INNOVATION ATTRIBUTES, WORKPLACE CLIMATE, AND ORGANIZATIONAL FACILITATORS AS PREDICTORS OF INTEGRATED DUAL DISORDERS TREATMENT IMPLEMENTATION

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAIʻI AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

AUGUST 2011

By

Diane C. Wilson

Dissertation Committee:

John J. Steffen, Chairperson

Kentaro Hayashi

Charles W. Mueller

Brad J. Nakamura

Steven J. Onken

Abstract

Despite an extensive body of evidence supporting the effectiveness of specific mental health and substance disorder treatments, evidence-based practices (EBPs) remain sparse in routine clinical settings. The purpose of this study was to identify modifiable practitioner level variables that predict implementation of a specific EBP, integrated dual disorders treatment (IDDT). A prospective correlational design was used to assess the degree to which practitioners' views about innovation attributes, workplace climate, and organizational facilitators predict IDDT implementation beyond practitioner characteristics, including training and experience. Participants were 115 practitioners in the state of Hawaii who had received training in IDDT. Standard regression analyses showed that innovation attributes (a composite of relative advantage, compatibility, complexity, observability, voluntariness, and image) predicted scores on implementation measures of general IDDT interventions and motivational interviewing. Workplace climate and organizational facilitators did not predict implementation. Attention to innovation attributes in the development, packaging, and dissemination of EBPs may enhance implementation, ultimately improving service quality and outcomes.

Table of Contents

List of Tables

Introduction

An extensive body of evidence supports the effectiveness of specific mental health and substance abuse treatment practices and programs (Chambless & Ollendick, 2001; Lehman et al., 2004; Miller & Wilbourne, 2002). Despite this literature, evidence-based practices and programs (EBPs) continue to be sparse in routine clinical settings and practice (Lehman & Steinwachs, 2003; Miller et al., 1995; U.S. Department of Health and Human Services, 1999). Traditional approaches to the dissemination of research based interventions (e.g., publications, continuing education workshops) do not appear to result in lasting practice changes (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Consequently, related areas, such as training approach, practitioner attitudes, and organizational climate, have piqued the interest of investigators as factors potentially influencing the uptake of EBPs (e.g., Aarons, 2006b; Glisson, 2002; Walters, Matson, Baer, & Ziedonis, 2005). These types of studies fall under the umbrella of *implementation research,* the study of activities and factors involved in the successful realization of a program or practice (Fixsen et al., 2005).

While the gap between mental health and substance abuse treatment research and practice has long been observed, only in the last decade has implementation research been initiated within the domain of EBPs (e.g., Garner, 2009, McFarlane, McNary, Dixon, Hornby, & Cimett, 2001; Roth, Panzano, Crane-Ross, Massatti, & Carstens, 2002). This work has drawn upon theory and models derived from a long history of research on the adoption, diffusion, and implementation of innovations in a range of other disciplines including agriculture, business, public health, and communications (e.g., Rogers, 2003). Two distinctions become important as these models are applied in the context of evidence-based mental health and substance abuse treatment services; the distinction between adoption and implementation and, because EBPs are generally implemented in the context of organizations, the related distinction between organization level and practitioner level adoption and implementation.

Innovation adoption and implementation have been described as different stages in a diffusion process (Rogers, 2003). The adoption stage requires a decision (i.e., whether to accept or reject an innovation), whereas the implementation stage requires

"overt behavior change as the new idea is actually put into practice. It is one thing for an individual to decide to adopt a new idea, quite a different thing to put the innovation to use" (Rogers, 2003, p. 179). In the diffusion of innovations literature, studies of the adoption decision far outnumber those of innovation implementation (Gotham, 2004). Given the context of the research, the adoption decision is often the logical outcome variable. For example, in marketing research, the consumer's decision to buy (i.e., adopt) a new product is the primary outcome of interest (Panzano & Herman, 2005). In the context of EBPs, however, adoption is insufficient. If an EBP is adopted but never implemented, it never reaches its target, the consumer of mental health and/or substance abuse treatment services. Implementation is a critical outcome.

Evidence-based practices are generally implemented within organizations. This results in what Rogers (2003) refers to as a contingent innovation-decision, where an individual's choice to adopt and implement an innovation is dependent upon a prior innovation-decision. For example, a doctor cannot implement a new medical procedure until his or her hospital has purchased the necessary equipment. Likewise, an organization cannot implement an innovation or EBP unless the individuals within that organization make overt behavioral changes. Furthermore, in organizations the adoption decision is often made by a set of individuals different from the set of individuals implementing the innovation (Gotham, 2004; Panzano & Herman, 2005; Rogers, 2003). Even if a mental health or substance abuse treatment organization adopts an EBP, front-line practitioners will not *necessarily* implement it. Implementation research to date has not sufficiently addressed this matter; in fact it has been largely ignored.

Given the need for EBPs to be implemented by practitioners within organizations, and given that traditional training approaches promoting such implementation are often ineffective, alternative approaches and other potential influences on implementation need to be explored. Accordingly, the purpose of this study is to identify potentially modifiable practitioner level variables that predict practitioner level implementation of a specific EBP. Identification of such variables may help guide implementation efforts beyond training and consultation. The specific EBP of focus in this study is integrated dual disorders treatment.

Integrated Treatment Context

One problem facing mental health and substance abuse treatment service systems is that of co-occurring serious mental illness (SMI) and substance use disorders (SUD) or dual disorders. Approximately half of individuals with SMI will also have a substance use disorder in their lifetime (Regier et al., 1990). Furthermore, the adverse consequences of substance abuse are greater among people with SMI than among the general population (Drake & Mueser, 2000; RachBeisel, Scott, & Dixon, 1999). An increased focus on this population of individuals beginning in the 1980s led to the development of an evidence-based intervention program called integrated dual disorders treatment (IDDT).

Integrated dual disorders treatment was designed specifically for individuals with co-occurring SMI and SUD and comprises a variety of practices with demonstrated effectiveness among individuals with either SMI or SUD alone (Lehman et al., 2004; Miller & Wilbourne, 2002). As a comprehensive program, IDDT has demonstrated greater consumer engagement in treatment, greater reductions of substance use, and decreased hospitalizations relative to traditional nonintegrated services (Drake, Mueser, Brunette, & McHugo, 2004). Accordingly, IDDT has been identified as an evidence-based mental health practice (U.S. Department of Health and Human Services, 1999).

In IDDT, interventions for both disorders and their related problems are delivered in a single program, by the same team of providers, and are modified to account for the presence of dual disorders (Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998). Components of IDDT include: a multidisciplinary approach, stage-wise interventions, comprehensiveness, time-unlimited services, assertive outreach, motivational interventions, substance abuse counseling, group treatment, family psychoeducation, participation in self-help groups, pharmacological treatment, and health promotion (Substance Abuse and Mental Health Services Administration [SAMHSA], 2003). Several of these components are implemented primarily at the organizational level (e.g., the delivery of services through a multidisciplinary team); several others are implemented primarily at the practitioner level (e.g., the use of motivational interviewing). Hence, implementation of IDDT requires change at multiple levels.

Given the high prevalence and adverse consequences of dual disorders, dissemination of IDDT has been a high priority at the national level (New Freedom Commission on Mental Health, 2003; SAMHSA, 2003). Despite these efforts, individuals with co-occurring disorders continue to have limited access to integrated treatment (Epstein, Barker, Vorburger, & Murtha, 2004). To date, four studies have addressed the implementation of IDDT, three reports based on the National EBP Project (Bond, Drake, McHugo, Rapp, & Whitley, 2010; Moser, DeLuca, Bond, & Rollins, 2004; Torrey, Lynde, & Gorman, 2005) and one ongoing large scale quantitative study based in Ohio (Panzano & Roth, 2006; Panzano et al., 2005; Roth et al., 2002).

Bond and colleagues (2010) reported on the IDDT implementation efforts of 13 sites participating in the National EBP Project. After two years, two sites (15%) had successfully implemented IDDT, nine (69%) were unsuccessful (i.e. showed poor adherence or fidelity to the model), and two (15%) had abandoned their effort altogether. Although the Torrey et al. (2005) and Panzano et al. (2005) studies included IDDT, the authors reported IDDT implementation results only in combination with the other EBPs studied. Nonetheless, both noted difficulties with implementation, and Panzano et al. even identified a class of sites as "de-adopters." These failed attempts to implement IDDT further highlight the need for implementation research and the application of such research to guide the implementation of EBPs in general and IDDT specifically. A greater understanding of the factors that contribute to implementation success may facilitate current and future efforts to make effective mental health and substance abuse treatments available in routine clinical settings, ultimately improving service quality and outcomes.

Models of Innovation Implementation

While models of innovation adoption are well-developed (e.g., Rogers, 2003), models of innovation implementation are in their infancy (e.g., Fixsen et al., 2005; Frambach & Schillewaert, 2002; Wandersman et al., 2008). Frambach and Schillewaert's multi-level conceptual framework addresses both organizational level adoption and intra-organizational acceptance of innovations. The latter is pertinent to the purpose of this study.

Intra-organizational acceptance of innovations refers to the use of the innovations by individuals within an organization (Frambach & Schillewaert, 2002). After the organizational adoption decision, individuals within the organization then make their own decision to accept or reject the innovation. Frambach and Schillewaert suggest the following general influences on individuals' acceptance of an innovation: organizational facilitators, social usage, personal characteristics, and personal dispositional innovativeness culminating in the individual's attitude toward and acceptance or rejection of the innovation.

Organizational facilitators are the organization's internal efforts to market the innovation including training and education, technical support, incentives, and control structures. Social usage is the degree to which the innovation is used by others in the individual's environment. Personal characteristics include demographics, tenure, personal values, and previous experience with the innovation. Personal dispositional innovativeness is the general tendency of a person to accept innovations and is determined by personal characteristics (Frambach & Schillewaert, 2002). Frambach and Schillewaert suggest that all of these factors influence individuals' attitudes (i.e., beliefs and affects) toward and consequently their acceptance of the innovation.

Frambach and Schillewaert (2002) developed their model from innovation adoption and technology acceptance research in the marketing and management disciplines. Accordingly, they caution that their proposed framework should be adapted to the specific innovation as well as the organization in which it is implemented. One such adaptation has appeared in the EBP implementation literature (i.e., Aarons, 2005).

Aarons (2005) made minor modifications to Frambach and Schillewaert's (2002) model to apply their framework to the context of EBP implementation. Aarons maintained the major influences outlined by Frambach and Schillewaert (organizational facilitators, social usage or networks, personal characteristics, dispositional innovativeness, and attitudes) but added an intermediary step toward implementation, that of behavioral intention and self-efficacy. Aarons also expanded on the organizational facilitators construct to include the role of organizational leadership, climate, and culture. Finally, Aarons specified four dimensions of attitudes that practitioners may have toward

EBPs: requirements to adopt the EBP, appeal of the practice, practitioner openness to innovation, and perceived divergence between current and new practices. See Table 1 for a summary of each model.

Table 1.
Two Existing Models of Evidence-Based Practice Implementation

Frambach and Schillewaert (2002)	Aarons (2005)
Attitudes Toward Innovation • Beliefs • Affects	Attitudes Toward Evidence-Based Practice • Appeal • Requirements • Openness • Divergence
Social Usage • Network externalities • Peer usage	Social Networks • Peer communication • Peer usage
Organizational Facilitators • Training • Social persuasion • Organizational support	Organizational Facilitators • Training • Social influence • Organizational support • Leadership • Culture • Climate
Personal Characteristics • Demographics • Tenure • Product experience • Personal values	Personal Characteristics • Demographics • Tenure • Product experience • Personal values
Personal Dispositional Innovativeness	Personal Dispositional Innovativeness

Literature Review

A review of the current EBP implementation literature was conducted to determine any further adaptations to the Frambach and Schillewaert (2002) or Aarons (2005) models that may be pertinent to this study. The review was focused on both qualitative and quantitative studies that included at least some primary data, that were conducted in context of mental health or substance abuse treatment, and that addressed factors involved in the post adoption implementation of a specific EBP or practice guideline. Other research, such as studies conducted in the context of physical health services, was included if the purpose of the investigation was particularly relevant to this study. Overall, the literature on EBP implementation is limited. The majority of studies reviewed were qualitative or observational in nature. Existing quantitative studies are primarily correlational survey studies. Nevertheless, several consistent themes emerged; these include: attributes of the innovation or practice, workplace climate, organizational facilitators, and personal or practitioner characteristics.

Innovation Attributes

Attitudes toward the innovation or EBP are central to both the Frambach and Schillewaert (2002) model of implementation and the Aarons (2005) adaptation. In the diffusion of innovations literature, the rate at which individuals adopt innovations depends partly on their subjective evaluation of or attitudes toward the innovation's attributes (Rogers, 2003). Five related dimensions have been identified as the most important innovation attributes influencing rate of adoption. These include relative advantage, compatibility, complexity, observability, and trialability. The individual's subjective evaluation (rather than an objective, expert, or purveyor evaluation) of the innovation along these attributes predicts adoption (Rogers, 2003). Consequently, innovation attributes in the context of this study refer to the individuals' or practitioners' subjective evaluation.

These variables have not been studied directly and systematically in the context of EBP adoption by organizations or implementation by practitioners; however, aspects of relative advantage, compatibility, complexity, and observability have emerged as relevant themes in numerous qualitative studies (e.g., Gold et al., 2003; Torrey et al., 2005) and

are currently under study in a large quantitative investigation (Roth et al., 2002; Panzano et al., 2005).

Relative advantage. Rogers (2003) defined relative advantage as "the degree to which an innovation is perceived as better than the idea it supersedes" (p. 229). Relative advantage is the ratio of expected costs and benefits to adopting or implementing an innovation or practice. While the concept of relative advantage is not unique to Rogers' diffusion model (e.g., the decisional balance dimension of the transtheoretical model; Prochaska, DiClemente, & Norcross, 1992), an examination of relative advantage from a diffusion perspective provides guidance for the focus of this study.

