found limited support for their hypothesis that therapist competence in CBT for depression would predict better clinical outcomes. Therapist competence, particularly a scale measuring the ability of the therapist to provide structure for the session, accounted for a significant amount of the variance in outcome. However, this relationship was only true for outcome as measured by independent evaluator ratings of depressive symptoms and not for self-report measures of symptoms.

However, more in-depth investigations of adherence and competence and their relationship with treatment process and outcomes have turned out to be relatively complex. While some studies have found that adherence to a treatment predicts better outcomes (Huey, Henggeler, Brondino, & Pickrel, 2000; DeRubeis & Feeley, 1990; Feeley, DeRubeis, & Gelfand, 1999), other researchers have found that overly strict adherence may actually lead to worse outcomes through a negative effect on the therapeutic relationship (Castonguay, et al., 1996; Huppert, et al., 2006). Investigations of the temporal relationship between treatment integrity measures and outcome have found that a bidirectional relationship between adherence, competence, and outcomes may occur (Barber, Crits-Cristoph, & Luborsky, 1996; Loeb, et al., 2005). It may be that a feedback loop operates throughout treatment during which therapist adherence and client outcomes influence each other over the course of therapy. Some studies have found that

the relationship between treatment integrity and outcomes is non-linear when the therapeutic alliance is taken into account (Barber, et al., 2006; Hogue, et al., 2008). In weaker therapy relationships, intermediate levels of adherence predicted the best outcomes, while in stronger relationships, therapist adherence did not affect outcomes.

A recent meta-analysis examined the relationships between adherence and outcome and competence and outcome across treatment modalities in an attempt to clarify the mixed findings. Webb, DeRubeis, and Barber (2010) found that neither competence nor adherence was related to patient outcomes. Aggregated effect sizes were almost zero for both adherence and competence. However, the authors report that there was significant heterogeneity in effect sizes across studies which could be due to differences in study methodologies and target problems. The authors also point to the unreliability of measures used to assess adherence and competence as potential confounders. Some studies only assessed these variables at one or very few therapy sessions, which may not give an accurate picture of actual therapist behavior over the course of treatment. These methodological issues could be obscuring the actual effects of adherence and competence on outcomes.

In transporting efficacious treatments from the laboratory to the community, mixed findings have been reported with regard to outcomes. Some treatment effectiveness studies have found similar outcomes to more controlled efficacy studies (Franklin, Abramowitz, Kozak, Levitt & Foa, 2000; Persons, Bostrom, & Bertagnolli, 1999), while others have found smaller effects (Henggeler, et al, 1997; Henggeler, Pickrel & Brondino, 1999). McHugh, Murray, and Barlow (2009) conclude that while the link between adherence and competence in efficacy studies is unclear, the link seems to

be stronger within studies examining the dissemination of specific treatments to community settings. For example, dissemination efforts for Multisystemic Therapy (MST) have found that higher therapist adherence is important in achieving desired long-term outcomes in adolescent drug use and problematic behavior (Henggeler, et al., 1997; Schoenwald, Carter, Chapman, & Sheidow, 2008). The innovators of MST have identified therapist adherence as a potential mechanism through which MST leads to significant family and adolescent outcomes (Huey, et al., 2000). A link has also been found between therapist adherence and competence and client outcomes in effectiveness studies of motivational enhancement therapy (MET) (Martino, et al., 2008). While the relationship between fidelity and outcomes is complex, therapist adherence and competence are important in the dissemination of ESTs into practice settings.

Therapist Fidelity in Dissemination Efforts

While treatment integrity procedures are commonplace in treatment outcome research, they are not used as frequently or as intensively in clinical settings. McHugh, Murray, and Barlow (2009) point out that resources within community treatment programs are limited and efforts to provide integrity monitoring and supervision can be very expensive. When community programs attempt to monitor fidelity themselves, without the assistance of independent observers, biases may prevent accurate measurements of fidelity. In a study examining the correlation between the adherence ratings of community therapists, in-house program supervisors, and outside observers, they found that while agreement of the occurrence of certain basic MET strategies within a session was relatively high, agreement on the use of more advanced MET strategies, the extent of their use, and the competence with which they were delivered was low.

Therapists and supervisors tended to rate therapists as being more adherent and competent in their delivery of MET than the expert observers. Using therapists or in-house supervisors to monitor fidelity may not be the most appropriate way to measure treatment integrity.

MST has been widely regarded as a success story within the field of dissemination research. Dissemination studies have found successful long-term outcomes (Henggeler, et al., 1992; Henggeler, et al., 1993) and that MST is more cost-effective when compared to typical interventions for seriously at-risk youth (Henggeler et al., 1992; Schoenwald et al., 1998). Henggeler, Schoenwald, and Pickrel (1995) attribute the success of their efforts to the theoretical underpinnings and empirical base of MST and their thorough implementation strategies.

In MST, treatment integrity is taken seriously and specific protocols are utilized to review and maintain therapist adherence. These protocols include an extensive orientation in which therapists, supervisors, and administrators become acquainted with the MST model, weekly on-site supervision by an in-house supervisor who has been trained in MST and is adherent to a supervision protocol, and the adoption of an outside MST consultant who assists in procedures related to treatment integrity and booster training (Henggeler, 1999). Supervisor adherence to the specified supervision protocol, particularly a supervisor's focus on adherence to the principles of MST, has been found to be related to therapist adherence of MST with clients (Schoenwald, Sheidow, & Chapman, 2009).

Many of the practices used to disseminate MST to the service sector have utilized recommendations from diffusion of innovation theorists. For example, the use of an

outside MST consultant, the fact that client outcomes are monitored extensively, and the adaptability of MST are in line with the recommendations for successful adoption and diffusion laid out by Backer, Liberman, and Kuehnel (1986). In line with Rogers' (2003) theory of diffusion, Brown, et al. (1997) laid out specific arguments for the relative advantage of MST over other adolescent treatments. Efforts aimed at enhancing adoption of MST use extensive supervision and training protocols in order to decrease the perceived complexity of the program. In addition, the adaptability of MST may enhance the routinization of MST into regular practice.

Treatment integrity has been found to be an important predictor of client outcomes in MST and the methods used to ensure therapist fidelity have been standardized into regular MST practice. Henggeler and colleagues (2008) examined whether the application of similar fidelity procedures to CM might promote therapist adherence and implementation. Two conditions were examined: a CM workshop-only condition and an intensive quality assurance (IQA) condition that was modeled after MST fidelity monitoring procedures. According to youth-report, therapists in the IQA condition were more adherent to CM cognitive behavioral techniques. The use of these techniques consistently increased from baseline to the four month follow-up period. CM monitoring techniques, however, remained stable for both groups. The authors contribute this to a possible ceiling effect as monitoring techniques had been used frequently in standard practice. This study provides evidence for the idea that intensive fidelity management techniques could prove useful in promoting implementation of an EST in a community setting.

Due to the high value placed on treatment integrity, researchers have examined factors that predict adherence to MST. According to Schoenwald and Hoagwood (2001), it is important to pay attention to factors related to the individual client, the therapist, the organization, purchaser, and policymaker in terms of treatment adherence. Fidelity must be considered within a social context, or important dimensions may be missed and dissemination efforts will suffer.

As discussed previously, both individual and organizational factors are theorized to be related to innovation adoption and implementation in important ways. Therapist fidelity could be a mediator in this relationship. Perhaps treatment competence and adherence is more likely in organizations and individuals with certain characteristics which then promotes successful adoption and implementation of ESTs.

Schoenwald, Carter, Chapman, and Sheidow (2008) examined the influence of organizational characteristics on therapist adherence to MST and client outcomes. They found that greater therapist adherence, less hierarchy of authority, and greater therapist perception of decision-making power within an organization predicted favorable adolescent outcomes in terms of reductions in behavioral problems. They also found that the relationship between therapist perception of growth and advancement within an organization and client outcomes was moderated by adherence. When therapists were highly adherent, there was no relationship between perception of growth and advancement and outcomes. When there was a low level of therapist adherence, higher perceptions of growth and advancement predicted worse outcomes. There was no evidence of mediation of organizational factors through adherence on client outcomes. The authors raised the question of whether mental health agencies differ substantially

from child welfare and juvenile justice agencies in the ways that organizational factors influence therapist adherence and client outcomes.