According to Rogers (2003), different innovations have specific advantages in different domains (e.g., economic, social, time and effort). For example, new fashions, cars, or hairstyles may impart social or status advantage to adopters, whereas new internet services may have time or effort saving advantages. In the context of EBPs, the specific advantages of implementing a practice have not been examined systematically; however, existing studies suggest the importance of practitioners' perceptions about the impact of the EBP on consumer outcomes (i.e., effectiveness) and about the status and career consequences, including the influence of incentives or mandates, for the practitioner.

Effectiveness. Through interviews with program stakeholders, Guydish et al. (2005) explored factors related to the sustained use of the Matrix model of substance abuse treatment. The model was initially adopted by the participating sites as part of a clinical trial. The authors returned to the sites 2 to 12 months following the end of the trial to collect qualitative information from participants about how to support better the adoption of EBPs. They reported that practitioners who continued to use the model at follow-up viewed it as effective. Michie, Hendy, Smith, and Adshead (2004) similarly collected qualitative interview data on the differences between practitioners categorized by audit as high or low implementers of the United Kingdom's National Service Framework (NSF) for coronary heart disease. Perceptions about the extent to which the NSF improved patient care and outcomes differentiated between the high and low implementers, with high implementers reporting more benefits to patient care.

Forman, Fagley, Steiner, & Schneider (2009) examined school psychologists' use of evidence-based psychosocial interventions taught in a graduate course. In a follow-up survey, the practitioners implementing the interventions endorsed beliefs that the practices were empirically valid and would have a positive effect on students. Finally, Panzano et al. (2005) have been collecting quantitative data from agency directors and practitioners in an ongoing multisite longitudinal study, the Innovation Diffusion and Adoption Research Project (IDARP). The purpose of the IDARP is to determine what factors and processes influence the adoption and implementation of EBPs including the Texas Medication Algorithms Project model, Multisystemic Therapy, cluster-based planning, and IDDT. Preliminary results indicated that practitioner expectations about the benefits of the practice, including improved outcomes and improved quality and efficiency of services, were related positively to the assimilation of the EBPs into routine practice. Perceived effectiveness of the practice appears to be an aspect of relative advantage specific to EBPs that may influence their uptake and implementation by practitioners in the field.

Professional growth and prestige. Another aspect of relative advantage that may be relevant to EBPs is the degree to which the implementation of the practice furthers the practitioners' personal goals for professional growth, prestige, or status. Qualitative studies appear to support this idea. For example, Moser et al. (2004) provided an informal qualitative summary of strategies and barriers related to implementation of Assertive Community Treatment (ACT) and IDDT. Their report was based on interviews and informal conversations with stakeholders, chart reviews, and fidelity assessments conducted during participation in the National EBP Project. They noted that implementation of ACT was facilitated by center directors taking pride in advancing their programs to the "best ACT team in the state" (p. 930). In another qualitative study, Kellogg et al. (2005) reported that implementation of a contingency management program corresponded with a certain amount of staff pride in being part of a "state of the art" program (p. 62). Finally, Michie et al. (2004) found that high implementers of the United Kingdom's NSF expressed pride in meeting the implementation milestones. Thus, the degree to which practitioners believe that implementing an EBP will further their

goals for professional growth and prestige may influence their perceived relative advantage of implementing and ultimately their implementation of a new practice.

Incentives and mandates. A final aspect of relative advantage that may be relevant to the implementation of EBPs is the influence of career incentives and mandates issued by an organization. According to Rogers (2003), incentives have several effects on innovation adoption. They affect the perceived relative advantage of an innovation and therefore its rate of adoption; they lead to adoption by different people than those who naturally adopt early; and while the quantity of adoption increases, the quality may be relatively low (i.e., sustainability may be lessened). Mandates also exert influence through their effect on perceived relative advantage, but can have undesirable side effects (Rogers, 2003). In the context of EBPs, external incentives or controls placed by an organization or third party payer may include career consequences, contingent funding, and political benefits. These themes have emerged in qualitative reports.

Michie and colleagues' (2004) high and low implementers were distinguished by the degree to which they cited the career consequences of following the UK's NSF. External monitoring and contingent funding were discussed by Gold et al. (2003) as important for successful implementation of ACT and supported employment services in existing community mental health centers (CMHCs). Panzano et al.'s (2005) preliminary quantitative results showed that expectations about the political and strategic benefits of implementing the EBPs were positively and significantly related to assimilation of the EBP into routine practice. Finally, in another quantitative study, McFarlane et al. (2001) found that practitioners who perceived incentives as important demonstrated implementation of family psychoeducation less than those who perceived incentives as unimportant. This finding is consistent with Rogers' (2003) conclusion that incentives may not lead to high quality implementation.

While perceived efficacy, professional or career consequences, and degree of external incentives or mandates have emerged in qualitative studies as aspects of relative advantage that may be particularly relevant to the relative advantage of implementing EBPs, the existing state of knowledge in this area is certainly not conclusive. Investigators have only recently begun to examine some of these variables quantitatively,

and, in the context of EBPs, only one study, the IDARP (Roth et al., 2002; Panzano et al., 2005), has directly examined the general construct of relative advantage as defined by Rogers (2003). In the IDARP study, the degree to which advantages of the EBP were perceived as outweighing its disadvantages was positively related to its assimilation into the organizations' routine practice (Panzano et al., 2005). Thus, the role of relative advantage appears to generalize to the context of EBP implementation, though this notion needs further empirical investigation.

Compatibility. Compatibility is "the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p 15). In the context of EBP implementation, an organization's treatment philosophy or mission, practitioner theoretical orientation, perceived consumer needs, and practitioner views on research and evidence may influence the implementation process. Generally, there is a positive relation between perceived compatibility and rate of adoption (Rogers, 2003). Within the context of EBPs, the literature suggests compatibility is also important for successful post-adoption implementation.

Treatment philosophy, program goals, and consumer needs. Numerous qualitative studies suggest that compatibility with practitioners' existing treatment philosophy or clinical orientation is relevant to EBP implementation. In a discussion of conditions that hindered or facilitated the implementation of the Multidimensional Treatment Foster Care Model (MTFC) in the state of Oregon, Chamberlain (2003) emphasized the role of practitioners' existing philosophy or assumptions about professionally driven versus family driven treatment. Implementation was hindered when the existing view of practitioner driven treatment conflicted with the MTFC model of family driven treatment. Rowe and Boyle (2005) conducted a three year qualitative study of the implementation of an inter-disciplinary team model in a large Australian mental health treatment facility. Results were based on structured and in depth interviews, focus groups, and documentation review. They concluded that the required change in philosophy posed a significant barrier to implementation.

Fals-Stewart, Logsdon, and Bircher (2004) and Obert et al. (2005) examined the implementation successes and failures of EBPs in the context of community based

substance abuse treatment programs that had been sites for clinical trials. Through interviews, chart reviews and questionnaires, Fals-Stewart et al. found that incompatibility with practitioners existing views of addiction as an individual problem contributed to the failure to sustain behavioral couples therapy at two of the four sites. Based on group and individual interviews, Obert et al. found that practitioners holding philosophies incorporating the notion that clients need to "hit bottom" were more reluctant to use the Matrix model which promotes a non-confrontational, collaborative style. They concluded that clashes with existing belief systems and values were important areas of focus for implementation efforts.

Bachman and Duckworth (2003) and Moser et al. (2004) examined implementation of EBPs in the specific context of integrated treatment for co-occurring mental illness and SUDs. Using structured interviews, observations of meetings, and review of program documentation, Bachman and Duckworth found that compatibility with existing practice and program goals facilitated progress toward implementing the Comprehensive, Continuous and Integrated System of Care (CCISC) model in Massachusetts state agencies. Through similar methods, Moser et al. found that existing values or philosophy about an abstinence-oriented versus a staged treatment approach influenced fidelity to IDDT in the context of the National EBP project. Given the findings of these qualitative studies, compatibility appears an important variable in the implementation process across a wide variety of EBPs.

Quantitative cross-sectional survey studies have substantiated the relation between compatibility and EBP implementation. Several investigators in the substance abuse treatment field have examined the role of theoretical orientation in the implementation of specific evidence-based substance abuse treatments. Ball et al. (2002) investigated the relations between practitioners' clinical orientations and the addiction therapy techniques they endorsed using. They found that practitioners generally used techniques compatible with their clinical orientation. For example, clinicians who identified their clinical orientation as Rogerian or client-centered used specific motivational interviewing counseling techniques more than clinicians endorsing a 12-step/disease concept orientation.

McGovern, Fox, Xie, and Drake (2004) assessed practitioner readiness to adopt and self-reported use of specific evidence-based addiction treatment practices. They found that practitioners were more motivated to use and were more likely using specific evidence-based substance abuse treatments that were compatible with their primary treatment approach. For example, clinicians who endorsed the 12-step approach reported more current use of Twelve-Step Facilitation and less use of relapse medications than clinicians not endorsing the 12-step approach as their primary treatment perspective. Knudsen, Ducharme, Roman, and Link (2005) found a similar result in their study of counselor attitudes toward buprenorphine. They reported a significant association between counselor clinical orientation and attitudes about the acceptability of buprenorphine as a treatment. Practitioners endorsing a 12-step approach were less likely to view buprenorphine as an acceptable treatment.

Studies involving EBPs in a variety of different fields have shown similar relations between compatibility and implementation. In an examination of variables predicting the implementation of Parenting Wisely, Gordon and Stanar (2003) found that consistency with agency mission statement and population needs predicted the number of families receiving the intervention and the survey respondents' ratings of implementation success. Descriptive results from the IDARP study indicated that assimilation of the four EBPs into routine clinical practice was related positively to compatibility with the adopting organization's treatment philosophy (Panzano et al., 2005). While the results from the qualitative and quantitative studies to date support a positive relation between compatibility and EBP implementation, there is a caveat.

According to Rogers (2003), if an innovation is perceived as completely congruent with an existing practice, there is no innovation. In a review of theories related to changing practitioner behavior, Reimer, Rosof-Williams, and Bickman (2005) similarly noted that motivation for change is often precipitated by a perceived discrepancy between the goal and actual states. To implement a new practice, it must be perceived as different from current practice in at least some way. Consistent with these ideas, Moser et al. (2004) in a qualitative study and McFarlane et al. (2001) in a quantitative survey study found that implementation of EBPs (i.e., ACT, IDDT, and

family psychoeducation) was less successful when practitioners perceived that they were already doing the practice. Given this caveat, the research conducted within the context of EBPs supports the generalization of Rogers' conclusions about compatibility and adoption and extends this reasoning into the realm of implementation.

The evidence-based practice movement. Much of the early EBP research addressing the construct of compatibility focuses on practitioner clinical orientation and implementation of specific practices. The construct of compatibility, however, subsumes an important and larger debate in the mental health and substance treatment fields, the evidence-based practice movement. Much of the recent EBP implementation literature relevant to the construct of compatibility focuses on practitioners' attitudes toward EBPs.

While the evidence-based practice movement is generally accepted as a positive movement, it is not without controversy. Attitudes toward EBPs vary among practitioners and these attitudes vary along a variety of dimensions including the role of treatment manuals and the therapeutic relationship, the nature of the evidence, and the transportability of EBPs (Garfield, 1998; Jensen-Doss, Hawley, Lopez, & Osterberg, 2009; Kazdin, 2004; Stahmer & Aarons, 2009). Differing opinions on these matters come to the forefront when considering compatibility.

Evidence-based practices are generally detailed in manuals or toolkits. Manuals address internal validity in outcome studies and provide a means for replication in both research and practice settings. Alongside these apparent benefits, treatment manuals challenge traditional conceptualizations of the therapeutic process (Addis & Krasnow, 2000). Variability in practitioners' views toward manuals or toolkits has been documented. Addis and Krasnow surveyed practicing psychologists and found both positive and negative perceptions of treatment manuals; negative perceptions emphasized a focus on technique at the expense of the therapeutic relationship, and positive perceptions emphasized positive outcomes. Given that the implementation of EBPs is often accomplished in part through the use of a manual or toolkit, practitioners' attitudes toward such tools are a potentially important dimension of compatibility.

Themes related to this dimension of compatibility have emerged in qualitative studies. In the United Kingdom, Michie et al. (2004) found differing attitudes about the

use of the NSF versus the use of clinical judgment. Practitioners identified as low implementers viewed the guidelines a detrimental to individualized care. The notion that the guidelines were rigid and took away from the therapeutic relationship also distinguished between low and high implementers, with low implementers expressing this concern more than high implementers. Similarly, clinical inflexibility was cited by Brown (2004) as a barrier to implementation of the Matrix model. In Brown's study, clinical inflexibility of the model emerged as a theme from focus group and individual interviews designed to determine the ramifications of implementing the model in community organizations that participated in a clinical trial. In another study of implementation of the Matrix model, Obert et al. (2005) found that practitioners who viewed the model as inflexible also had overall negative attitudes toward the model and those who viewed the model as flexible had overall positive attitudes toward the model. Finally, data from Henggeler and colleagues' (2008) quantitative study directly support the notion that favorable attitudes toward treatment manuals predict implementation. Practitioners endorsing positive outcomes associated with manuals were more likely to use contingency management than those endorsing less positive outcomes.

A second criticism of the evidence-based practice movement is the emphasis on evidence without a critical evaluation of its strength (Jensen, Weersing, Hoagwood, & Goldman, 2005). Practitioners have varying levels of experience and training in research and are not always able to make a critical evaluation of the evidence. Furthermore, researchers themselves do not always agree on what constitutes adequate evidence for a practice to be deemed evidence-based (Kazdin, 2004). Practitioner views about the nature of research and of the evidence resulting from such research may vary in their compatibility with implementing EBPs.

Themes related to these ideas have emerged in qualitative studies. For example, through interviews with practitioners, Guydish et al. (2005) found that sustained implementation of the Matrix model post participation in a clinical trial was related to practitioner familiarity with and acceptance of research in general. Additionally, Torrey, et al. (2005) observed that the culture of programs participating in the National EBP Project varied in their degree of scientific thinking and predisposition to implementing

science based services. The extent to which practitioners value research is another aspect of compatibility that may play a role in implementation.

Finally, given that many EBPs are developed and tested in well-controlled laboratory settings (i.e., through efficacy studies), practitioners may have different perceptions about how well the practice applies to their particular clinical settings and populations. While this issue of transportability is a frequently voiced concern in the literature, little research has addressed how it may influence the implementation of EBPs (Kazdin, 2004). In one qualitative study, however, practitioners expressed concerns that using the Matrix model was problematic in that it did not address the heterogeneity of their client population or their multiple problems (e.g., comorbidity; Obert et al., 2005). Similarly, in their quantitative study, Nelson and Steele (2007) found that attitudes toward treatment research, including attitudes about transportability, predicted self-reported use of EBPs.

Issues of transportability, the nature of research and evidence, and the use of treatment manuals or toolkits have been debated by proponents and critics of the evidence-based practice movement, but few investigators have addressed how practitioner views on these issues may influence the implementation of EBPs. Views on these issues may be subsumed under Rogers' (2003) general attribute about the compatibility of the practice with the practitioners' beliefs and values about their own practice. The extent to which this broad construct of compatibility impacts EBP implementation requires further study.

Complexity. Complexity is "the degree to which an innovation is perceived as relatively difficult to understand or use" (Rogers, 2003, p. 257). Innovations vary in the level of expertise needed for their implementation. Evidence-based practices also vary in their complexity, and perceptions about complexity are likely specific to each individual practice. While Rogers acknowledged that the research on complexity is not entirely conclusive, he observed that the complexity of an innovation is negatively related to its rate of adoption. Little systematic research has examined complexity in the context of EBP adoption or implementation; however in the research that does exist on the topic, complexity appears a construct relevant to EBP implementation.

Data obtained from qualitative studies using semi-structured and in depth interviews, observations, and documentation review suggest that model clarity influences EBP implementation. In an investigation of factors influencing the implementation of the NSF for mental health in northern England, Kaner, Steven, Cassidy, and Vardy (2003) found that differential interpretation led to problems in consistent application of the guidelines. Similarly, Bachman and Duckworth (2003) identified that acceptance of the CCISC model in Massachusetts state agencies was hindered by the lack of a clear picture of the practice. Moser et al. (2004) described the difficulties that practitioners had implementing IDDT in CMHCs as part of the National EBP Project in Indiana. They cited the model's complexity as well as insufficient clarity as barriers to implementation. Gordon and Stanar (2003) explored factors influencing the implementation of Parenting Wisely. They found that practitioners who self-reported high implementation of the practice attributed their success in part to the ease with which it is implemented.

An ongoing quantitative study supported the emerging role of complexity in EBP implementation. In the preliminary paper on the IDARP results, Panzano et al. (2005) reported a positive relation between the degree to which implementation was seen as relatively easy and EBP assimilation into routine practice. Evidence-based practices vary in organizational and clinical complexity, and practitioner perceptions about this complexity may influence their willingness to try and ultimately implement the practice.

Observability. Observability is "the degree to which the results of an innovation are visible to others" (Rogers, 2003, p. 258). In the context of EBPs, the desired results of the practice are improvements in consumer outcomes. This defining characteristic of EBPs may be more or less observable depending on the particular practice. For example, in supported employment, employment rates are observable outcomes. In IDDT, however, client movement through the stages of change or reductions in substance use may not be as readily apparent.

According to Rogers, observability is positively related to an innovation's rate of adoption. The descriptive results of the IDARP suggest that observability is also related to implementation; Panzano et al. (2005) found a positive relation between practitioner views of EBP outcome demonstrability and later assimilation of the EBP into routine

practice. Related research has addressed the relation between implementation and observability by providing outcome feedback to practitioners with the intention of improving implementation.

Through a review of theories related to changing clinician practice, Reimer et al. (2005) devised a model to facilitate the implementation of EBPs through practitioner behavior change. In their Contextualized Feedback Intervention Theory, the provision and acceptance of outcome-based feedback is central to practice change. Liddle et al. (2002) applied this idea, albeit informally, to the implementation of Multidimensional Family Therapy (MDFT) in an adolescent intensive outpatient program in Florida. The authors used weekly "scorecards" to document patient progress and practitioner adherence to MDFT and reviewed the scorecards with practitioners in regular supervision meetings. Through a qualitative analysis of interview, chart review, and observation data, they found that the use of the scorecards was one of the most important facilitators of the implementation process. They noted that once the practitioners saw their patients change, they became more motivated to implement the model. As practitioners were able to observe positive results, they increased their fidelity to the practice. Thus, the role of observability in innovation adoption may generalize to the context of EBP implementation.

Workplace Climate

Climate refers to individuals' perceptions of their work environment and the impact of that environment on their well-being. Climate consists of multiple dimensions, but a single underlying climate factor is presumed (Glisson, 2002). When analyzed at the individual level, climate perceptions are referred to as psychological climate. When individuals within the same organization agree on perceptions of their shared environment, their collective or aggregated perceptions are referred to as organizational climate. Climate is a property of the individual or individuals within the organization rather than a property of the organization (Parker et al., 2003). Accordingly, climate in this study is conceptualized as separate from the organizational facilitators factor identified by Aarons (2005) in his adaptation of the Frambach and Schillewaert (2002) model.

Two recent meta-analytic reviews indicate that climate relates positively to job performance (Carr, Schmidt, Ford, & DeShon, 2003; Parker et al., 2003). In the context of EBP implementation, however, the relation between climate and fidelity remains unclear. Glisson and Hemmelgarn (1998) found that climate was related positively to the degree to which children's mental health service programs met quality standards. Additionally, Aarons and Sawitzky (2006b) found that climate was positively associated with practitioner attitudes toward EBPs in general. Conversely, Schoenwald, Sheidow, Letourneau, and Liao (2003) found that climate was unrelated to therapist adherence to Multisystemic Therapy.

While the global construct of climate includes multiple dimensions, there is little consensus as to what specific dimensions comprise the presumed higher order construct (Parker et al., 2003). Furthermore, current climate literature suggests that the specificity of the climate construct should match the specificity of the outcome of interest (Carr et al., 2003). Studies of climate dimensions specific to EBP implementation may demonstrate more consistent relations than has previous research using the global climate construct. Indeed, several specific climate dimensions have emerged as relevant to practice change; these include involvement, learning and change, cohesion, and burnout.

Involvement. The way in which an EBP is introduced by the leadership of an organization and the degree of practitioner involvement in the adoption decision may influence implementation. Involvement includes perceptions about one's degree of participation or influence in decision-making and the level of communication or sharing of information within the organization (Patterson et al., 2005). Rogers (2003) addressed involvement through his discussion of authority innovation-decisions. Authority decisions are adoption decisions that are made by relatively few powerful people in the organization (e.g., the CEO of a company). According to Rogers, authority decisions generally lead to the fastest rate of adoption; however, they also are more likely to be circumvented by employees during the implementation process. Thus, implementation of EBPs may be influenced by the perceived degree of practitioner involvement in the organizational adoption decision. Several studies have addressed this possibility.

Involvement, ownership, and communication have emerged as themes in qualitative studies of the implementation process. Gold et al. (2003) attributed their failure to implement ACT and supported employment teams in a CMHC in part to insufficient staff buy-in, "we erred in not inviting staff members to participate in project development, and thus staff felt no sense of ownership of, and little obligation to promote and support the new interventions" (p. 299). Similarly, Moser et al. (2004) cited attitudinal barriers to the implementation of ACT and IDDT in sites where implementation was directed by administrators without first engaging practitioners in the decision-making process. Finally, Kaner and colleagues' (2003) study of practitioner implementation of the UK's NSF for mental health resulted in three major themes, one of which was the way the model was introduced to practitioners. Practitioners reported strong feelings that the model had been imposed on them without consultation or interaction from management and consequently held negative views of the model.

The role of involvement in the implementation of EBPs has also been addressed through quantitative studies. Panzano et al. (2005) found a positive relation between the extent of staff involvement and influence in decision making and the degree of EBP implementation. They also found a positive relation between implementation and the quality of communication between the purveyor of the EBP and the adopting organization. Glisson (2002) examined the effect of an organizational intervention, the Availability, Responsiveness, and Continuity (ARC) initiative, on changes in adherence to children's mental health service quality standards in the state of Tennessee. The ARC includes 10 components, one of which is participatory decision making. Glisson found that case management teams receiving the ARC intervention had improvements in service quality greater than those of the control group. It is not clear, however, how essential participatory decision-making is to the ARC intervention. Furthermore, in a study of the role of climate in the implementation and outcomes of Multisystemic Therapy (MST), Schoenwald et al. (2003) found results inconsistent with previous studies. Practitioner participation in decision making did not predict adherence to the MST model. Certainly, further investigation is needed to determine the role of involvement in the implementation of EBPs.

Learning and change. Learning and change climate perceptions refer to individuals' views about what helps and hinders learning and change within an organization (Mikkelsen, Saksvik, & Holger, 1998). Perceptions about access to training and supervision, support and time for learning, openness to change, and receipt of constructive feedback are all aspects of learning climates (Bates & Khasawneh, 2005). Learning climate has been positively associated with organizational capacity for innovation in a variety of organizations (e.g., manufacturing, insurance, retail; Bates & Khasawneh, 2005; Shipton, Fay, West, Patterson & Birdi, 2005). As innovations, EBPs are new ideas representing a change from existing practice, and a change from existing practice requires learning on behalf of practitioners. The extent to which practitioners perceive their work environment as supportive of such change and learning may impact EBP implementation.

In a longitudinal qualitative study of the implementation of a client-driven multidisciplinary team approach within an Australian mental health facility, Rowe and Boyle (2005) found that practitioner defensiveness against change and fears of punishment for making mistakes during the learning process were substantial barriers to the change process. In another qualitative study, Moser et al. (2004) concluded that implementation of ACT was less successful in sites that did not allow for a temporary loss in productivity (i.e., practitioner billable service hours) so that practitioners had time to learn the new practice. Finally, in Ohio's IDARP study, the extent to which an organization was seen has having a learning culture was related positively to implementation or assimilation of EBPs into routine practice (Panzano et al., 2005). Hence, while few studies have directly addressed the notion that learning climate influences EBP implementation, aspects of such a climate have emerged as relevant in the existing literature.

Social norms and work group cohesion. The theory of planned behavior suggests that norms play an important role in the prediction of behavioral intention (Ajzen, 1991). Social learning theory emphasizes the role of modeling and observational information exchange in behavior change (Bandura, 1977). Finally, according to Rogers' (2003), the diffusion of innovations occurs through communication between individuals

who are linked in networks; "an individual is more likely to adopt an innovation if others in his or her network have adopted previously" (p. 359). Accordingly, the implementation of an EBP by individuals in the practitioner's social or work group environment may impact his or her own implementation of the practice.

While the relation between work group norms and EBP implementation has not been studied directly, findings from related research offer some suggestion about their potential role. In their preliminary paper on Ohio's IDARP results, Panzano et al. (2005) reported a positive relation between professional and system norms that favored adoption and a positive adoption decision at the organizational level. In an application of the theory of planned behavior, Jimmieson, White, and Peach (2004) assessed the relation between work group norms and employee intention to implement specific actions to facilitate an organizational change (i.e., relocation). They found a positive relation between group norms and intention only for those employees who reported high identification with their work group. Thus, the nature and degree of linkage or connection among work group members may be relevant to implementation. The cohesion dimension of climate addresses this issue.

Cohesion is the degree of perceived cooperation, friendliness, trust, and mutual support among members of a work group (James & Sells, 1981). Relatively more research has addressed the relation between cohesion and EBP implementation. Qualitative studies suggest a positive relation between EBP implementation and staff cohesion. Moser et al. (2004) identified intra-team conflicts as a barrier to the implementation of ACT, which requires strong cooperation among team members. In a qualitative report on the implementation of contingency management in five New York City methadone treatment programs, Kellogg et al. (2005) noted that the successful implementation of the EBP appeared to impact staff cohesion positively.

Results from quantitative studies are less clear. In a survey study, Corrigan, McCracken, Kommana, Edwards, and Simpatico (1996) examined barriers to the implementation of behavioral innovations for individuals with SMI (e.g., skills training) in the context of an Illinois state psychiatric hospital. They found that individuals reporting relatively greater collegial support perceived fewer barriers to implementing the

behavioral programs; they did not, however, measure implementation directly. Lochman and colleagues (2009) found that positive coworker relations did not predict counselor implementation of a school-based youth violence prevention program. Finally, results from Joe, Broome, Simpson, & Rowan-Szal (2007) indicate that cohesion may interact with other counselor perceptions to predict use of workshop training.

Stress and burnout. Learning and implementing an EBP requires time and effort. The degree to which practitioners perceive that they are already overloaded with work tasks and under pressure to meet job demands may influence the time and effort devoted to the implementation of a new practice. Burnout is a prolonged psychological response to chronic job stress that has been associated negatively with job performance in a variety of work contexts (Maslach, Schaufeli, & Leiter, 2001). In the context of mental health services, burnout has also been associated negatively with practitioner job satisfaction and mental health consumer outcomes (Aarons & Sawitzky, 2006a; Priebe et al., 2004). The degree to which job stress leads practitioners to experience burnout may influence the uptake of EBPs as well.

Burnout consists of three core features or dimensions: emotional exhaustion; cynicism, disengagement, or depersonalization; and reduced personal efficacy or accomplishment. Emotional exhaustion is the central quality of burnout and represents role overload, stress, and pressure to produce or meet targets (Maslach et al., 2001). This aspect of burnout has emerged in both qualitative and quantitative studies as relevant to the implementation of EBPs.

Stress, role overload, and low morale were identified by Kaner et al. (2003) and Liddle et al. (2002) as barriers to practitioner implementation of the UK's NSF for mental health and multidimensional family therapy, respectively. In a description of the reasons for Parenting Wisely implementation failure, Gordon and Stanar (2003) cited that practitioners were overwhelmed with other responsibilities. Finally, Moser et al. (2004) noted that pressure to meet productivity standards served as a significant barrier to the implementation of ACT; the implementation of a new program generally requires a loss in productivity as a certain amount of time is spent in training and learning the new practice.