It may also be that a mediational relationship is more apparent at long-term follow-up. Schoenwald, et al. (2009) examined the relationship between organizational climate and culture, therapist adherence, and client outcomes four years post-treatment. They found that therapist adherence significantly predicted client outcomes four years after treatment. When adherence was held constant, therapist job satisfaction, perception of growth and advancement opportunity, and therapist perception of participation in organization decision making, predicted outcome. Using random effects regressions models, the authors found that when both adherence and the three organizational factors were modeled together, only perceptions of growth and advancement remained significantly related to client outcomes. Adherence seems to be a very important factor in the successful dissemination of MST, but the jury is still out on how organizational culture and climate impacts therapist adherence.

Individual therapist variables have also been examined in terms of treatment fidelity. Schoenwald, Letourneau, and Halliday-Boykins (2005) found that, surprisingly, therapist education and experience generally and in MST did not predict adherence. The researchers suggested that this reflects the extensive training and supervision process that MST therapists undergo. Also, in contrast with Rogers (2003), therapist perception of compatibility, complexity, and relative advantage of MST did not predict adherence. The authors hypothesize that this is due to the fact that all therapists agreed to work in an MST program and thus a ceiling effect may be operating.

The importance of treatment fidelity in the dissemination of MST has been well-demonstrated. The innovators of MST have developed thorough integrity monitoring procedures that have been effective in community settings. It stands to reason that these dissemination procedures would be helpful in the dissemination of other ESTs to community settings. It is likely that the organizational and therapist variables examined in MST research would also be important for other forms of treatment.

A series of studies by Henggeler and colleagues (2007, 2008) examined the role of both organizational and therapist variables in the diffusion process of CM in community settings. In an initial study, Henggeler, et al. (2007) examined the factors that predicted workshop attendance. They found that both overall support for the training among agency leadership and therapist training attendance were relatively high. Individual therapist attitudes about EBP and characteristics did not predict training attendance. However, therapists from organizations with higher motivation were more likely to attend the training. The fact that training attendance was predicted by program motivation fits with Simpson's (2002) process of change model. However, in contrast with Simpson's model, better climate and fewer resources also predicted training attendance. Climate and institutional resources are theorized to play a more important role in the adoption stage of the process of change model. Henggeler, et al. (2007) hypothesize that in terms of resources, organizations with lower resources but higher motivation to change might be more likely to attend a training in this context because costs were covered for study participants. Organizational climate may not only be important during the implementation stage, it may also be an important factor in deciding to seek training.

Henggeler and colleagues later examined factors that predicted treatment adoption and implementation in this sample of therapists that had been trained in CM. Henggeler, et al. (2008) conceptualized adoption as the number of therapists who reported using CM in practice and implementation as therapist fidelity in their delivery of CM over the course of six months of follow-up. They found that 58 percent of their sample adopted CM if they had a substance abuse client, and the rate of adoption increased steadily over the six month follow-up period. They also found that mental health professionals were more likely to adopt than substance abuse therapists. The researchers hypothesized that perhaps substance abuse therapists are knowledgeable in more treatment options for substance abusing clients. In terms of therapist variables, higher education level, amount of experience, more positive attitudes towards behavior therapy and manuals, and a higher score on the requirements subscale of the EBPAS predicted higher rates of adoption of CM. Organizational factors did not predict CM adoption.

Fidelity was measured for both the cognitive-behavioral and monitoring aspects of CM. With respect to the CM cognitive-behavioral techniques, greater fidelity was seen in younger therapists and those with a certification in addictions counseling, larger caseloads, and a larger number of adolescent clients. Higher fidelity to these techniques were also seen in therapists who did not view manuals as having a dehumanizing impact on treatment. For the CM monitoring techniques, younger, male therapists and those with a certification in addictions counseling and degrees in social work were more likely to be adherent. In terms of organizational characteristics as measured by the ORC, higher organizational readiness to change was related to higher fidelity in the cognitive-

behavioral components of CM while greater training exposure and utilization was related to better fidelity in the monitoring components (Henggeler, et al., 2008). Some support was found for Simpson's (2002) model in that organizational readiness was found to be important in moving from the adoption to the implementation phase. However, support was not found for the idea that organizational resources, attributes, and climate would be most important in predicting adoption while climate would be most important at the implementation phase.

Several conclusions could be drawn from these findings. Perhaps the process of diffusion within an organization is different depending upon treatment and therapist attributes. Because of the high level of complexity of the system in which dissemination occurs, it is likely that the diffusion process will differ somewhat depending upon characteristics of the organization, the therapists that work within that organization, the client population, and the type of EST that is being disseminated. However, while the process will likely have to be adapted somewhat for each individual context, much like the notion that therapists competently using ESTs will take into account individual client differences, a theoretical approach to treatment diffusion is a worthwhile goal. Another explanation is that Simpson's model in its current form may not be accurate in terms of the components that are important during each stage of diffusion. Simpson's model is relatively new, so further research could elucidate these relationships.

Putting it all Together: What We Know about Dissemination Efforts

According to a systems-contextual perspective and the results of successful dissemination efforts, it is important to pay attention to the context in which a therapist provides services when considering ways to enhance dissemination. Factors related to the

organization, the individual therapist within that organization, the client population being served, the proposed treatment, and the diffusion process itself, including training and treatment integrity concerns, are all important to explore. Better understanding of a therapist's context will allow one to intervene in these contexts and adapt them to facilitate diffusion efforts. Simpson's (2002) process of change model provides a useful framework of diffusion innovation within which to examine these important contextual factors. Research has found that therapist competence in MI is related to client outcomes (Gaume, Gmel, Faouzi, & Daeppen, 2009; Moyers, et al., 2007; Moyers & Martin, 2006; Moyers, Miller, & Hendrickson, 2005). It is important to determine which organizational and individual therapist factors best facilitate the adoption and implementation of MI in practice. Miller, Sorensen, Selzer, and Brigham (2006) recommend that research be conducted that examines which factors predict skill maintenance after training. Many studies have pointed to problems with high rates of therapist attrition in training studies, especially over longer-term follow-ups (Baer, et al., 2004; Moyers, et al., 2008; Bennett, et al., 2007). High attrition may limit the generalizability of research findings and impede the ability to examine long-term skill maintenance. It is possible that individual attitudes and organizational factors also affect therapist attrition in dissemination studies. Knowledge of factors related to attrition will allow researchers to find ways to enhance retention strategies.

Study Aims

The purpose of the current study is to examine factors related to the dissemination of MI in a large, national sample of front-line substance abuse counselors. Specifically, therapists' perceptions of organizational factors related to readiness to implement new

treatments and attitudes about EBP will be used to predict the adoption of MI. Therapist attitudes and organizational factors will also be used to predict therapist attrition at three months post-training.

According to Simpson's (2002) model of transferring research-based interventions to practice, adoption of an intervention represents a decision by the clinician or administrators in the organization to attempt the use of a new intervention. In the current study, the adoption phase could be conceptualized as the post-training and three-month follow-up time points as therapists have gone through training and training enhancements such as consult calls and detailed feedback and are attempting to use MI skills first with actors and then at three-months with actual clients. Adoption will be operationalized as a therapists' competence in the delivery of MI. Therapist skill will be conceptualized as global score ratings and several summary scores that are commonly used to determine therapist competence in MI. These include the frequency of MI-inconsistent behavior, the percentage of MI-consistent behaviors, and the reflection-to-question ratio. The global ratings that will be examined include therapist empathy, acceptance, and MI-spirit, an average of the global ratings of evocation, collaboration, and autonomy-support.

It is hypothesized that more positive attitudes about EBP will predict enhanced MI skill improvement from baseline to three-months post-training. Specifically, the total score on the EBPAS will predict skill gain from baseline to the three-month follow-up time point.

Simpson (2002) and Simpson and Flynn (2007) predict that different organizational characteristics will impact adoption, implementation, and maintenance

rates of a new treatment. Following the process of change model, it is hypothesized that at the adoption time period, or immediately post-training and three-month post-training, resources, staff attributes, and program climate will be more important in predicting skillfulness in MI.

Exploratory analyses will also be used to examine demographic and professional background and training variables and how they predict competence in MI and skill maintenance across the follow-up time points.