Quantitative studies also suggest the potential role of exhaustion in EBP implementation. In a study of barriers to the implementation of behavioral innovations in a state psychiatric hospital, staff emotional exhaustion was positively related to the perception of barriers to implementing the innovations (Corrigan et al., 1996). Olade (2003) found that perceived work burden was negatively related to research utilization in a survey of nurses in rural southwestern U.S. Finally, in a group comparison, Aarons, Fettes, Flores, & Sommerfeld (2009) found lower emotional exhaustion among practitioners implementing an evidence-based children's service compared with those implementing services as usual. Given the cross-sectional nature of the design, the direction of this relation is not clear.

Stress and exhaustion may be particularly relevant to the implementation of IDDT. Individuals with co-occurring SMI and SUD often have problems in multiple domains, and the comorbidity of their disorders can further complicate their recovery (Drake & Mueser, 2000). In an effort to describe the experience of professionals working with people who have dual disorders, Deans and Soar (2005) conducted in-depth interviews with mental health practitioners in rural Australia. They found that practitioners experienced negative emotions in their work with clients with dual diagnosis. These negative emotions included nervousness, feeling overwhelmed, and feeling at risk of violence. Thus, emotional exhaustion may play an important role in the implementation of IDDT as well as EBPs in general.

Depersonalization, also referred to as disengagement or cynicism, is a reaction to exhaustion and involves the practitioner putting distance between his or herself and the consumer of services (Maslach et al., 2001). Practitioners experiencing depersonalization detach from their job and develop uncaring or indifferent attitudes toward their performance, coworkers, and clients (Halbesleben & Buckley, 2004). Practitioner cynicism toward and detachment from consumers of mental health and substance abuse services may hinder not only consumer outcomes (e.g., through diminished therapeutic alliance), but also the implementation of the EBPs designed to facilitate these outcomes.

Cynical attitudes toward the populations targeted by specific EBPs have been cited as barriers to their implementation. Moser et al. (2004) observed attitudinal barriers

where practitioners believed that their clients would not be able to benefit from IDDT as they were "too sick." Similarly, Chamberlain (2003) noted that practitioner perceptions about the target population's inability to succeed were a barrier to the implementation of the Multidimensional Treatment Foster Care model. Likewise, Torrey et al. (2005) described implementation problems in sites where practitioners lacked a recovery orientation. Finally, Corrigan et al. (1996) found a positive relation between depersonalization and psychiatric hospital staff perception of barriers to implementing a behavioral program. Depersonalization, manifested in these ways, may impede implementation.

The final component of burnout, personal accomplishment, or more generally professional efficacy, refers to a diminished sense of effectiveness or ability of the practitioner to perform his or her job (Maslach et al., 2001). Social cognitive theory and the theory of planned behavior suggest how this dimension of burnout may be relevant to the implementation of EBPs. Both theories emphasize the role of perceptions or beliefs about one's ability to perform a behavior in the actualization of that behavior (Ajzen, 2002; Bandura, 1989).

In social cognitive theory, "people's self-efficacy beliefs determine their level of motivation, as reflected in how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles" (Bandura, 1989, p. 1176). In the theory of planned behavior, perceived behavioral control includes both perceived self-efficacy and perceived controllability, with self-efficacy indicating the perceived "ease or difficulty of performing a behavior" and controllability indicating "beliefs about the extent to which performing the behavior is up to the actor" (Azjen, 2002, p. 672). Both self-efficacy and controllability have been shown to predict intention and behavior (Azjen, 1991). Given that the implementation of an EBP by a practitioner is an intentional human action that occurs in the work environment, professional efficacy may play an important role in the practitioner's implementation success. In his adaptation of the Frambach and Schillewaert (2002) model, Aarons (2005) proposed that self-efficacy, along with behavioral intention, precedes implementation. While there is little empirical work in this specific area, a few studies have touched on related topics.

In a study of the theory of planned behavior, Jimmieson et al. (2004) assessed the relation between perceived behavioral control and employee intention to implement specific actions to facilitate an organizational change (i.e., relocation). They found that employees perceptions of control over the implementation of the specified actions was positively related to their intention to complete the actions. In a more direct qualitative study of factors influencing EBP implementation, Guydish et al. (2005) found that the degree to which the clinicians believed in their own capacity to change was related to sustained implementation of the Matrix model post clinical trial participation. Finally, in Ohio's IDARP study, Panzano et al. (2005) conceptualized the organizational adoption as a decision under risk. An organization's capacity to manage risk was related positively to adoption of EBPs. In turn, the capacity to manage risk was positively related to the belief that, once trained, the practitioners within the organization would be able to implement the practice competently (Panzano et al., 2005).

Personal accomplishment, the third core feature of burnout, may be particularly relevant to practitioners working with the population of individuals with dual disorders. In their qualitative study, Deans and Soar (2005) found that practitioners felt frustrated, powerless, and inadequate in their work with people who have dual diagnosis. These perceptions of diminished personal accomplishment may play a role in the implementation of EBPs in general and IDDT specifically.

In summary, several specific dimensions of workplace climate have emerged as relevant to EBP implementation. Practitioners' involvement in the organizational level adoption decision, their perceptions about their organizations' stance on learning and change, the norms and cohesion of their work groups, and the degree to which they experience burnout all may influence EBP implementation. The existing literature only begins to address this possibility; systematic study is sorely needed.

Organizational Facilitators

Organizations may be defined as stable systems of individuals working together to achieve common goals. Organizations consist of a hierarchy of authority through which labor is divided (Rogers, 2003). Organizational facilitators are actions taken at an organizational level (i.e., affecting the system of individuals) to market an innovation to

individuals within the organization (Frambach & Schillewaert, 2002). According to Frambach and Schillewaert, organizational facilitators include training and education, technical support, and incentives or control structures. Additionally, Rogers emphasizes the role of champions (i.e., individuals who put their authority or weight behind an innovation) in facilitating the adoption of innovations within organizations. Related variables have emerged in the literature on EBP implementation; training and technical support may be subsumed under the broader construct of installation efforts, and the role of the champion may be translated as leadership support.

Installation efforts. Installation efforts are the actions taken at an organizational level to prepare the organization for the implementation of an EBP. These efforts include the allocation of resources (e.g., funding, staff, offices, equipment) and the provision of effective training and technical support (Fixsen et al., 2005). While objective measures of installation efforts may be available at the organizational level (e.g., budget, training schedules), practitioner perceptions about such efforts may diverge. For example, Corrigan et al. (1996) found that practitioner perceptions about the degree to which inadequate resources were barriers to the implementation of an evidence-based behavioral program varied systematically with practitioner burnout. Furthermore, EBPs vary in the degree of clarity with which service delivery components are defined (Fixsen et al., 2005). For example, ACT defines specific staff to client ratios, whereas IDDT does not specify such ratios (SAMHSA, 2003). Given this margin for interpretation of the practice, practitioners will likely have varying beliefs about the adequacy of their organization's planning for its implementation. These perceptions about resources and training, in turn, may impact the degree to which practitioners implement the given EBP.

Practitioner views about the role of dedicated resources appear in several qualitative studies of EBP implementation. Through interviews with site stakeholders, including program directors, practitioners, and clients, Moser et al. (2004) found that planning, funding, staffing, and equipment such as cell phones were important factors in the implementation of ACT and IDDT. Using similar methodology, Guydish et al. (2005) observed that planning and staffing were relevant to the sustained implementation of the Matrix model. The issues of funding and third party payment were echoed by

stakeholders interviewed about the implementation of behavioral couples therapy in substance abuse clinics (Fals-Stewart et al., 2004). Finally, McHugh and Barlow (2010) note that the leading national and state level implemenation efforts to date are supported by a substantial allocation of funding and training resources.

Findings from quantitative studies also support the notion that the allocation of specific resources is relevant to EBP implementation. The degree to which sites had dedicated specific resources was positively related to the assimilation of EBPs into routine practice in the IDARP study (Panzano et al., 2005). Moreover, funding and computer availability were positively related to the implementation of Parenting Wisely in Gordon and Stanar's (2003) study of social service agencies. Finally, Dariotis, Bumbarger, Duncan, and Greenberg (2008) found that sufficient allocation of resources was related to program adherence across a variety of evidence-based children's and family interventions in school and community contexts.

Specific allocation of resources may also include training resources. A growing body of research suggests that the training of clinicians poses one of the greatest challenges to EBP implementation (McHugh & Barlow, 2010). In the context of installation efforts, practitioners' perceptions about their organization's resources for training and technical support may relate to their realization of the practice. Reporting on the National Evidence-Based Practice Project, Mancini et al. (2009) noted that the availability of technical assistance and the ability of leadership to provide clinical supervision were important variables in the implementation of ACT. Similar conclusions were drawn for the implementation of IDDT (Moser et al., 2004). Through focus group interviews, Welch and Mooney (2001) uncovered themes of inadequate training and education as perceived barriers to practitioner adherence to Australia's Service Delivery Guidelines for the treatment of people with co-occurring disorders. Similarly, Gold et al. (2003) described the need for ongoing training and consultation in the implementation of ACT and supported employment.

Leadership support. Within organizations there are at least two types of leaders, those individuals in managerial or authority positions and those who are selected by the other members of the organization. This latter type of leader is referred to as a champion

or opinion leader and is particularly important in the implementation of innovations, "the presence of an innovation champion contributes to the success of an innovation in an organization" (Rogers, 2003, p. 414). The influence of champions within organizations underscores the importance of a subjective evaluation of leadership support. Evidence-based practices supported by positional leaders may or may not also be supported by opinion leaders within an organization and vice versa. While several EBP implementation studies suggest the importance of leadership support, few distinguish between managerial and opinion leader support.

Support for the role of leadership commitment in the implementation of EBPs comes primarily from qualitative reports of interviews with program stakeholders. For example, the implementation success of contingency management in New York methadone treatment programs was attributed by stakeholders in part to dynamic program leaders (Kellogg et al., 2005). Similarly, ineffective leadership was identified as a significant barrier to the implementation of IDDT in Indiana EBP Project sites (Moser et al., 2004). And finally, Panzano et al. (2005) found that top management support was positively related to assimilation of EBPs into routine practice, although only later in the implementation process (i.e., on their second contact).

Taken together the existing literature on EBP implementation suggests that installation efforts and leadership support play an important role in implementation success. These organizational facilitators may provide the infrastructure that practitioners need to perform the new practice. At the same time, practitioner perceptions of these factors may diverge from objective measures and from perspectives of program directors, especially when the EBP is not well specified in terms of service delivery components such as practitioner to client ratios. These perceptions may influence practitioners' perceived behavioral control and ultimately their implementation of the practice.

Practitioner Characteristics

Practitioner characteristics include basic demographics, such as age and sex, as well as other characteristics, such as job tenure, position, and prior training and experience. While not the primary focus of this study, these variables will likely influence EBP implementation, particularly prior training and experience.

Demographics. In the diffusion of innovations literature, the rate of innovation adoption has been associated with a variety of demographic variables, such as years of formal education and occupational status (Rogers, 2003). Examples in the context of EBP implementation include Henggeler et al. (2008) who found that age and gender predicted implementation of contingency management and Aarons (2004) who found that professional position and educational level were related to practitioner attitudes toward EBPs. These studies suggest that practitioner demographics may relate not only to adoption but also to implementation.

Training and experience. Despite the finding that traditional approaches to dissemination (e.g., publications, continuing education workshops) do not appear to result in lasting practice changes, most would agree that implementing an EBP requires knowledge and skills. In Rogers' (2003) model of innovation diffusion, the first stage in the innovation-decision process is the acquisition of knowledge about the innovation. Without awareness of a practice, a practitioner cannot make a decision to accept or reject it. Without knowledge of how to do the practice, a practitioner cannot implement it. Implementation will depend in part on practitioners' knowledge and mastery of the practice. In the context of EBPs, Moser et al. (2004), observed that mastery was one of the most frequently cited barriers to the implementation of IDDT in Indiana. Knowledge and skills may be particularly important for complex EBPs such as IDDT.

Practitioners bring varying levels of knowledge and skills to an organization depending on their training and experience. Given the interdisciplinary nature of mental health and substance abuse treatment organizations, practitioners within these organizations will have varying professional training (e.g., social work, nursing, psychology) as well as varying levels of training specific to IDDT. For example, a practitioner may have attended a continuing education workshop on motivational interviewing which is one aspect of IDDT. Another practitioner may have been exposed to evidence-based practices as part of earning a degree in social work. These prior training experiences may influence EBP implementation in addition to any specific EBP training provided directly by the practitioner's employer or organization. Furthermore, the nature of the training obtained by practitioners may influence implementation.

Recent investigations have examined a variety of training approaches, formats, and intensities in an effort to understand what training contributes to practice change (e.g., Lochman et al., 2009; Sholomskas et al., 2005). While brief training approaches (e.g., one to two day workshops) appear to result in immediate improvements in practitioner skill, more intensive supervision and coaching as well as attention to factors beyond training, such as those addressed in the foregoing review, appear necessary for sustained implementation (Madson, Loignon, & Lane, 2009; McHugh & Barlow, 2010). Certainly, these factors should be considered in the prediction of EBP implementation, and while not the direct focus of this investigation, are included in the framework for this study.

Models of Innovation Implementation Revisited

The current literature on the implementation of EBPs in the specific context of mental health and substance abuse treatment suggests numerous potential influences on implementation. These influences fall into four main categories that are generally consistent with the factors proposed by Frambach and Schillewaert (2002) and Aarons (2005); attributes of the innovation or EBP, workplace climate, organizational facilitators, and personal characteristics. These four categories provide the framework for this study. The framework is summarized and compared with the previous models in Table 2.

The innovation attributes category corresponds with the attitudes components in the Frambach and Schillewaert (2002) and Aarons (2005) models; however, unlike the previous models, no hypothesis is made about the centrality of the attitudes component. Additionally, this category is specified differently than the previous models. Similar to Rogers' (2003) conception, it includes attitudes about relative advantage, compatibility, complexity, and observability.