As the factor-structure of the EBPAS has not been examined in terms of a large population of geographically diverse substance abuse counselors, a factor analysis of the theoretically developed subscales seems in order. While a confirmatory factor analysis of the scale with community mental health providers across 17 states confirmed the original four factor structure of the EBPAS (Aarons, et al., 2007), substance abuse counselors may be a fundamentally different population in terms of training requirements and education level (Kerwin, Walker-Smith, & Kirby, 2006). Therefore, confirmatory factor analysis will be used to confirm the four-factor structure originally proposed by Aarons (2004) in our sample.

Method

This study is part of a larger randomized clinical trial examining different methods in training front-line substance abuse counselors in Motivational Interviewing (MI).

Participants

Participants include 190 licensed substance-abuse counselors who sought training for MI. Participants were recruited and trained in two different waves. Wave 1 consisted

of 100 eligible substance abuse counselors whom were trained in November 2008 and Wave 2 included 90 counselors who were trained in November 2009.

Participants were recruited nationally through NIDA clinical trials network (CTN) treatment centers, advertisements in journals, announcements through substance-abuse professional organizations, google advertisements, a posting to the University of New Mexico's Center on Alcoholism, Substance Abuse, and Addictions' (CASAA) web-site, postings to MI-based listserv groups, and distribution of flyers. A total of 1,652 individuals expressed interest in participating in Project ELICIT.

Interested potential participants filled out an online survey to assess eligibility. Eligible professions included counselors, social workers, psychologists, physicians, physicians' assistants, nurses, and therapists with specialized addictions certifications. Participants were required to report that they treat primarily substance abuse patients and treat at least 10 clients per week. In order to be eligible for inclusion, at the time of recruitment, participants must have worked for a publicly-funded or not-for-profit agency which included hospitals, schools, or veterans affairs (VA) medical center settings. Participants had to live and practice within the United States and be willing to travel to Albuquerque, NM to attend a two-day training in MI with grant support. Participants also had to indicate that they would be willing to submit audio-recorded sessions immediately post-training, and at 3-, 6-, and 12-months post-training. A total of 642 individuals met eligibility requirements and were invited to send a baseline work sample and study documentation.

In order to be enrolled in the study, eligible potential participants were asked to submit a copy of their license, a signed consent form, an anonymous client consent to be

audio-recorded, and a 40-minute audio-recording of themselves doing therapy with a substance abuse client. Once we received an audible, 40-minute session with an adult substance abuse client, along with the required paperwork, participants were enrolled in the study. Across both study waves, 198 eligible participants returned an audible baseline session and study documentation.

Once participants were enrolled, their air-travel to Albuquerque, NM was paid for through a travel agent and their hotel room was reserved. Eight enrolled participants were unable to attend the training. All participants received free air-travel and lodging, training in MI and training materials, and breakfast and lunch during the two days of training. At the end of the training, all participants were given a copy of Miller and Rollnick's (2002) Motivational Interviewing, Second Edition: Preparing People for Change, training DVDs, and a Project ELICIT tote bag in which there was a candy bar, a study magnet, and a digital recorder for which to record their follow-up sessions. Participants were also given the option of receiving continuing education units (CEUs) for attending the training. For each of the three post-training follow-up time points, participants were given financial incentives for turning in digital recordings. Participants received \$75 for each digital recording they submitted and a \$25 bonus if they submitted their recording and paperwork by the indicated time period deadline.

Measures and Apparatus

Self-Report Measures. Participants completed a series of questionnaires in the months post-enrollment (before the training) and returned these via postage-paid envelopes.

The Organizational Readiness for Change- Treatment Staff Version (TCU ORC-S; Lehman et al., 2002) was used to examine participants' perception of organizational attributes that may be related to the adoption and implementation of new treatment models. The scale is based upon Simpson's (2002) model for transferring research into practice. The ORC-S consists of 17 clinician and treatment center demographic questions and 129 self-report items on a five-point scale which fall into five sub-scales. The motivation for change subscale includes items which assess program needs, training needs, and pressures for change. The resources scale assesses the adequacy of organizational resources including offices, staffing, training, equipment, and internet availability. The staff attributes scale includes items which assess for growth potential, efficacy, influence, and adaptability). The organizational climate sub-scale assesses organization mission, cohesion, autonomy, communication, stress, and ideas about change. Lastly, the training exposure and utilization scale assesses training opportunity satisfaction, training exposure, and training utilization at both the individual and program levels. The ORC-S has been widely used within the substance abuse field to examine the readiness to adopt and implement new treatments within community treatment centers. Lehman et al. (2002) used principal component analysis to confirm the factor structure of the scales and found adequate internal consistency and predictive validity in terms of both client and organization outcomes (Simpson & Flynn, 2007). Saladana, et al. (2007) also found support for the convergent and concurrent validity of the motivational readiness and training needs scales of the ORC-S in relation to therapist attitudes about ESTs and treatment manuals.

Therapist attitudes about EBP were assessed using Aaron's (2004) Evidence-Based Practice Attitudes Scale (EBPAS). The scale is made up of 15 items answered on a five-point scale. The scale includes four subscales that measure the intuitive appeal of EBP, attitudes about organizational requirements to use ESTs, openness to innovation, and perceived divergence between treatment as usual and new ESTs. Confirmatory factor analyses completed with a large California sample of community mental health providers and a sample of providers from 17 states supports the four-scale factor structure and adequate internal consistency of the four scales and the total score (Aarons, 2004; et al., 2007). Scores have been associated with practitioner demographics, organization characteristics, and new treatment implementation in meaningful ways (Aarons, 2004, 2005; Saldana, et al., 2007; Stahmer & Aarons, 2009).

Important therapist demographics such as sex, ethnicity, and race were assessed using a demographic instrument designed for this study. Theoretical orientation, certifications held, recovery status, previous exposure to MI, and practice characteristics were assessed using the Background and Training Questionnaire, also designed for Project ELICIT.

MI Competence Measures. In order to assess changes in MI skillfulness, participants submitted a baseline audio-recording of a therapy session with a substance abuse client, completed a recorded role-play with a standardized patient at the end of the second day of training, and were asked to submit digital recordings of themselves with actual substance use clients using their MI skills at three-, six-, and 12-months post-training.

All sessions were coded using the CASAA Application for Coding Therapy Interactions (CACTI) software for the Motivational Interviewing Skills Code (MISC) Version 2.5. The MISC is a behavioral coding system in which therapist and client verbal behavior is evaluated during therapy sessions. Two passes are made of each session. During the first pass, the session is parsed into distinct utterances and global ratings of therapist empathy, evocation, autonomy-support, collaboration, and acceptance and client self-exploration are made. During the second pass, raters assign behavior counts to therapist and client verbal behavior. Therapist codes include open and closed questions, simple and complex reflections, giving information, facilitate, filler, MI-consistent, and MI-inconsistent behaviors. MI-consistent behaviors include affirmations, support, emphasize control, reframe, and asking permission before giving advice and raising concern. MI-inconsistent behaviors include confronting, directing, warning, and advising and raising concern without permission. Client codes include follow-neutral responses, and different categories of change talk and counter change talk. Change and counter-change talk categories include expressions of desire, ability, reasons, need, taking steps, and commitment either for or against change.

In the current study, therapist skill is conceptualized as global score ratings and several summary scores that are commonly used to determine therapist skillfulness in MI. These include the frequency of MI-inconsistent behavior, the percentage of MI-consistent behaviors, and the reflection-to-question ratio. The global ratings that were examined included therapist empathy, acceptance, and MI-spirit, an average of the global ratings of evocation, collaboration, and autonomy-support. These measures of therapist skill were chosen because they have been found to predict changes in client behavior in previous

studies (Gaume, et al., 2009; Moyers, et al., 2007; Moyers & Martin, 2006; Moyers, Miller, & Hendrickson, 2005).

Procedures

This study is part of Project ELICIT, a larger study aimed at examining theory-based methods of training therapists in MI. Project ELICIT is a randomized clinical trial in which therapists received either training-as-usual in MI or an enhanced training in which the ability to recognize, reinforce, and elicit client verbalizations related to change is emphasized. The goal of Project ELICIT is to determine whether this enhanced training condition affects the ability of clinicians to elicit change talk, a proposed causal mechanism of MI. The goal of the current study is to examine organizational factors and therapist attitudes across conditions and their relationship to therapists' ability to adopt MI.

Pre-Training Assessment. Enrolled participants were sent a packet of questionnaires in the months before the training to complete and return via postage-paid envelopes. Participants were sent instructions regarding the questionnaires and were given a deadline to complete the packet and return it before November of that training year. Participants who did not complete the questionnaires were contacted by email and phone. A research assistant examined every questionnaire for missing data and if any questions or measures were overlooked, the participant was called and encouraged to complete the questions over the phone. Participants were made aware that they could refuse to answer any questions and were asked to write that they were declining next to the question. Participants completed the demographic questionnaire, the ORC-S, and the EBPAS, along with other Project ELICIT related measures at this time.

Training. Participants were randomized into two training conditions: a standard MI training and an MI-enhanced condition. Both training conditions were conducted by the same trainers and lasted for the same two-day period. The standard MI training condition was based on a “learning to learn” model. The focus in this model is on: 1) the importance of MI spirit 2) basic listening skills and 3) therapist use of indicators of success in MI (client talking more than the therapist, decreased sustain talk, and increased change talk) to guide practice. Didactic presentation and active learning techniques such as practice and role-play were used to introduce and practice MI skills. The enhanced MI condition was also conducted within this learning model and focused on both relational and technical aspects of MI, using didactic and active learning methods. In addition, the enhanced group also received specific training in recognizing and reinforcing client change talk. Educational materials and exercises on eliciting and reinforcing change talk were emphasized.

Post-Training Assessment and Recording. At the end of the second day of training, participants recorded a twenty-minute MI session with an actor playing a standardized substance abuse client. Therapists were instructed to use MI with the actors to enhance their motivation to change their drinking behavior. At the conclusion of the role-play, actors filled out a form that assessed how important, confident, and ready they would feel to make a change in their behavior. They also rated the therapist on scales of warmth, respectfulness, and helpfulness.

Individualized Feedback. At each follow-up period, participants received personalized feedback regarding their previous audio-recorded submission. Before the three-month follow-up session was due, participants were given feedback on their post-

training recordings in the form of behavior counts and global ratings. Before the six- and 12-month recordings and following the 12-month submission, participants received feedback on their global ratings.

Consult Calls. Before the submission of the three-month follow-up sessions, participants were encouraged to participate in six consult phone calls with an MI expert. During these calls, participants discussed the personalized feedback given regarding their post-training actor sessions. Consultants answered questions and role-played areas of particular difficulty for participants. These calls were completed before the three-month follow-up session was due.

Follow-up Procedures. Following the training, participants were informed by email a month in advance of the upcoming follow-up period. Participants were emailed instructions for how to upload their digital recordings to a secure website and were sent the appropriate paperwork that accompanied each follow-up submission. As part of Project ELICIT, participants completed a session report form that asked about session details such as client characteristics and therapists' perception of their own MI skills and a Working Alliance Inventory that assessed therapist-client rapport as perceived by the therapist. Participants also submitted an anonymous client consent form that stated that the client had given the therapist permission to be audio-recorded. Participants were sent a client consent form to be audio-recorded that the client signs, but this was kept with the therapist's records and was not submitted with the follow-up session. Participants also filled out a follow-up checklist that stated that their session was a 1st or 2nd therapy session that was at least 40 minutes long with an adult substance abuse client. If there

were any deviations from these requirements (i.e.- a shorter session, a different target behavior, or a longer-term client), the session had to be approved by Dr. Moyers.

Research assistants provided technical support to any participants that had difficulties uploading sessions to the secure website. If these problems could not be resolved, the participant was sent a FedEx envelope in which to send their digital recorder so that the file could be removed from the recorder and sent back to the participant. Participants were sent postage-paid envelopes to send in study-related paperwork or faxed their paperwork to a confidential fax machine.

Participants were also given postage-paid postcards to give to their clients. These postcards allowed the client to anonymously request that we destroy the recording of their therapy session without using it in our analyses.

Research assistants attempted to reach participants that did not complete their follow-up submission in the designated time period by phone or email. Participants received a \$25 timeliness incentive if they submitted their session before the deadline. However, participants were encouraged to submit their follow-up sessions past the deadline in order to receive a \$75 incentive. If participants were unable to record a session with an actual client, they could submit a recording of a role-play session. Participants were encouraged to call the project manager to troubleshoot any problems they were having. If the research assistants were unable to reach a participant that had not submitted a follow-up session by the follow-up time point, the participant was contacted by email stating that he or she would be contacted by the next follow-up period and were encouraged to submit a session at that time.

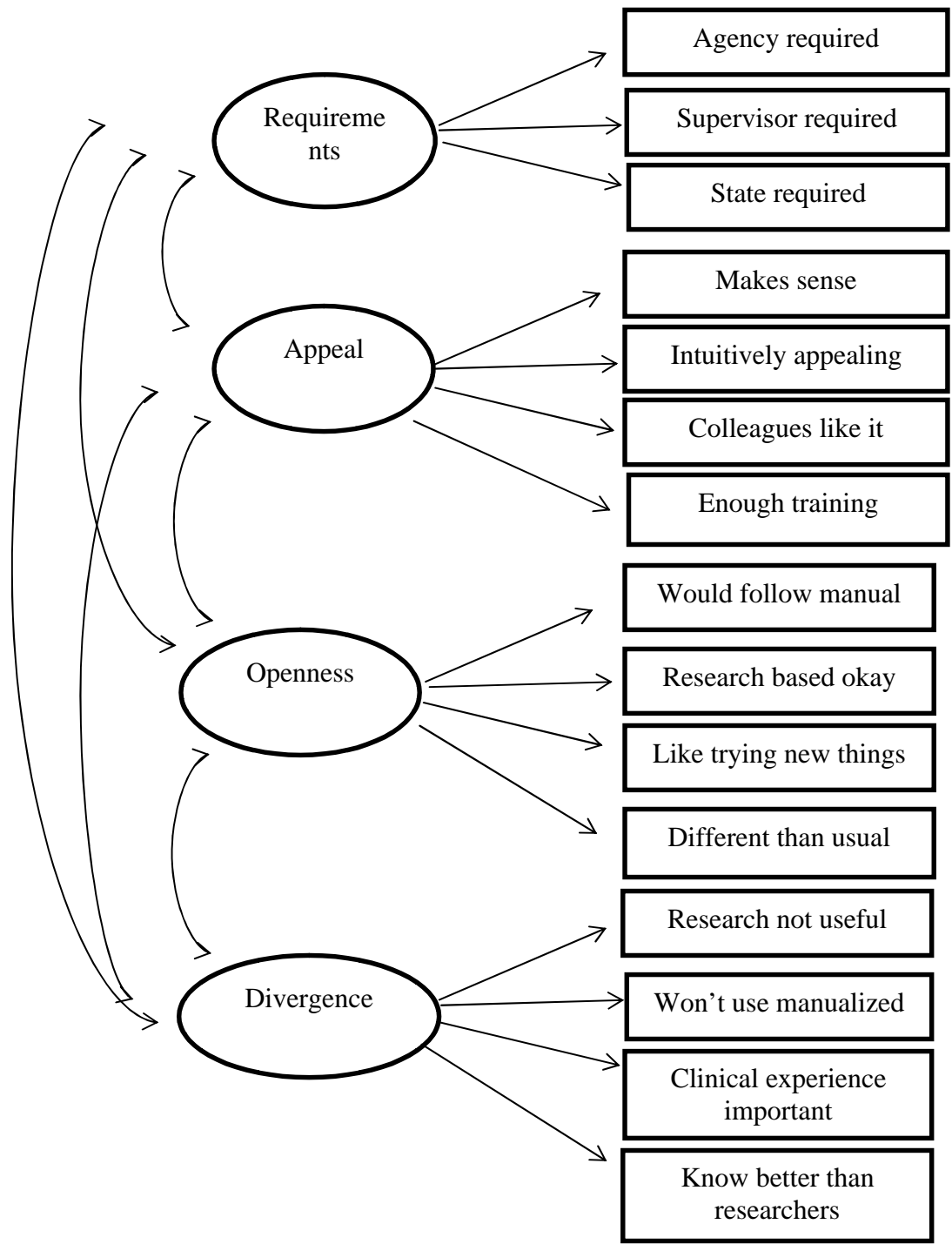
Data Analysis

Missing Data Procedures. Missing data constituted less than 1% of the collected data for the EBPAS and ORC scales. According to recommendations made by Tabachnick and Fidell (2007), with less than 5% of data missing, it is likely that any procedure for handling missing data would find similar results. Therefore, mean substitution was used to fill in missing data points.