Consistent with Aarons (2005), organizational or workplace climate emerged as a potential influence in EBP implementation; however, because climate is a property of the individual (Parker et al., 2003), it is not conceptualized as an organizational facilitator as in Aarons (2005). Instead, climate is conceptualized as a separate major category of

influence. The social networks and usage components in Frambach and Schillewaert (2002) and Aarons (2005) are included as aspects of climate in the current framework.

With the exception of the climate component, the organizational facilitators category is generally consistent with the Frambach and Schillewaert (2002) and Aarons (2005) models. Leadership support and installation efforts are considered the main organizational facilitators for EBP implementation. The practitioner characteristics category corresponds with the personal characteristics components in the previous models. Personal dispositional innovativeness was left out in the proposed framework as the focus of this study is primarily on modifiable variables.

Table 2.
Proposed Influences on Evidence-Based Practice Implementation

Frambach and Schillewaert (2002)	Aarons (2005)	Current Study Adaptation
Attitudes Toward Innovation • Beliefs • Affects	Attitudes Toward Evidence-Based Practice • Appeal • Requirements • Openness • Divergence	Innovation Attributes • Relative advantage • Compatibility • Complexity • Observability
Social Usage • Network externalities • Peer usage	Social Networks • Peer communication • Peer usage	Workplace Climate • Involvement • Learning and change • Social norms and cohesion • Stress and burnout
Organizational Facilitators • Training • Social persuasion • Organizational support	Organizational Facilitators • Training • Social influence • Organizational support • Leadership • Culture • Climate	Organizational Facilitators • Leadership support • Installation efforts
Personal Characteristics • Demographics • Tenure • Product experience • Personal values	Personal Characteristics • Demographics • Tenure • Product experience • Personal values	Practitioner Characteristics • Demographics • Training and experience • Knowledge and skills
Personal Dispositional Innovativeness	Personal Dispositional Innovativeness	

Method

The purpose of this study was to identify potentially modifiable practitioner level variables that predict practitioner level implementation of IDDT. Using the proposed framework as a guide, the following primary research questions were addressed through a prospective correlational survey design:

1. To what extent do practitioner perceptions of the attributes of IDDT, workplace climate, and organizational facilitators predict IDDT implementation beyond practitioner characteristics?
2. To what extent are the specific dimensions of attributes of IDDT, workplace climate, and organizational facilitators related to IDDT implementation?

Participants

Participants were 115 practitioners employed in Hawaii Adult Mental Health Division (AMHD) and Alcohol and Drug Abuse Division (ADAD) funded programs. These programs included state operated community mental health centers (CMHCs) and private agencies with AMHD and/or ADAD contracts. Of the 115 participants, 100 completed both surveys (13% attrition). Additionally, two participants reported irrelevant data at follow-up (i.e., they were no longer working with the population of individuals with co-occurring disorders). These data were discarded for a final sample of 98 participants who were used in the subsequent analyses.

All participants had received an AMHD sponsored IDDT training series or curriculum. The curriculum consisted of 24 hours of training contact with a mix of didactic, demonstration, and practice exercises. The training was delivered by one to two trainers in a series of weekly two to six hour sessions. Seven cohorts received the training between June of 2006 and August of 2009. The curriculum consisted of six modules covering the following topics: overview of co-occurring disorders and integrated dual disorders treatment, substances of abuse, IDDT screening and assessment, stages of change and stage-wise treatment, motivational interviewing, and case formulation and recovery planning.

Measures

Practitioner level predictor variables, (i.e., innovation attributes, dimensions of workplace climate, and organizational facilitators), covariates (i.e., practitioner characteristics), and IDDT implementation variables (i.e., general IDDT and motivational interviewing implementation) all were measured through practitioner self-report.

Predictor variables. A practitioner survey was constructed using several subscales from existing measures. The subscales were chosen to reflect the four main components of the proposed framework: innovation attributes, workplace climate, organizational facilitators, and practitioner characteristics. The scales used to measure each component as well as their source instruments are detailed below.

Innovation Attributes. Moore and Benbasat's (1991) untitled short (25 item) scale for measuring perceived characteristics of innovating (PCI) was used to measure practitioners' perceptions of the characteristics of IDDT. This measure was supplemented with one subscale from Aarons' (2004) Evidence-Based Practice Attitudes Scale.

Moore and Benbasat's (1991) PCI is a self-report measure that consists of eight subscales reflecting the five attributes of innovations described by Rogers (2003); relative advantage, compatibility, complexity (referred to by Moore and Benbasat as ease of use), observability (referred to by Moore and Benbasat as result demonstrability), and trialability. Additionally, the PCI covers three constructs that emerged during the scale development process; image, visibility, and voluntariness. Six of the eight subscales were used in this study; Relative Advantage, Image, Voluntariness, Compatibility, Ease of Use, and Result Demonstrability.

Because the PCI was developed in the context of information technology and the innovation referred to in the instrument is the personal work station (PWS), minor changes were made in the wording of the items. For example, "Using a PWS is compatible with all aspects of my work" was changed to "Using IDDT is compatible with all aspects of my work." The response options range from 1 "Extremely Disagree" to 7 "Extremely Agree." See Table 3 for example items from each subscale.

Moore and Benbasat (1991) used a comprehensive scale development and testing procedure. To establish initial construct categories, both newly created and existing items

were pooled and subjected to four rounds of sorting by independent judges. Constructs were redefined when inter-judge agreement indicated the need. The resulting scales were subjected to three field tests. In the final field test, the instrument was administered to 540 employees in seven companies. All scales demonstrated acceptable levels of reliability. Cronbach's Alpha reliability coefficients for the scales used in this study ranged from .77 to .95. Validity was supported through factor analyses as well as discriminant analyses showing that the instrument successfully discriminated between innovation adopters and nonadopters.

The Evidence-Based Practice Attitude Scale (EBPAS; Aarons, 2004) is a self-report survey consisting of 15 items across four subscales; Requirements, Appeal, Openness (to innovation), and Divergence. Only the Divergence subscale was used as it appears to tap a dimension of compatibility relevant to evidence-based practices that is not specifically covered by Moore and Benbasat's (1991) Compatibility subscale. See Table 3 for an example item from the Divergence subscale. The item response options range from 0 "Not at All" to 4 "To a Very Great Extent." These response anchors were modified for this study; "Not at All" was changed to "Strongly Disagree," "To a Very Great Extent" was changed to "Strongly Agree," and so forth. These modifications were made for consistency in response formats across the variety of measures used in this study. They do not alter the overall meaning of the questions.

The EBPAS (Aarons, 2004) was developed in the specific context of mental health services. A pool of initial items was generated on the basis of a literature review and consultation with mental health service providers and researchers. The scale was administered to 373 mental health service providers and managers from 51 organizations. Factor analyses provided support for the four factor structure of the scale. While the internal consistency reliability for the Divergence subscale was not optimal (Cronbach's alpha was .59), the construct remains important and is not represented on other existing scales. Construct validity of the subscale has been supported by data on its relations with practitioner professional status (i.e., intern versus staff) and practitioner perceptions of their organizations' leadership (Aarons, 2005, 2006).

Table 3.
Example Items from Innovation Attributes and Climate Measures

Source Instrument and Subscale	Example Item
Perceived Characteristics of Innovating (Moore & Benbasat, 1991)	
• Relative Advantage	• Using IDDT improves the quality of work I do.
• Image	• People in my organization who use IDDT have a high profile.
• Voluntariness	• My boss does not require me to use IDDT.
• Compatibility	• IDDT fits well with my work style.
• Ease of Use	• Overall, I believe that IDDT is easy to implement.
• Result Demonstrability	• The results of using IDDT are apparent to me.
Evidence-Based Practice Attitude Scale (Aarons, 2004)	
• Divergence	• Clinical experience is more important than using research-based practices.
Organizational Climate Measure (Patterson et al., 2005)	
• Involvement	• Management involves people when decisions are made that affect them.
• Innovation and Flexibility	• This organization is quick to respond when changes need to be made.
• Performance Feedback	• The way people do their jobs is rarely assessed.
• Pressure to Produce	• People are expected to do too much in a day.
Organizational Readiness for Change (TCU Institute of Behavioral Research, 2005)	
• Cohesion	• The staff here work together effectively as a team.
• Training	• You receive regular in service training.
Maslach Burnout Inventory-Human Services Survey (Maslach & Jackson, 1986)	
• Emotional Exhaustion	• I feel frustrated by my job.
• Depersonalization	• I don't really care what happens to some recipients.
• Personal Accomplishment	• I feel I'm positively influencing other people's lives through my work.

Workplace climate. Several dimensions of climate were measured; involvement in decision making, innovativeness and flexibility, training, performance feedback, staff cohesion, pressure to produce, and burnout. Subscales were drawn from three instruments; the Organizational Climate Measure (OCM; Patterson et al., 2005), the Texas Christian University (TCU) Organizational Readiness for Change measure (ORC; TCU Institute of Behavioral Research, 2005), and the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1986).

The OCM is a relatively comprehensive multidimensional self-report measure of climate. It consists of 17 subscales, four of which were used in this study; Involvement, Innovation and Flexibility, Performance Feedback, and Pressure to Produce. See Table 2 for example items. The response options range from 1 "Definitely False" to 4 "Definitely True."

Using theory from management and organizational psychology as a framework, Patterson et al. (2005) developed initial OCM domains and scale items. They then piloted and administered the measure to 6869 employees from 55 manufacturing organizations in the United Kingdom. The full scale demonstrated acceptable reliability, as well as discriminant, concurrent, and predictive validity (Patterson et al., 2005).

Reliability and validity were also supported for each of the four subscales chosen for use in this study. Internal consistency reliabilities (Cronbach's alpha) ranged from .79 to .87. The results of factor analyses suggested the subscales tapped distinct constructs. Validity was supported by significant relations between: the Involvement subscale and the degree of coherence in the organizations' appraisal systems; the Innovation and Flexibility subscale and the organizations' age and innovativeness in products and technology; and the Performance Feedback subscale and the organizations' degree of sophistication in training practices (Patterson et al., 2005).

Additional climate dimensions were measured using the Organizational Readiness for Change measure (Lehman, Greener, & Simpson, 2002; TCU Institute of Behavioral Research, 2005). The ORC is a comprehensive self-report survey designed to measure organizational functioning and readiness for change. The 18 ORC scales are organized

into four categories; organizational climate, motivation for change, adequacy of resources, and staff attributes, although the authors do not provide empirical support for this organization. Two scales were chosen for the present study, Cohesion and Training. The Cohesion subscale taps a dimension of climate relevant to EBP implementation that is not covered by the OCM. A training dimension is included on the OCM, but because the ORC Training scale was developed with specific reference to social service agencies, it is more relevant to the context of this study and was chosen over the OCM training subscale for this reason. For example items from the Cohesion and Training scales see Table 3. The response options range from 1 "Strongly Disagree" to 5 "Strongly Agree."

Guided by literature on technology transfer, organizational development, and organizational climate, Lehman et al. (2002) developed, piloted and tested the psychometric properties of the ORC. The scale was administered to 458 treatment staff and 135 program directors from more than 100 substance abuse programs. Reliability, scale dimensionality, and validity analyses showed the measure to have overall acceptable psychometric properties as well as meaningful relations with other pertinent variables.

Specific results for the Cohesion and Training scales also suggested acceptable reliability and validity. Internal consistency reliabilities (Cronbach's alpha) for the Cohesion and Training scales were .92 and .64, respectively. Factor analysis supported the unidimensionality of each scale. Program staff and director scores on each scale were correlated significantly, suggesting the scales are useful across these differing roles. Finally, the scales were related significantly to treatment process and organizational structure variables; Cohesion was related to counselor rapport and Training was related to program stability, providing some support for construct validity (Lehman et al., 2002).

The final aspect of climate measured was burnout. While the OCM and the ORC tap aspects of burnout (i.e., pressure to produce, stress), neither do so comprehensively. Consequently, burnout was measured using the Maslach Burnout Inventory-Human Services Survey (MBI-HSS; Maslach & Jackson, 1986). The MBI-HSS is a self-report measure consisting of 22 items across three subscales; Emotional Exhaustion, Depersonalization, and Personal Accomplishment. See Table 3 for example items. The

response options range from 0 to 6 indicating varying frequencies, for example, 0 indicates "Never," 3 indicates "A few times a month", and 6 indicates "Every day."

The MBI-HSS was developed over an eight year period, beginning with a qualitative exploratory phase and resulting in the current scale. The measure has been examined for reliability and validity in numerous studies which collectively provide supportive data on reliability, factor structure, and convergent and discriminant validity (Maslach, Jackson, & Leiter, 1996).

The MBI-HSS has been administered to large samples of employees, including mental health workers, in a variety of health and service organizations (Maslach et al., 1996). Both measures of internal consistency and test-retest reliability have shown acceptable reliability. Maslach et al. reported Cronbach's alphas of .90, .79, and .71 and test-retest coefficients of .82, .60, and .80 for the Emotional Exhaustion, Depersonalization, and Personal Accomplishment subscales, respectively. Convergent validity has been supported by significant relations between MBI-HSS scores and independent behavioral ratings; measures of job characteristics, such as caseload size; and measures of employee outcomes, such as intention to leave one's job. Discriminant validity has been supported by low and insignificant correlations between MBI-HSS scores and measures of job satisfaction and social desirability, respectively (Maslach et al.).

***Organizational facilitators*.** Organizational facilitators include leadership support of IDDT and program installation efforts. While there are existing measures of leadership style and general supervisor support, such as the OCM (Patterson et al., 2005) or the Multifactor Leadership Questionaire (Avolio, Bass, & Jung, 1999), these scales tap constructs that are general in nature and do not address the specific issue of leadership support for IDDT. While the relations among leadership style, general supervisory support, and implementation may be fruitful areas of investigation (e.g., Aarons, 2006), they are outside the scope of this study. Instead, a question specifically addressing leadership support of IDDT was written and added to the practitioner survey: "The leadership at your organization encourages your use of IDDT." Because champions of IDDT may or may not be in authority positions within the organization, a second related

question was written for the survey: "Your co-workers encourage your use of IDDT." Response options ranged from 1 "Strongly Disagree" to 5 "Strongly Agree." The two items were averaged resulting in a leadership support scale.