There were five baseline and three post-training sessions that were problematic and were dropped from the analyses. Problematic sessions included those that were dropped because of underage clients, audibility issues, and those that were lost due to technical errors. These missing sessions were treated as missing data in the HLM analyses.

Confirmatory Factor Analysis. To examine the factor structure of the EBPAS in our sample of substance abuse counselors, a confirmatory factor analysis was used to confirm the four-factor structure derived by Aarons (2004). Data were analyzed using the AMOS (Version 4.0; Arbuckle, 1999) program which used maximum likelihood estimation with robust standard errors (MLR). See Figure 1 for the hypothesized four-factor model as set forth by Aarons (2004). Subscales were allowed to covary. To scale the four latent variables, the metric of the latent variable was fixed to that of the first indicator of each subscale by fixing the path from the latent variable to the indicator to a value one.

Figure 1. Theorized four-factor structure of the EBPAS.



Model fit was assessed using several fit indices which included X^2 , the comparative fit index (CFI) and parsimonious comparative fit index (PCFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). While a significant X^2 value implies that the data does not fit the data well, Brown (2006) explains that the X^2 value is highly dependent on sample size and thus, other fit indices should be examined. Brown (2006) recommends using guidelines by Hu and Bentler (1999) to evaluate the TLI, CFI, and RMSEA. Specifically, RMSEA values close to .06 or lower, and CFI and TLI values close to .95 or higher indicate a good model fit. Brown (2006) further recommends that RMSEA values lower than .08 indicate adequate model fit (Browne & Cudeck, 1993) and that CFI and TFI values between .90 and .95 may indicate adequate model fit.

Logistic Regression. Logistic regression can be used to predict a binary outcome from a set of predictor variables (Tabachnick & Fidell, 2007). Therefore, in order to determine whether the ORC subscales and the EBPAS total score can be used to predict attrition at three-months, logistic regression was used in SPSS (Version 15.0; SPSS Inc., Chicago, IL). The potential predictors included the five ORC subscales, training exposure and utilization, organizational climate, staff attributes, resources, and organization motivation for change, and the EBPAS total score. The binary outcome variable was whether or not a three-month follow-up session was submitted. As variable order was not considered important, direct logistic regression was performed in which all six predictors were entered at step one in the regression equation.

To identify potential covariates to be used in the logistic regression model, bivariate correlations were performed between three-month attrition various demographic

and professional background variables. Demographic variables included race, ethnicity, and sex, and background variables included hours spent treating clients per week, hours spent treating substance abuse clients per week, total hours of prior MI training, years of experience in the mental health field, and years of experience in the substance abuse field.

Random coefficient regression modeling (RCRM). Initially, RCRM models including the time variable as a level one predictor and no level two predictors was used to assess the linear trajectory of skill for each of the therapist skill variables from baseline (pre-training) through the three-month follow-up period. RCRM was also used to longitudinally assess the trajectory of skill using the ORC and EBPAS variables as level two predictors. A median-split of the ORC scales, motivation for change, resources, staff attributes, organizational climate, and training exposure and utilization, and the EBPAS total score will be used as moderators to examine the slope of therapist MI skill from baseline to three-months post-training. These analyses also allow for the prediction of the intercept, which represents the skill level at each time point, using the predictor variables. Therefore, the ORC subscales and the EBPAS total scores will also be used to predict skill level at the baseline, post-training, and three-month time points. Measures of therapist skill will serve as the level-one predictors. These will include measures of the frequency of MI-inconsistent behaviors, the percentage of MI-consistent behaviors to MI-inconsistent behaviors, reflection-to-question ratio, and global scores of empathy, acceptance, and MI-spirit, which is an average of the global ratings of evocation, collaboration, and autonomy-support. HLM (Version 6.0; Scientific Software International Inc., Lincolnwood, IL), using restricted maximum likelihood estimation,

was used to conduct the RCRM analyses. Data were initially centered at the baseline time point to examine slope and intercept, and then data were centered at post-training and three-months to examine intercepts at these time points.

Results

Participant Characteristics

Of the 190 participants, 61.6% were female and at the time of the training, reported an average age of 45.35 years. In terms of reported race, this sample consisted of 82.6% white non-Hispanic, 7.9% African American, 3.2% American Indian or Alaskan Native, .5% Asian, and 5.8% other. In terms of reported ethnicity, 7.4% reported Hispanic or Latina/o origin. Participants reported that on average, they spent about 25.73 hours per week treating clients, 22.5 hours of which they spent treating substance-use clients. They reported an average of 12.63 years of experience in the mental health field and 9.71 years of experience in the substance-use treatment field. Participants reported an average of 8.99 hours of prior training in MI.

Confirmatory Factor Analysis of EBPAS Scale

While the X^2 test was significant ($X^2(84) = 177.12$), according to Brown (2006), the X^2 statistic tends to be inflated by sample size. Therefore, other fit indices were examined in addition to the X^2 statistic. The CFA results indicate a poor-to-marginal model fit to the data (CFI = .913; TLI = .892; RMSEA = .077). All factor loadings were statistically significant (see Table 1) as in the analyses by Aarons, et al. (2007).

Table 1

EBPAS subscale means, standard deviations, factor loadings (standardized regression weights), and Cronbach's alphas

	M	SD	Factor Loadings	Alpha
1. Requirements	2.72	.92		.92
Agency required			.91	
Supervisor required			.99	
State required			.78	
2. Appeal	3.32	.52		.74
Makes sense			.77	
Intuitively appealing			.89	
Get enough training to use			.44	
Colleagues happy with intervention			.54	
3. Openness	2.86	.63		.76
Will follow a treatment manual			.69	
Like new therapy types			.76	
Therapy developed by researchers			.71	
Therapy different than usual			.55	
4. Divergence	3.19	.56		.60
Research-based treatments not useful			.56	
Will not use manualized therapy			.52	
Clinical experience more important			.65	

Know better than researchers				.40
5. Total	12.08	1.66		.76

See Table 2 for the factor covariances. Bivariate correlations were conducted to examine the relationships between the subscales. Cohen's (1992) guidelines were used to characterize the size of the relationships. The appeal subscale had a large, positive relationship with the requirements subscale ($r = .37, p < .01$) and a large, positive relationship with the openness subscale ($r = .42, p < .01$). There was also a small, negative relationship between the divergence and openness subscales ($r = .16, p < .05$). The divergence subscale was not related to the requirements or appeal subscales and openness was not related to the requirements subscale. While Aarons, et al. (2007) found mostly similar patterns of relationships, they did find a small, positive relationship between the requirements and openness subscales.

Table 2

Covariances of EBPAS Factors

	Requirements	Appeal	Openness	Divergence
Requirements	-			
Appeal	.147*	-		
Openness	.076	.139*	-	
Divergence	.003	.002	.045*	-

Table 1 shows the total EBPAS scale and subscale means, standard deviations, and Cronbach's alphas. Subscale reliabilities ranged from .60 to .92. While the reliability of the requirements subscale was quite high, the total scale, and appeal and openness subscales evidenced only adequate reliability, while the divergence subscale had low reliability. This may indicate high measurement error. These patterns of reliabilities were similar to those by Aarons, et al. (2007). While the fit indices do not indicate what would be considered good model fit by interpretation guidelines, they are very similar to the fit indices reported in the Aarons, et al. (2007) CFA conducted with a large sample of mental health providers ($\chi^2(83) = 183.51$; CFI = .92; TLI = .90; RMSEA = .07). Therefore, it seems that the four-factor model fits the data from a sample of substance abuse providers about as well as a sample of general mental health practitioners.

Participant Attrition at Three-Month Follow-up

In Wave 1, 76 of the 100 participants and in Wave 2, 78 of the 90 participants submitted three-month follow-up sessions. This represents an 81% follow-up rate at three-months post-training.

Predicting Attrition at Three-Month Follow-up

Logistic regression was used to examine whether the five ORC subscales and the EBPAS total score could predict attrition at three-months post-training. See Table 2 for descriptive statistics for the EBPAS and Table 3 for descriptive statistics for the ORC.

Table 3

Descriptive statistics for the ORC

	M	SD	Minimum	Maximum
ORC				
Motivation for change	96.31	13.47	52.86	140.36
Resources	176.24	23.76	104.52	228.33
Staff Attributes	152.54	15.19	107.67	190.67
Organizational Climate	204.24	23.26	119.33	254.17
Training	99.84	20.43	44.17	152.67

There were no significant relationships between attrition and any of the background or demographic variables. Therefore, no covariates were used in the logistic regression model.

The overall model significantly predicted participant attrition ($X^2(6) = 13.63, p = .034$). However, the only significant predictors in the equation were organizational climate and EBPAS total. The model correctly classified 100% of participants who did submit a follow-up session but only 5.6% of the participants who did not submit a follow-up session. Therefore, the model was better at classifying those participants who did submit a session than those who did not submit a session. See Table 4 for results of the regression analyses.

Table 4

Logistic regression analyses predicting attrition at three-months post-training

	B	Wald	df	p
Step 1				
EBPAS Total	.24	3.89	1	.05
ORC Training	-.01	.04	1	.85
ORC Organization Climate	.03	6.84	1	.01
ORC Staff Attributes	.01	.69	1	.41
ORC Resources	-.02	.01	1	.19
ORC Motivation for Change	.02	1.29	1	.26
Constant	-7.66	5.35	1	.001

Preliminary Analyses of Therapist Skill

There were significant correlations between MI skill variables at baseline and hours spent treating substance abuse clients per week and total hours of prior MI training. Hours spent treating substance abuse clients per week was negatively related to percentage of MI consistent behaviors ($r = -.103$, $p = .019$), reflection to question ratio ($r = -.089$, $p = .043$), and empathy ($r = -.092$, $p = .035$). Total prior MI training was positively related to frequency of MI-inconsistent behaviors ($r = .174$, $p = .001$), and negatively related to percentage of MI consistent behaviors ($r = -.156$, $p = .001$), acceptance ($r = -.105$, $p = .016$), and empathy ($r = -.089$, $p = .042$). However, these

relationships are small, according to Cohen's (1992) guidelines, and so were not used as covariates in the following analyses.

Each measure of therapist skill showed a significant, positive trajectory from baseline to three months, except for frequency of MI-inconsistent behavior which showed a significant, negative trajectory across time. See Table 5 for the regression coefficients, t-ratio values, and p values of the slope coefficients of the slopes for each of the MI skill variables.

Table 5

RCRM analyses examining change in each MI skill variable across the three time points

	B	t	p
Frequency of MI-inconsistent behaviors	-.93	-4.78	<.001
Percentage of MI-consistent behaviors	.01	5.09	<.001
Reflection to question ratio	.46	4.16	<.001
Acceptance	.18	4.25	<.001
Empathy	.18	4.96	<.001
MI Spirit	.28	8.63	<.001

Predicting Trajectory of Therapist MI Skill

RCRM analyses were used to determine the factors that predicted differences in slope trajectory, or MI skill gain, over time. See Table 6 for results. In terms of reflection-to-question ratio, both the resources and training subscales of the ORC

moderated slope. The group with higher scores on the resources scale had a significantly larger slope ($\beta = .67$) than the group with lower resources ($\beta = .24$). The group with higher training utilization scores had a significantly larger slope ($\beta = .68$) than the group with lower training utilization scores ($\beta = .24$). In terms of the global measure of acceptance, the resources subscale was a moderator of slope. The group with higher resources had a significantly smaller slope ($\beta = .09$) than those with fewer resources ($\beta = .26$). There were no other significant moderators found for any of the therapist skill outcomes.

Table 6

Significant RCRM analyses predicting slopes of MI skill variables from level two variables

	B	t	p
Reflection-to-question ratio			
Low Training	.24	2.37	.018
High Training	.68	4.39	.043
Low Resources	.24	2.39	.018
High Resources	.67	4.38	.046
Acceptance			
Low Resources	.26	4.27	<.001
High Resources	.09	2.21	.04

Predicting Therapist Skill Level at Each Time Point

RCRM analyses were used to determine the factors that predicted differences in intercept values, or level of MI skill, at each of the three time points: baseline, post-training, and three-months post-training. Both level of resources and training predicted therapist ratings of acceptance at baseline. Those with higher resources ($\beta = 3.52$) and higher training utilization ($\beta = 3.55$) had significantly higher ratings of acceptance at baseline. Training utilization also significantly predicted therapist baseline levels of empathy and MI spirit. Those therapists with higher scores on the training utilization subscale had higher ratings of empathy ($\beta = 3.46$) and MI spirit ($\beta = 2.93$) at baseline. See Table 7 for significant results of these analyses. There were no other significant predictors found for any of the other MI skill variables at baseline.

Table 7

Significant RCRM analyses predicting intercepts of MI skill variables from level two variables at baseline

	B	t	p
Acceptance			
Low Training	3.14	33.72	<.001
High Training	3.55	35.24	.001
Low Resources	3.16	36.42	<.001
High Resources	3.54	40.28	.002
Empathy			

Low Training	3.20	40.36	<.001
High Training	3.46	42.79	.016
MI Spirit			
Low Training	2.71	41.79	<.001
High Training	2.93	44.28	.014

Those therapists with higher scores on the training utilization subscale of the ORC also showed higher ratings of MI spirit ($\beta = 3.18$), empathy ($\beta = 3.58$), and acceptance ($\beta = 3.66$) at the post-training time point. Therapists' scores on the resources subscale significantly predicted acceptance and reflection-to-question ratio at the post-training time point. Those therapists who reported higher resources were rated significantly higher on acceptance ($\beta = 3.63$) and reflection-to-question ratio ($\beta = 2.84$) on the session recorded immediately post-training. See Table 8 for significant results of these analyses. There were no other significant predictors found for any of the other MI skill variables at post-training.

Table 8

Significant RCRM analyses predicting intercepts of MI skill variables from level two variables at post-training

	B	t	p
Reflection-to-question ratio			
Low Resources	2.39	28.83	<.001

High Resources	2.84	31.21	.018
Acceptance			
Low Training	3.39	51.82	<.001
High Training	3.66	54.95	.002
Low Resources	3.41	57.27	<.001
High Resources	3.63	59.88	.010
Empathy			
Low Training	3.43	61.82	<.001
High Training	3.58	63.80	.049
MI Spirit			
Low Training	3.04	68.62	<.001
High Training	3.18	70.81	.030

At the three-month time point, resources and training remained significant predictors of therapist skill in MI. Higher scores on the resources subscale predicted higher ratings of reflection-to-question ratio ($\beta = 3.30$) and acceptance ($\beta = 3.81$). Higher scores on the training utilization subscale predicted higher ratings of acceptance ($\beta = 3.84$), empathy ($\beta = 3.76$), and MI spirit ($\beta = 3.46$) at three-months post-training. See Table 9 for significant results of these analyses. There were no other significant predictors found for any of the other MI skill variables at three-month follow-up.

Table 9

Significant RCRM analyses predicting intercepts of MI skill variables from level two variables at three-month follow-up

	B	t	p
Reflection-to-question ratio			
Low Resources	2.85	19.43	<.001
High Resources	3.30	21.81	.018
Acceptance			
Low Training	3.57	47.10	<.001
High Training	3.84	50.23	.002
Low Resources	3.59	49.62	<.001
High Resources	3.81	52.23	.010
Empathy			
Low Training	3.60	54.14	<.001
High Training	3.76	56.25	.035
MI Spirit			
Low Training	3.32	60.21	<.001
High Training	3.46	62.38	.030

Discussion

The purpose of the current study was to examine the factors related to the adoption of MI in a large, national sample of substance abuse treatment providers. Specifically, therapists' perceptions of organizational factors related to readiness to implement new treatments and attitudes about EBP were used to predict the adoption of MI. Therapist attitudes and organizational factors were also used to predict therapist attrition at three months post-training.

In line with Simpson's process of change model (2002), it was hypothesized that at the adoption time period, or immediately post-training and three-month post-training, resources, staff attributes, and program climate will be more important in predicting therapist skillfulness in MI.

Aarons, et al. (2007) theorizes that therapist attitudes about EBP is made of four factors; the appeal of an EBP, openness to adopt new treatments, requirements regarding use of EBP, and divergence from current practice. While a confirmatory factor analysis of the scale with community mental health providers across 17 states confirmed the original four factor structure, substance abuse counselors may be a fundamentally different population in terms of training requirements and education level (Kerwin, Walker-Smith, & Kirby, 2006). Therefore, confirmatory factor analysis was used to confirm the four-factor structure originally proposed by Aarons (2004) in our sample.