Organizational facilitators also include program installation efforts, and installation efforts include the sufficiency of training and resources devoted to the EBP. A measure of installation efforts is part of the ORC (Lehman et al., 2002). This domain of the ORC consists of 28 items across five subscales tapping the adequacy of offices, staffing, training, computer access, and e-communications. In their study of reliability and validity, Lehman et al., found that these scales were most likely to have lower reliabilities and noted that these scales actually were intended to provide checklists of critical resources rather than to serve as traditional scales. For this reason, and because of the length of the measure, the ORC domain was not used for this study.

Instead, installation efforts were measured through two items developed specifically for this study and added to the practitioner survey. The items address how prepared the organization is to implement the practice. They are: a) "Your organization is prepared to implement IDDT (e.g. office space and equipment, staffing, funding)" and b) "Staff at your organization have the skills they need to implement IDDT." Response options for these items range from 1 "Strongly Disagree" to 5 "Strongly Agree." The two items were averaged for the installation efforts scale.

Practitioner characteristics. Questions about practitioner characteristics were also developed and added to the practitioner survey. They included questions about type of agency (i.e., state or private), role or position, caseload size and mix, basic demographic information, job tenure, experience in the field, and amount, quality, and frequency of training. Amount and quality of training were measured using three items each; the items were averaged resulting in the continuing education and IDDT training evaluation variables, respectively.

Implementation variables. Integrated dual disorders treatment consists of a variety of components implemented at the organizational and individual practitioner level. Because the focus of this study is implementation by practitioners within organizations, only the individual practitioner level components were measured (e.g.,

stage-wise interventions, assertive outreach). Furthermore, because the training curriculum emphasized the motivational interviewing component of IDDT, specific focus was placed on motivational interviewing as an implementation outcome.

General IDDT interventions. The IDDT Fidelity Scale, developed as a part of the National EBP Project, is a broad measure of the core IDDT components; however, it is only appropriate for assessment of IDDT implementation at the program or clinic level (SAMHSA, 2003). No single instrument has been developed to measure implementation of IDDT at the practitioner level. Consequently, the IDDT Fidelity Scale was adapted for use in this study.

The IDDT Fidelity Scale consists of 13 items reflecting essential components of the model (e.g., stage-wise interventions, assertive outreach). Independent observers rate each item from 1 (not implemented) to 5 (fully implemented) relative to anchors established through expert sources and empirical literature (SAMHSA, 2003). Data sources for the ratings include semi-structured interviews with program directors and clinicians, chart reviews, and observations of team meetings.

Although the IDDT Fidelity Scale is being used nationally in EBP Project sites, there are no published studies of its psychometric properties. Initial reliability and validity evidence were reported for an earlier version of the scale, the Dual-Disorder Treatment Fidelity Scale (Mueser, Noordsy, Drake, & Fox, 2003; Wilson & Crisanti, 2006). This earlier version consists of 20 items, 11 of which are found with minor wording changes on the IDDT Fidelity Scale. The earlier version was administered by two raters in six Hawaii AMHD programs. Inter-rater reliability was good; the intraclass correlation coefficients for the 11 items found also on the IDDT Fidelity Scale ranged from .57 to 1.00 with only one falling below .79. The item level ratings also were found to distinguish between programs that specialized in dual disorders and community mental health centers that did not, providing initial known groups validity data (Wilson & Crisanti, 2009). While this earlier version scale and the IDDT Fidelity Scale are not identical, they are similar, and these findings may generalize.

The IDDT Fidelity Scale was adapted into a 12 item self-report measure of implementation at the practitioner level. Only components of IDDT that are primarily

practitioner level interventions were measured. These are reflected in the following fidelity scale items: a stage-wise approach, outreach, motivational interviewing, cognitive behavioral substance abuse counseling, family psychoeducation, self-help participation, pharmacological treatment, and health promotion. Additional areas not explicitly addressed by the fidelity scale, but central to IDDT and to the IDDT training curriculum, were also assessed. These include integration of services, integration in recovery planning, and functional or contextual analysis.

The IDDT Fidelity Scale anchors were used as a basis for the self-report measure. The wording from the anchors was formatted into questions. For example, the scale anchor for Item 9, Family Psychoeducation, reads, "Families (or significant others) receive family psychoeducation on dual disorders." Ratings from 1 to 5 indicate the percentage of families receiving this service. This anchor was converted into the following question, "You provide dual disorders psychoeducation to approximately what percent of your clients' families (or significant others)?" Response options were created to reflect the percentage ranges in the fidelity scale (i.e., less than 20%, 20 to 39%, 40 to 59%, 60 to 79%, and 80% or more). Three additional items were developed to address integration in services, recovery planning, and assessment as these aspects of IDDT were emphasized in the training series. A similar format was used for these items. For additional example items, see Table 4.

Because the IDDT Survey is a new measure, there are no published data on psychometrics; however, the survey was pilot tested for content validity, feasibility, and score variability. To assess content validity, the measure was reviewed by two national level and two local level experts in the practice. To determine feasibility, the degree to which respondents understand the items and response formats, and score variability, the survey was administered to 13 practitioners. Respondents had no problems understanding the items or response formats. All but one item (Item 9) had at least a 4-point dispersion. Mean scores (*SD*) ranged from 1.42 (1.16) to 4.00 (1.70). The mean (*SD*) across respondents was 2.79 (1.36). Based on feedback from the expert reviewers, minor changes were made to the wording of items and some definitions were added to the existing items.

The expert reviewers also provided feedback regarding the self-report nature of the measure, specifically that respondents may endorse most items, consequently reporting greater implementation than was actually occurring. To address this feedback, five items representing practices inconsistent with the IDDT model were added to the survey. These included items about therapies that are not part of IDDT such as, psychodymanic, gestalt, and reality therapies, as well as items inconsistent with specific components of IDDT, such as, "Approximately what percent of your interactions with clients were based on an abstinence-oriented approach (e.g., stressing the importance of abstinence from substances)?" These items were reverse scored. For the complete final survey see Appendix A.

Table 4.
Summary of Implementation Measures

Study Instrument	Source Instruments	Example Items
IDDT Survey	IDDT Fidelity Scale (SAMHSA, 2003)	• You addressed *both* mental illness and substance abuse in approximately what percent of your interactions with clients? • For approximately what percent of your clients did you complete a contextual or functional analysis of substance use?
Motivational Interviewing Survey	Motivational Interviewing Treatment Integrity Scale (Moyers et al., n.d.) Motivational Interviewing Knowledge and Attitudes Test (Leffingwell, 2006)	• Explored my client's views about how change can occur. • Tried to persuade my client to follow the team's recommendations about change. (reverse scored) • Gave clear consequences for continued substance use. (reverse scored)

Motivational interviewing. Because the IDDT training curriculum placed heavy emphasis on the motivational interviewing component of IDDT, the second implementation measure was a motivational interviewing (MI) self-report survey. The survey is based on two existing scales, the Motivational Interviewing Treatment Integrity scale (MITI; Moyers, Martin, Manual, & Miller, n.d.), and the Motivational Interviewing Knowledge and Attitudes Test (MIKAT; Leffingwell, 2006).

The MITI is a behavioral coding system that measures practitioner adherence to motivational interviewing. The MITI is based on a more complex and labor intensive coding system, the Motivational Interviewing Skills Code (MISC). The MITI was developed to provide a more condensed, reliable, economic version of the MISC that focused solely on therapist behavior (Moyers, Martin, Manuel, Hendrickson, & Miller, 2005). Factor analysis was used to derive the underlying factors within the MISC. These factors provided the basis for development of the MITI coding categories. The MITI categories include; Empathy, MI Spirit (collaboration, evocation, and autonomy), Giving Information, Questions (open and closed), Reflections (simple and complex), MI Adherent (asking permission, affirming, emphasizing the client's control, and supporting), and MI Non-adherent (advising without permission, confronting, and directing). Empathy and MI Spirit are global categories rated on a 7 point Likert scale. The remaining categories are behavior counts (Moyers et al., n.d.).

The MITI has been shown to be a reliable and sensitive measure of therapist competence in MI (Moyers et al., 2005). In a validation study, Moyers et al. found adequate inter-rater reliability among three raters (trained undergraduate and graduate students). Intraclass correlation coefficients ranged from .52 to .97. Sensitivity of the MITI was assessed through the comparison of pre- and post-training tapes; differences were significant for several MITI categories (e.g., greater MI Spirit, more Reflections). Finally, the MITI was compared to the MISC, and despite being less than half the length of the MISC, the MITI accounted for 59% of the variance in the MISC factor scores (Moyers et al., 2005). One limitation of the MITI is that is does not measure more advanced MI skills that are core elements of MI. These include elicitation of change talk,

development of discrepancy between client behaviors and goals or values, and support of self-efficacy.

The MIKAT was developed to measure knowledge and attitude change regarding MI strategies (Leffingwell, 2006). The test consists of two parts, a true-false quiz about the principles of MI and a checklist of counseling behaviors that includes both MI consistent (e.g., support self-efficacy) and MI prohibited (e.g., breakdown denial) behaviors. The MIKAT has limited data on psychometric properties, though in one pre-post study, scores on the test changed significantly from baseline to post-MI training workshop (Leffingwell, 2006). The MIKAT and the MITI were used as a basis for the self-report MI Survey.

The MI Survey consists of 31 statements that represent MI consistent or inconsistent strategies (for example items see Table 4). Practitioners are asked to rate the frequency with which they use each strategy. Because the implementation of a new practice may be viewed as a behavior change that occurs in stages (as in the transtheoretical model, Prochaska, Diclemente & Norcross, 1992), and because intention often precipitates behavior (Ajzen, 1991; Webb & Sheeran, 2006), a measure of intention was incorporated into the response scale, possibly to increase the sensitivity of the measure. The response scale ranges from 0 “Never, and I don’t intend to” to 5 “Always.” See Appendix A for the complete survey.

The majority of the MI Survey statements (20 of the 31) were drawn from the MITI category descriptions (Moyers et al., n.d.). Two statements represent Empathy, eight represent MI Spirit, four represent MI Adherent, four represent MI Non-adherent, and one each represent Questions and Reflections. Five additional statements were generated to represent the core MI elements not measured by the MITI (elicitation of change talk, development of discrepancy, support of self-efficacy). The result was a 25 item measure with 16 MI consistent and 9 MI inconsistent statements. The remaining six statements were drawn from the MIKAT checklist of MI prohibited counseling behaviors (Leffingwell, 2006). Prohibited behaviors were selected to balance the self-report survey in terms of MI consistent and inconsistent statements. The MI inconsistent items (i.e., items 2, 4, 6, 8, 10, 12, 14, 17, 19, 21, 23, 26, 28, 30, and 31) were reverse scored.

Because it is a new measure, there are no published psychometric data for the MI Survey; however, the survey was administered to 30 practitioners for pilot testing. Ten practitioners in the pilot group were Hawaii AMHD clinical staff and 20 were practitioners and trainers registered with the Motivational Interviewing Network of Trainers (MINT). The latter constituted an expert group. Items were examined for dispersion of scores and floor and ceiling effects. All but two items had at least a four point dispersion. Item means (*SD*) ranged from 2.45 (1.38) to 4.60 (1.00) with a scale mean of 3.88 (1.31). The MINT practitioners mean score (*SD*), 4.30 (.26), was higher than the AMHD practitioners mean score of 3.06 (.27), $t(28) = 12.29$, $p < .01$, suggesting the MI Survey differentiates between experts and non-experts in the practice.

Procedure

Data were collected on two occasions. The practitioner survey (predictor variables) was administered post-training and the implementation surveys were administered at a three month follow-up point. The practitioner survey (see Appendix C for the complete survey) was administered to participants as a group for each training cohort during one of their regularly scheduled training sessions or agency staff meetings. The implementation surveys were administered in a similar fashion three months later with the exception of one outer island cohort for which the implementation surveys were mailed. Additionally, implementation surveys were mailed to participants who were not present on the follow-up day. Two to three reminders were given via email, telephone, and/or letter for return of the mailed surveys. See Table 5 for the survey administration sequence of the measures.

Table 5.
Administration Sequence for Study Measures

Post-Training	Three Month Follow-Up
Practitioner Survey • Attributes of the Practice • Workplace Climate • Organizational Facilitators • Practitioner Characteristics	Implementation Surveys • IDDT Survey • Motivational Interviewing (MI) Survey

Because the subscales included in the practitioner survey were drawn from a variety of instruments, their administration was counterbalanced according to five randomly selected orders. Administration of the implementation surveys was also counterbalanced. All survey data were linked to follow-up data only through a linkage code (see the introduction section of Appendix C).

Results

Prior to any analyses, data were examined for missing data, outliers, and evaluation of assumptions. Patterns of missing data were assessed using SPSS Missing Values Analysis (MVA). Little's missing completely at random (MCAR) test showed no significant deviation from a pattern of values that are MCAR, X^2 (6651) = 4417, p = 1.00. Less than 2% of all values were missing; however, because the missing values were dispersed across scale items and cases, deletion of cases would have resulted in a substantial decrease in sample size. Consequently, missing values were imputed using the Markov chain Monte Carlo method through the SPSS multiple imputation function. Five imputations were completed resulting in five complete datasets. The observed data along with the five datasets with imputed values were used for the remaining analyses. Pooling or combining values from the imputed sets leads to the optimal estimates and these estimates are reported where possible (i.e., where supported by the SPSS software).

Where a single set of combined estimates could not be computed, the estimates from the observed data or each of the five imputations are reported.

Continuous variables were checked for normality through an examination of skewness, kurtosis, and graphical representations of variables obtained using the SPSS descriptives function. Participants' months in their job (job tenure) was positively skewed and was corrected through a logarithmic transformation. Participants' number and hours of follow-up training were also positively skewed. Because approximately half of all participants reported no follow-up trainings, these variables were dichotomized into "any" or "none" in regard to follow-up trainings number and hours. Consequently, participants' hours of follow-up training was rendered redundant and was dropped from the analysis. Linearity and homoscedasticity were assessed through an examination of bivariate scatterplots produced by the SPSS scatter/dot function.

Several categorical variables were collapsed due to low cell frequencies in one or more categories. The education variable was collapsed to two groups; practitioners with a bachelor's degree or less and those with a master's degree or more. Practitioners' IDDT training hours was collapsed to two groups; those who had received only the hours provided by the curriculum used in this study and those who had the curriculum plus additional IDDT training hours. Training frequency was dichotomized to high frequency (i.e., monthly or more frequently) and low frequency (i.e., quarterly or less frequently). Participant role was collapsed into the following categories: case manager, social worker, substance abuse counselor, team leader, nurse or psychiatrist, multiple roles, and other. See Tables 6 and 7 for a description of the sample along categorical variables.

Table 6.
Practitioner Demographic Characteristics – Categorical Variables

Practitioner Characteristic	*n*	Percent
Training Cohort		
1	18	18.4
2	17	17.3
3	15	15.3
4	13	13.3
5	13	13.3
6	12	12.2
7	10	10.2
Missing	0	
Agency Type		
State Operated	55	56.1
State Contracted	29	29.6
Other	13	13.3
Missing	1	1.0
Role		
Case Manager	27	27.6
Social Worker	15	15.3
Substance Abuse Counselor	8	8.2
Team Leader	7	7.1
Nurse	6	6.1
Administrator	4	4.1
Psychologist	2	2.0
Psychiatrist	1	1.0
Vocational Specialist	1	1.0
Multiple	20	20.4
Other	7	7.1
Missing	0	
Ethnicity		
White	37	37.8
Asian	22	22.4
Native Hawaiian and OPI	21	21.4
Other (multiple or Black)	13	13.3
Missing	5	5.1
Sex		
Female	64	65.3
Male	30	30.6
Missing	4	4.1

Note. Values shown are from observed data.

Table 7.
Practitioner Training and Experience – Categorical Variables

Practitioner Characteristic	*n*	Percent
Education		
High School	1	1.0
Some College	5	5.1
Associate's	4	4.1
Bachelor's	29	29.6
Master's	48	49.0
Doctoral	7	7.1
Other	4	4.1
Missing	0	
IDDT Training Hours		
0-10	11	11.2
11-20	16	16.3
21-30	13	13.3
31-40	9	9.2
41-50	9	9.2
51-60	4	4.1
61-70	4	4.1
71-80	4	4.1
81-90	3	3.1
91-100	3	3.1
More than 100	13	13.3
Missing	9	9.2
IDDT Training Frequency		
Daily	1	1.0
Weekly	30	30.6
Monthly	15	15.3
Quarterly	14	14.3
Semi-Annually	8	8.2
Annually	12	12.2
Less than Annually	14	14.3
Missing	4	4.1
Follow-Up Training Frequency		
Daily	4	4.1
Weekly	19	19.4
Monthly	17	17.3
Quarterly	9	9.2
Never	48	49.0
Missing	1	1.0

Note. Values shown are from observed data.

Two additional variables were dropped from the analysis. Case management services type was dropped due to a change in the way the state provided case management services that rendered this variable inapplicable partway through the study. Caseload size was also dropped due to apparent ambiguity in the question; some participants reported on agency versus practitioner level caseload.

The innovation attributes, workplace climate, and organizational facilitators aggregate variables were formed by summing item level data. Item scores on the Relative Advantage, Image, Voluntariness, Compatibility, Divergence (reverse scored), Ease of Use, and Result Demonstrability subscales were summed to form the innovation attributes aggregate. Item scores on the Involvement, Cohesion, Innovation and Flexibility, Performance Feedback, Training, Pressure to Produce, Emotional Exhaustion (reverse scored), Depersonalization (reverse scored), and Personal Accomplishment subscales were summed to form the workplace climate aggregate. Finally, the installation efforts and leadership support items were summed to form the organizational facilitators aggregate.

Reliabilities were assessed using Cronbach's alpha for internal consistency. The beneficial impact of item deletion was explored in two cases; (a) if the scale alpha was lower than that reported in prior studies, or (b) if a scale developed for this study had an alpha below .80. Item deletion was not explored for scales with only two items. Item deletion was examined for the following scales; Depersonalization, Training, Ease of Use, Demonstrability, and Image, continuing education, the MI Survey, and the IDDT Survey. Item deletion led to improved internal consistency for two scales, participant amount of continuing education (general, EBP, and IDDT related) and the IDDT Survey. For the continuing education scale, the general continuing education item was deleted bringing Cronbach's alpha from .46 to .64. For the IDDT Survey, Item 12 was deleted bringing Cronbach's alpha from .48 to .65. The scales with the lowest internal consistencies were those consisting of only two or three items (e.g., Voluntariness, Image, Installation Efforts). See Table 8 for scale reliabilities. Reliabilities are reported for the observed data.

Table 8.
Descriptive Statistics and Reliabilities for Continuous Variables

	Multiply Imputed		Observed			
Variable	Mean	*SE*	*N*	Mean	*SD*	α
Practitioner Characteristics						
Age	46.87	1.16	87	46.86	12.05	
Training and Experience						
Years in Job	5.98	.77	95	5.99	7.76	
Years in Field	12.51	.98	96	12.52	9.77	
Continuing Education	2.07	.08	96	2.06	.81	.64
IDDT Training Evaluation	3.35	.06	94	3.35	.59	.88
Attributes of IDDT						
Divergence	1.57	.07	97	1.57	.66	.66
Voluntariness	3.97	.13	96	3.97	1.32	.51
Relative Advantage	5.00	.09	94	5.00	.90	.86
Compatibility	5.27	.11	96	5.27	1.04	.82
Ease of Use	4.52	.10	96	4.51	.96	.69
Demonstrability	4.90	.10	96	4.90	.93	.71
Image	3.51	.11	97	3.52	1.04	.63
Innovation Attributes Aggregate	106.72	1.48	91	106.66	15.17	.86
Workplace Climate						
Emotional Exhaustion	2.20	.12	95	2.21	1.21	.90
Personal Accomplishment	5.00	.00	93	5.00	.71	.73
Depersonalization	1.11	.11	96	1.11	1.03	.74
Involvement	2.17	.07	95	2.17	.67	.86
Performance Feedback	2.59	.06	98	2.59	.61	.79
Innovativeness	2.40	.07	94	2.40	.65	.83
Pressure to Produce	3.02	.06	95	3.02	.61	.80
Cohesion	3.46	.09	96	3.46	.88	.88
Training	2.99	.07	94	3.00	1.32	.66
Workplace Climate Aggregate	184.48	2.98	85	182.96	30.53	.93
Organizational Facilitators						
Leadership Support	3.52	.09	96	3.52	.84	.65
Installation Efforts	3.15	.08	95	3.15	.77	.42
Organizational Facilitators Aggregate	13.33	.28	95	13.34	2.80	.68
Implementation						
IDDT Survey	2.97	.05	83	2.96	.52	.65
MI Survey	3.04	.04	86	3.04	.39	.73

Note. $N = 98$ for multiply imputed data.

Preliminary Analyses

Several preliminary analyses were performed to determine which, if any, of the practitioner characteristics were related to the implementation variables. The alpha level was set to .05 for all preliminary and primary analyses. For practitioner characteristics measured on nominal scales, group means were compared using *t* tests or one-way analyses of variance. These characteristics included: training cohort, type of agency, participants' role, ethnicity, sex, education, and initial and follow-up IDDT training hours and frequency. See Table 9 for a description of the multiply imputed IDDT and MI Survey data for these characteristics.

Table 9.
Implementation Surveys Scores for Categorical Variables

			IDDT Survey		MI Survey	
		n	Mean	*SE*	Mean	*SE*
Training Cohort	1	18	2.88	.13	3.16	.09
	2	17	3.08	.14	2.89	.08
	3	15	2.96	.13	2.86	.08
	4	13	2.84	.08	2.86	.08
	5	13	3.10	.18	3.30	.12
	6	12	2.88	.14	3.14	.15
	7	10	3.04	.13	3.16	.06
Agency Type						
State Operated		55.2	2.93	.06	3.04	.06
State Contract		29.4	3.11	.10	3.09	.07
Other		13.4	2.82	.17	2.97	.11
Role						
Case Manager		27	2.96	.12	3.00	.07
Social Worker		15	2.81	.12	2.82	.06
Substance Abuse Counselor		8	3.03	.18	3.06	.17
Team Leader		7	3.26	.13	3.16	.14
Nurse or Psychiatrist		7	3.04	.19	2.86	.14
Multiple Roles		19	2.93	.09	3.19	.12
Other		15	2.99	.14	3.18	.12
Ethnicity						
White		37.2	2.97	.09	3.16	.07
Asian		22.4	2.94	.10	2.88	.09
Native Hawaiian or OPI		22	3.05	.11	3.03	.07
Other		16.4	2.87	.12	3.04	.04
Sex						
Female		66.4	3.06	.06	2.93	.05
Male		31.6	2.78	.08	3.10	.07
Education						
Bachelor's or Less		43	2.99	.08	3.02	.06
Master's or More		55	2.96	.07	3.06	.05
IDDT Training Hours						
Curriculum Only		45.4	2.80	.07	3.03	.06
Curriculum Plus		52.6	3.11	.07	3.06	.06
IDDT Training Frequency						
High		46.8	2.98	.08	2.99	.06
Low		51.2	2.96	.07	3.10	.05
Follow-up IDDT Training Number						
Any		50	2.97	.07	3.11	.06
None		48	2.97	.08	2.98	.05

Note. Values shown are from multiply imputed data; cell sizes were no longer only integer values.

Scores on the IDDT Survey differed significantly between groups on the IDDT training hours and sex variables. Participants with IDDT training hours beyond the hours provided by this study had IDDT Survey scores higher than those with only the curriculum hours. Female participants had IDDT Survey scores higher than those of male participants. Scores on the MI Survey differed among groups on the training cohort variable. Additionally, differences among groups on the MI Survey approached significance for the ethnicity variable. These variables were included in their respective primary analyses. See Tables 10 and 11 for *t* test and ANOVA results.

Table 10.
Differences in Implementation by Practitioner Characteristic – Dichotomous Variables

	t	*df*	*p*
IDDT Survey			
Sex	3.10	77	.00
Education	.31	81	.76
IDDT Training Hours	-3.20	75	.00
IDDT Training Frequency	-.13	79	.90
Follow-up IDDT Training Number	-.21	80	.83
MI Survey			
Sex	1.80	80	.08
Education	-1.47	84	.15
IDDT Training Hours	-.82	76	.41
IDDT Training Frequency	-.36	80	.72
Follow-up IDDT Training Number	1.08	83	.28

Note. Estimates shown are from observed data.

Table 11.
F tests of Differences in Implementation by Practitioner Characteristic

	IDDT Survey			MI Survey		
	F	*df*	*p*	*F*	*df*	*p*
Training Cohort	.59	(6, 76)	.74	3.98	(6, 79)	.00
Agency Type	2.46	(2, 80)	.09	.67	(2, 82)	.51
Role	.65	(6, 76)	.69	1.50	(6, 79)	.19
Ethnicity	.45	(3, 74)	.72	2.71	(3, 77)	.05

Note. Estimates shown are from observed data.

Pearson correlation coefficients were computed to determine any relations between the implementation variables and the practitioner characteristics measured on interval scales (i.e., job tenure, months in the mental health and/or substance abuse field, age, amount of continuing education, and quality of IDDT training). Participants' job tenure was significantly and negatively related to scores on both the IDDT and MI Surveys. Practitioners with more years in their job implemented less general IDDT and MI interventions. Participants' amount of continuing education was significantly and positively related to IDDT Survey scores. The more EBP and IDDT continuing education practitioners had, the more they implemented general IDDT interventions. See Table 12 for a summary of correlations.

Table 12.
Correlations between Practitioner Characteristics and Implementation

	IDDT Survey	MI Survey
Job Tenure (log)	-.21*	-.28**
Months in Field	-.07	.00
Age	-.12	-.08
Continuing Education	.30**	.19
IDDT Training Evaluation	.10	.17

Note. Estimates shown are from multiply imputed data. $N = 98$.
* $p = <.05$, ** $p = <.01$

Analyses of Primary Research Questions

Question 1. *To what extent do practitioner perceptions of the attributes of IDDT, workplace climate, and organizational facilitators predict IDDT implementation beyond practitioner characteristics?* Two standard multiple linear regression analyses were performed with the aggregate variables (innovation attributes, workplace climate, and organizational facilitators) as the predictors in each. Implementation of general IDDT interventions (measured via the IDDT Survey) was the dependent variable in the first analysis, and implementation of motivational interviewing (measured via the MI Survey) was the dependent variable in the second analysis. Normality and homoscedasticity of variables included in the regression analyses were assessed through an examination of residuals; results indicated assumptions were met.

The regression of innovation attributes, workplace climate, and organizational facilitators on the implementation of general IDDT interventions included the following practitioner characteristics: continuing education, job tenure, IDDT training, and sex. The squared multiple correlation (R^2) for the regression was significantly different from zero, $R^2 = .36$, $F\ (7, 50) = 4.01$, $p = .001$ (estimates are from observed data). The model (including practitioner characteristics) accounted for 36% (27% adjusted) of the variability in the implementation of general IDDT interventions.

Table 13 displays the correlations among continuous variables included in the regression. Although the correlation between organizational facilitators and implementation of general IDDT interventions was significantly different from zero (r = .21, p = .02), organizational facilitators did not contribute significantly to the regression (see Table 14). Practitioner characteristics included in the model also did not contribute uniquely to the regression. Apparently, the relations between these variables and implementation mediates or is redunent to the relations between attributes and implementation.