CFA of EBPAS

Therapist attitude about EBP may be an important predictor of research participation and actual use of EBP. Therefore, it is important to have a valid instrument to assess these attitudes. The results of the CFA and reliability analyses of the EBPAS

scale in this study indicate that the factor structure, parameter estimates, factor covariances, scale reliabilities, and factor correlations are very similar to that of Aarons, et al.'s (2007) CFA in a sample of general mental health providers. Therefore, it follows that in substance abuse providers, the four-factor structure made of appeal of the EBP, likelihood of adopting EBPs if required to do so, openness to new types of treatment, and perceived divergence, is similar to general mental health providers, despite differing educational and training backgrounds. However, upon further examination of indices evaluating model fit, it seems that in the current study and the Aarons, et al. (2007) CFA, model fit was only marginal at best. In the Aarons, et al. (2007) CFA, the authors concluded that the model evidenced very good fit. So, why the difference in interpretation between two CFAs with very similar results? Aarons, et al. (2007) used much less stringent guidelines to determine good model fit which included: CFI and TLI values greater than .90 and RMSEA values less than .10. The guidelines for good fit used in the current study, based on recommendations by Brown (2006), were an RMSEA close to .06 or below and CFI and TLI values at .95 or greater. According to Brown (2006), there is much controversy surrounding which indices should be used and what the appropriate cutoff values are in determining good model fit. There are problems comparing model fit across studies when different guidelines for appropriate model fit are used. More standard guidelines for model fit would be helpful in dealing with this problem.

In examining parameter estimates in the current study, while significant, those in the divergence subscale are the lowest. The divergence subscale also was the least reliable of the four subscales according to estimates of Cronbach's alpha. This low

reliability indicates low internal consistency in this scale and high measurement error.

The problems with the divergence subscale may be leading to poor model fit in the CFA analyses. Future studies should re-examine this four-factor structure and examine areas of strain in the model. These analyses would point to model changes that might improve model fit. However, Brown (2006) cautions that these model changes would be post-hoc in nature and could be fitting the data too precisely, causing problems replicating results in other samples. As the theoretical development of the EBPAS is a major strength of the instrument, it's important that any model changes should make sense in the context of the proposed theory of therapist attitudes about EBP. Further empirical and theoretical conceptualization is needed to strengthen the psychometrics of this scale.

Therapist Attrition

Therapist research participation and attrition may be related to both individual and organizational factors. In the current study, the follow-up rate at three-months post-training was 81%. This is relatively higher than follow-up rates reported in other therapist training studies (Baer, et al., 2004; Moyers, et al., 2008; Bennett, et al., 2007). However, it is likely that as follow-up periods increase in length, attrition becomes an exponentially greater problem. High attrition in training studies is a problem because it may limit the generalizability of research findings and impede the ability to examine long-term skill maintenance. Results of logistic regression analyses indicated that more positive attitudes about EBP and higher ratings of organizational climate predicted a greater likelihood that a therapist would submit a follow-up session.

Higher scores on the EBPAS scale indicate more positive attitudes about EBP, which include more positive attitudes about innovation in general, more organizational

requirements to use EBP in practice, more openness to change practice, and less of a perceived divergence between current practice and the innovation (Aarons, 2004). Perhaps trainers should spend more time addressing these factors during workshop training. As many states are moving towards requiring the use of EBP in practice, trainers could emphasize this point and spend time addressing how the innovation is similar to current practice. Trainers could also enhance the appeal of the innovation using strategies from Rogers' (2003) diffusion of innovation theory by enhancing the relative advantage of MI over other interventions and decreasing the perceived complexity. The use of change agents, or influential colleagues, throughout the training could also enhance the appeal of an intervention. It might be useful for a trainer to identify practicing therapists to assist in the training by describing their personal experiences learning and using the treatment with clients. The key is to not assume that therapists will be interested in adopting a particular treatment simply because they are attending the training, trainers should seek to motivate therapist interest in a treatment before beginning skill-training. These efforts may enhance therapist participation in research and decrease attrition, which would enhance research efforts to understand the best ways to train therapists in the use of ESTs.

Logistic regression analyses also indicated that organizational climate was a significant predictor of follow-up recording submission. According to Lehman, Greener, and Simpson (2002), organizational climate refers to therapist perception of clarity of organization goals, cooperation amongst staff, and organizational openness to change. The ORC organizational climate subscale assesses six dimensions: 1) staff awareness of their organization's mission and goals, 2) staff cohesion and trust, 3) the autonomy staff

are allowed in making treatment decisions, 4) openness of communication among staff and management, 5) perceived stress and workload, and 6) management openness to change. As in adoption and dissemination efforts, it could be beneficial for those interested in therapist training research to form more intimate relationships with the organizations in which their participants work. The CTN is a nice example of the ways in which treatment organizations and researchers can work together to conduct multi-site research and promote the adoption and implementation of ESTs. It may be a more valid recruitment strategy to recruit participants through organizations, rather than as individual providers, as substance abuse treatment providers are often nested within these large organizations. An organization's involvement in research promotion could change the climate of that organization by providing clarity of mission and promoting openness to change. Researchers or treatment consultants could also then assist in the development of a more positive organizational climate by making suggestions for how to handle issues related to communication, staff autonomy, and therapist burnout and stress. A more reciprocal relationship between researchers and organizations could enhance more positive attitudes about EBP and research participation among staff. As described in Beidas and Kendall (2010), therapist training and skill acquisition takes place in a context that includes individual, societal, organizational, and innovation-specific factors. It's likely that these factors also predict research participation and attrition.

Classification analyses indicated that while attitudes about EBP and organizational climate significantly predicted the submission of a follow-up session, the model was not very reliable in predicting which therapists did not submit a follow-up session. This makes sense in that there are likely many factors unaccounted for in the

model that might represent barriers to submitting a follow-up session. These could include occupation-related factors such as job-loss, workload or scheduling changes, or change in client population and individual-factors such as relocation, illness, or leave of absence.

Predictors of Therapist Skill Trajectory

While attitudes about EBP and therapists' perceptions of organizational climate may predict study participation, different factors may predict actual MI skill gain over time. Results of RCRM analyses indicated that therapist skill level on each of the six outcome variables did increase significantly, and in a positive way, from baseline to three-months after the training. It was hypothesized, in accordance with Simpson's process of change model of adoption and implementation, that organizational climate, resources, and staff attributes would be the most important predictors of treatment adoption. According to the results of the current study, organizational resources and training exposure and utilization were the most important factors in predicting slope of MI-skill gain from baseline to the three-month follow-up time point. Specifically, resources and training moderated the slope of reflection-to-question ratio in that those with higher scores on the resources and training subscales of the ORC showed significantly greater skill gain than those with lower scores on these scales. The relationship between acceptance scores and resources evidenced a somewhat different relationship. Resources moderated the slope of acceptance in that therapists with higher scores on resources had a smaller slope of acceptance scores from baseline to three months. However, acceptance scores were relatively high in this sample which could indicate a ceiling effect. Those with higher resources started out with higher ratings of

acceptance at baseline than those with lower resources and so had less room for improvement. Hypotheses were partially supported: resources did predict skill gain in terms of reflection-to-question ratio from baseline to three months but organizational climate and staff attributes were not significant moderators of slope. Organizational training exposure and utilization was also a significant moderator of the slope of reflection-to-question ratio.

Predictors of Therapist Skill Level

While slope in RCRM analyses indicates the predictors of skill growth over time, the intercept indicates predictors of skill level at a specific time-point. Intercepts were examined at each of the three time points to determine the factors that were important in predicting MI competence before training, immediately after training, and then three-months post-training. Simpson's model predicts that organizational climate, resources, and staff attributes are the most important predictors of skill at the adoption stage, or the post-training and three-month follow-up time points. As there were no specific hypotheses about the factors that would predict MI skill before the training, analyses examining which factors predict incoming MI skill at baseline were exploratory in nature. As in the slope analyses, resources and training exposure and utilization were significant predictors of MI skill at each of the time points. At baseline, higher scores on the resources subscale of the ORC predicted higher ratings of acceptance and higher scores on the training subscale predicted higher ratings of acceptance, empathy, and MI spirit. At the post-training time point, higher resources predicted higher ratings of acceptance and larger reflection-to-question ratio, and higher training exposure predicted higher ratings of MI spirit, acceptance, and empathy. At the three-month follow-up point, higher

resources predicted larger reflection-to-question ratio and higher ratings of acceptance while higher training exposure predicted higher ratings of acceptance, empathy, and MI spirit. In line with Simpson's model, resources were important at the adoption stage, but organizational climate and staff attributes did not predict skill levels at these time points. Training exposure and utilization, however, was an important predictor at all three time points.

The ORC resources subscale refers to the practical concerns in an organizational setting. The availability of offices for staff and rooms to conduct therapy, appropriate staffing, support for training and continuing education, appropriate equipment, and internet access are all related to the amount of financial support available to an organization (Lehman, Greener, & Simpson, 2002). When these resources are adequate and available, organizations are able to devote more resources towards training and education, higher quality supervision, and support activities. Also, staff are likely able to focus more attention on improving their own treatment fidelity. When an organization has the resources available, adoption of ESTs can become a major focus. Without these resources in place, the focus remains on day-to-day survival of the organization. According to the results of this study, organizational resources are vitally important in promoting the fidelity of MI skills and the adoption of MI in practice. This raises important concerns in a time when insurance companies and governmental agencies are requiring organizations to implement ESTs. Without appropriate funding, it is unlikely that organizations will be able to implement these treatments in a way that will translate to therapist treatment fidelity.

The training exposure and utilization scale of the ORC refers to therapist satisfaction with training opportunities, exposure to training opportunities, utilization of skills or treatment techniques learned in trainings, and organizational support for the utilization of skills or treatment techniques learned in trainings. In the current study, scores on this scale were important predictors of both the trajectory of MI skill gain and also skill levels at all three time points. Scores on this scale was also found to be an important predictor of fidelity to components of CM in a study by Henggeler, et al. (2008). When an organization supports and provides opportunities for training in general, therapists are better able to learn and implement new treatment techniques. Giving therapists the opportunity to take time off to attend training and supporting the implementation of new skills is likely to promote an atmosphere of openness to innovation and change. This may enhance therapists' attitudes towards seeking training opportunities and practicing and implementing new treatments. This support for training is tied to organizational resources. Organizations that are not well-funded are unlikely to be able to give staff time off to attend trainings or the time to practice new therapy skills. They are also less likely to devote energy towards support activities and supervision aimed at enhancing therapist skill in new treatments. However, the findings of the current study do provide some insight into resource allocation. Even with limited funding, devoting a higher proportion of resources to training-related activities could lead to enhanced therapist fidelity to new treatments and enhanced client outcomes.

These findings align with the findings of Baer, et al. (2009) in their examination of an agency-tailored implementation study of MI. As described previously, the full model was not more cost-effective than usual training methods. However, researchers

identified an important confounding variable: while support activities such as skill-practice sessions and group discussion of experiences were promoted only in the experimental condition, it became clear that these support activities also occurred in the treatment-as-usual condition. Agencies that held more support activities, no matter the condition, evidenced higher levels of MI skills. Those agencies that were more supportive of training, and provided opportunities for staff to practice their newly-learned MI skills, showed higher levels of MI skill at follow-up. These types of agency-supported activities may be the key to the enhancing therapist competence in the delivery of MI, and perhaps other ESTs.

The importance of training exposure is also evident in the successful dissemination efforts of MST. In MST programs, significant attention is paid to treatment integrity. Procedures for promoting integrity revolve around a model that is supportive of continued supervision and training in MST procedures (Henggeler, 1999). The MST model involves an extensive introductory training, weekly supervision by an MST-trained supervisor, continued consultation by an MST expert, booster trainings, and ongoing fidelity monitoring. This type of continued-training model could be very useful in disseminating MI and other ESTs into practice. However, adherence to continued training is likely to be an important factor in translating a continued-education protocol into therapist treatment fidelity. According to the results from the current study, factors such as attitudes about EBP and organizational climate may predict therapist adherence to this type of training protocol. It may be useful for organizations to screen for attitudes about EBP and openness to training and continued education in therapists. This, however, is only half the battle. A supportive organizational climate that promotes a mission

towards the adoption of ESTs is a necessary factor. Appropriate resources and training exposure are also important in promoting this kind of organizational climate. A reciprocal relationship between researchers, treatment experts/consultants, therapists, organization leaders, and government agencies is important in bringing about a system-wide change.

Limitations and Future Directions

One major limitation to this study is that participants had self-selected to participate in a research study. Therefore, this sample may not represent the attitudes and skill levels of the true population of substance-abuse treatment providers. It is likely that therapists in organizations that are underfunded and do not support training endeavors did not have the opportunity to attend the training. However, as this study offered free training in a well-known substance abuse treatment and covered all costs, it may be that this attracted therapists that normally would not seek involvement in research. Despite self-selection into the study, there was significant variability in therapist attitudes about EBP, perception of organizational factors, and MI skill. Henggeler, et al. (2007) examined predictors of therapist training attendance for CM and found that organizational factors, and not individual factors, predicted training attendance. It would be useful to examine the factors that predict a therapists' attendance of an MI-based training.

As skill decline tends to occur as time from training progresses, a three-month follow-up is not sufficient to examine actual MI implementation. A twelve-month follow-up would give us more information regarding predictors of skill growth in the long-term. Having data for multiple time points would also allow for the examination of quadratic growth trends. There is some evidence that MI skill increases immediately post-training

but then slowly declines as time from the training increases (Miller & Mount, 2001; Baer, et al., 2004). Examining a quadratic trend could elucidate the organizational factors that are protective in decreasing skill decline. As of this writing, data from six- and twelve-month follow-ups are being coded. Once this data is coded and cleaned, it will be possible to examine a quadratic, longer-term skill growth trend.

Perceptions of organizational factors and therapist attitudes were only measured once, prior to the training. It would be useful to measure these potentially changing factors over time and see how changes in these factors may affect skill growth. Also, it would be useful to collect data on the types of barriers that therapists encounter at each follow-up point to get a more complete picture of the factors that might hinder adoption efforts. Information regarding the number of clients that therapists attempt to use MI with after training could also provide more information about MI adoption.

Overall, there needs to be more research on the types of organizations that facilitate the long-term adoption and implementation of MI and other ESTs for substance abuse concerns. Baer, et al. (2009) found that organizational support activities led to greater MI skill post-training. It would be useful to manipulate the types of support activities that are offered within organizations to determine which are most helpful. In terms of MI skill gain in research studies, adjuncts to training such as supervision phone calls with an MI expert and the provision of feedback predicted maintenance of MI skill over time (Miller, et al., 2004; Moyers, et al., 2008). Research examining how well these adjuncts work within an organizational structure could be helpful in determining the best ways to implement these practices. Also, as resources and training exposure were found to be important predictors of therapist MI skill, perhaps support activities aimed at

providing opportunities for more in-house and external training in general would promote an organizational climate conducive to learning and implementing ESTs. Identifying the most useful support activities could be the next step in enhancing EST dissemination into substance abuse treatment organizations.

Conclusion

The present study had three goals: 1) to examine the four-factor structure of the EBPAS in a sample of substance abuse providers, 2) to examine the organizational and therapist attitude variables that predicted study attrition, and 3) to examine the organizational and therapist attitude factors that predicted MI skill levels at each of the three time points and the factors that predicted skill growth over time. While the factor-structure of the EBPAS was similar in this sample to a sample of general mental health practitioners, the model fit the data only marginally-well. While substance abuse therapists may have different training backgrounds than general mental health practitioners, their attitudes may have a similar make-up. However, this is difficult to determine without further examination of the psychometrics and theory of the EBPAS. This is an important avenue for further research as therapist attitude may contribute to both their research participation and use of EBP in practice. More positive therapist attitudes about EBP and positive organizational climate predicted therapist submission of a three-month follow-up session. Institutional resources and training exposure and utilization predicted both skill growth over time and skill level at baseline, immediately post-training, and three-months post-training. In order to more effectively adopt MI, an organization needs to be appropriately funded and devote more resources to exposing therapists to continuing education opportunities. It will be important to examine

predictors of attrition and skill in a longer follow-up period. It will also be important to examine the potential for a quadratic skill growth trend and determine the factors that predict skill maintenance over time.

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