Table 13.
Correlation Matrix for Predictors in the Regression on general IDDT Implementation

Variable	1.	2.	3.	4.	5.	6.
1. IDDT Survey (DV)	1.00					
2. Innovation Attributes	.28**	1.00				
3. Workplace Climate	.02	.44**	1.00			
4. Organizational Facilitators	.21*	.18	.40**	1.00		
5. Continuing Education	.30**	.24**	.13	.24*	1.00	
6. Job Tenure (log)	-.21*	-.16	-.21*	.00	-.12	1.00

Note. Estimates shown are from multiply imputed data. N = 98.
*p = <.05, **p = <.01

The unstandardized regression coeficients and squared semipartial correlations with multiply imputed data are shown in Table 14. Only one of the predictor variables, innovation attributes, contributed significantly and uniquely to the prediciton of general IDDT implementation. The squared semipartial correlation (sr^2) for innovation attributes was .05 indicating that 5% of the variance in IDDT Survey scores can be attributed uniquely to innovation attributes.

Table 14.
Regression of Innovation Attributes, Workplace Climate, and Organizational Facilitators on the Implementation of general IDDT Interventions

	B	*SE*	*t*	*p*	sr^2
Innovation Attributes	.009	.004	2.41	.016	.05
Workplace Climate	-.003	.002	-1.68	.093	
Organizational Facilitators	.029	.019	1.53	.127	
Continuing Education	.089	.065	1.38	.168	
Job Tenure	-.055	.035	-1.56	.118	
IDDT Training (curriculum only)	-.173	.108	-1.60	.111	
Sex	-.195	.103	-1.89	.059	

Note. Estimates shown are from multiply imputed data. $N = 98$. Intercept (*SE*) = 2.60 (.45).

The regression of innovation attributes, workplace climate, and organizational facilitators on MI implementation included the practitioner characteristics of job tenure training cohort, and ethnicity. The squared multiple correlation for the regression was significantly different from zero, $R^2 = .52$, $F\ (13, 51) = 4.21$, $p < .001$ (estimates are from observed data). The model (including practitioner characteristics) accounted for 52% (40% adjusted) of the variability in MI implementation.

Table 15 displays the correlations among continuous variables included in the regression of innovation attributes, workplace climate, and organizational facilitators on MI implementation. Variables significantly correlated with MI implementation were also significant predictors in the regression (see Table 16).

Table 15.
Correlation Matrix for Predictors in the Regression on MI Implementation

Variable	1.	2.	3.	4.	5.
1. MI Survey (DV)	1.00				
2. Innovation Attributes	.33**	1.00			
3. Workplace Climate	.10	.44**	1.00		
4. Organizational Facilitators	.17	.18	.40**	1.00	
5. Job Tenure (log)	-.28**	-.16	-.21*	.00	1.00

Note. Estimates shown are from multiply imputed data. $N = 98$.
*$p < .05$, **$p < .01$

The unstandardized regression coeficients and squared semipartial correlations with the multiply imputed data are shown in Table 16. One of the primary predictor variables contributed significantly and uniquely to the prediciton of MI implementation, innovation attributes. The squared semipartial correlation (sr^2) was .04, indicating that 4% of the variance in MI Survey scores can be attributed uniquely to innovation attributes. Additionally, job tenure contributed uniquely, accounting for 6% of the variance, ($sr^2 = .06$).

Table 16.
Multiple Regression of Innovation Attributes, Workplace Climate, and Organizational Facilitators on MI Implementation

	B	*SE*	*t*	*p*	sr^2
Innovation Attributes	.007	.003	2.12	.034	.04
Workplace Climate	-.001	.002	-.74	.458	
Organizational Facilitators	.021	.015	1.40	.161	
Job Tenure	-.077	.028	-2.78	.005	.06
Training Cohort					
1	.326	.143			
2	.127	.137			
3	.379	.140			
5	.197	.158			
6	.082	.135			
7	.237	.125			
Ethnicity					
Asian	-.211	.097			
Native Hawaiian & OPI	-.062	.109			
Other	-.023	.123			

Note. OPI, Other Pacific Islander; Estimates shown are from multiply imputed data; $N = 98$; Intercept (*SE)* = 2.41 (.38).

Because the categorical variables (i.e., training cohort and ethnicity) were dummy coded for the analysis, the coefficients and subsequent significance tests varied depending on which category was excluded from the analysis. Consequently, the *t* values and significance tests for these coeficients are not reported in Table 16. Instead, general linear modeling was used to test the significance of these variables. The results for training cohort and ethnicity are shown in Table 17. Because the GLM function in SPSS does not support pooling or combining of multiply imputed data, the *F* ratios and *p* values for each of the five imputations are shown in the table. Neither training cohort nor ethnicity contributed uniquely and significantly to the prediction of motivational interviewing implementation.

Table 17.
General Linear Model Significance Tests for Training Cohort and Ethnicity

	Imputation									
	1		2		3		4		5	
	F	*p*	*F*	*p*	*F*	*p*	*F*	*p*	*F*	*p*
Training Cohort	1.91	.09	1.62	.15	1.90	.09	1.83	.10	1.83	.10
Ethnicity	1.44	.24	2.28	.09	1.72	.17	2.32	.08	1.46	.23

Note. Training cohort (*df* = 6); Ethnicity (*df* = 3).

The results of the regression analyses provide partial support for the proposed model of practitioner level implementation of evidence-based practices. Practitioner perceptions about the collective attributes of IDDT predicted IDDT implementation across implementation measures. Practitioner perceptions of workplace climate and organizational facilitators, however, did not predict IDDT implementation.

Question 2. *To what extent are the specific dimensions (subscales) of innovation attributes, workplace climate, and organizational facilitators related to IDDT implementation?*

a. To what extent are the innovation attributes of relative advantage, compatibility, divergence, ease of use, image, result demonstrability, and voluntariness related to general IDDT and MI implementation?
b. To what extent are the workplace climate dimensions of involvement, cohesion, innovation and flexibility, performance feedback, training, pressure to produce, emotional exhaustion, depersonalization, and personal accomplishment related to general IDDT and MI implementation?
c. To what extent are the organizational facilitators dimensions of installation efforts and leadership support related to general IDDT and MI implementation?

Questions 2a through 2c were addressed through an exploratory examination of Pearson correlations. Results, displayed in Table 18, are consistent with the regression results.

Several specific innovation attributes were significantly and positively related to both general IDDT and MI implementation (i.e., relative advantage, compatibility, and ease of use). Divergence, voluntariness, and demonstrability were also significantly related to MI implementation, though not to implementation of general IDDT interventions. Negative correlations were observed for divergence and voluntariness, and a positive correlation was observed for demonstrability.

Only one dimension of workplace climate was significantly related to either implementation measure. Cohesion was positively related to MI implementation. Neither dimension of organizational facilitators was related to either implementation measure. See Table 18 for the coefficients. For a complete matrix of correlations among dimensions of innovation attributes, workplace climate, organizational facilitators, and implementation variables, see Table 19 in Appendix D.

Table 18.
Correlations between Dimensions of Innovation Attributes, Workplace Climate, and Organizational Facilitators and general IDDT and MI Implementation

Dimension	General IDDT Interventions	Motivational Interviewing
Innovation Attributes		
Divergence	-.15	-.23*
Voluntariness	-.07	-.20*
Relative Advantage	.28**	.32**
Compatibility	.23*	.31**
Ease of Use	.34**	.31**
Demonstrability	.14	.39**
Image	.04	-.10
Workplace Climate		
Emotional Exhaustion	.01	-.01
Depersonalization	.14	-.12
Personal Accomplishment	.12	.08
Involvement	-.04	.05
Performance Feedback	-.09	-.03
Innovativeness	.03	-.02
Pressure to Produce	.01	-.06
Cohesion	.06	.20*
Training	.19	.14
Organizational Facilitators		
Leadership Support	.18	.15
Installation Efforts	.17	.13

Note. Estimates shown are from multiply imputed data. $N = 98$.
*$p < .05$, **$p < .01$

Discussion

The purpose of this study was to identify potentially modifiable practitioner level perceptions that predict practitioner level implementation of IDDT. Specifically, practitioner views of the attributes of IDDT, workplace climate, and organizational facilitators were tested as predictors of IDDT implementation. After controlling for practitioner demographic and training characteristics, innovation attributes predicted implementation. Workplace climate and organizational facilitators did not contribute uniquely to the prediction of implementation.

Innovation Attributes

Individuals' perceptions about the attributes of innovations have a long history of investigation in the fields of agriculture and education. Perceived innovation attributes account for most (49 to 87%) of the variance in the rate of *adoption* of an innovation (Rogers, 2003). The results of this study extend these findings in two ways: (a) they suggest innovation attributes are important in the context of evidence-based mental health and substance abuse treatments, and (b) they suggest innovation attributes contribute to *implementation* as well as adoption. While practitioners' attitudes toward EBPs have received considerable attention in the implementation literature (e.g., Aarons, McDonald, Sheehan, & Walrath-Greene, 2007; Garner, 2009; Henggeler, 2008), few studies have conceptualized practitioner attitudes along the dimensions summarized by Rogers. Inclusion of these dimensions in future work may improve the content validity of the attitudes construct, thereby enhancing EBP implementation models.

Several specific innovation attribute dimensions were related to the implementation variables. The relative advantage, compatibility, and complexity dimensions were related to both implementation variables. Practitioners who viewed IDDT as advantageous, compatible with their current approach and needs, and relatively easy to use implemented the practice more than those who viewed the practice as less advantageous, compatible, and easy to use. These findings are consistent with previous studies of relative advantage (Panzano et al., 2005), compatibility (Henggeler et al., 2008), and complexity (Gordon & Stanar, 2003; Panzano et al., 2005) in the context of EBP implementation.

Demonstrability, divergence, and voluntariness were related to only one implementation variable, MI implementation. The extent to which the results of IDDT were observable to practitioners (demonstrability) was related positively to MI implementation. Panzano and colleagues (2005) found a similar relation between demonstrability and implementation across a variety of EBPs. The divergence and voluntariness dimensions of innovation attributes were negatively related to MI implementation. Consistent with Henggeler and colleagues (2008) the more practitioners rejected the use of EBPs (e.g., basing clinical decisions on research, using treatment manuals) the less they implemented MI. Finally, practitioners perceiving greater voluntariness in their implementation implemented MI less. Given the exploratory nature of these analyses, adjustments were not made for the multiple significance tests, and the importance of each specific attribute in IDDT implemenation is tentative.

The current findings regarding innovation attributes have practical implications. When developing and packaging a practice, innovators and clinical researchers should understand the attributes of treatment innovations that are relevant to practitioners' implementation. As highlighted by Chorpita and Regan (2009), the majority of clinical research to date addresses only one attribute, relative advantage, while largely ignoring features such as compatibility and complexity that may inform ultimate implementation success. Consideration of how an EBP is packaged, for example, may improve practitioners perceptions along these dimensions. Chorpita, Daleiden, and Weisz (2005) set forth an innovative approach is this regard; specific elements of exisitng EBP protocols for children are packaged in modules that can be selected in ways compatible with organizational structure and client need (Chorpita, Becker, & Daleiden, 2007; McHugh & Barlow, 2010).

Knowledge about the relation between innovation attributes and IDDT implementation may also be useful to the purveyors of the practice (e.g., trainers, supervisors). Helping practitioners form favorable attitudes about the relative advantage, compatibility, complexity, and observability of IDDT may enhance training, consultation, and supervision efforts. Addressing beliefs about the flexibility of treatment manuals or the applicability of treatment outcome research, for example, may improve perceptions of

compatibility. Demonstrability may be addressed by providing feedback to practitioners on their clients' outcomes as they implement the practice. Liddle and colleagues (2002) have applied this idea with positive results. Given the correlational nature of the current study, however, the direction of the relation between attributes and implementation remains unknown, and these practical implications remain tentative.

Workplace Climate

Counter to expectations, workplace climate did not contribute to the prediction of IDDT implementation. This finding is consistent with Schoenwald and colleagues' (2003) report of no direct relation between climate and therapist adherence to multisystemic therapy (MST) as well as Henggeler and colleagues' (2008) finding of no relation between climate and practitioner implementation of contingency management. The result conflicts, however, with Glisson and Hemmelgarn's (1998) observed relation between climate and implementation of childrens' services quality guidelines. There are several possible explanations for these discrepancies.

One explanation is that climate as a global construct has been defined, in this study and others, through overlapping yet varying dimensions. For example, while the dimension of emotional exhaustion has been consistently included in the global climate construct, dimensions of role conflict, growth and advancement, and innovativeness have not. Nonetheless, even when specific dimensions of climate have been examined individually, results are inconsistent. For example, independent studies have shown EBP implemention to be related to emotional exhaustion, training emphasis, involvement in decision making, and cohesion (Aarons et. al., 2009; Henggeler et al., 2008; Panzano et al., 2005; and this study, respectively): Others have shown these same dimensions to be unrelated to EBP implementation (Klimes-Dougan et al., 2009; this study; Schoenwald et al., 2008); and Dariotis et al., 2008, respectively). It is not clear what dimensions, if any, are relevant to EBP implementation, and consequently, which should be included in the global construct. Examining dimensions individually may be most appropriate at this stage of development in the EBP implementation literature.

A second explanation for the divergent results is related to the level at which climate is analyzed in various studies. The distinction between psychological climate

(i.e., individual perceptions analyzed at the level of the individual) and organizational climate (i.e., individual perceptions aggregated to the organizational level for analysis; Glisson, 2002) is not made clear in the majority of EBP implementation studies to date. It is possible that climate may predict implementation differentially when analyzed at the individual level versus the organizational level. In fact, one recent investigation showed practitioner emotional exhaustion (EE) to predict implementation when EE was measured at the individual level, but not when it was aggregated to the organizational level (Schoenwald et al., 2009). Conceptual clarity may be facilitated by matching the level of analysis (i.e., psychological or organizational climate) to the specific implementation outcome under investigation (e.g., practitioner or organizational level implementation). Alternatively and when theoretically indicated, multilevel models (such as in Schoenwald et al.) may be useful.

A third explanation for the inconsistent results regarding the role of climate involves the extent to which practitioner characteristics, particularly practitioner training and experience, are included in the prediction of implementation. For example, Glisson and Hemmelgarn (1998) noted that practitioners in their study varied in educational level and received minimal training as part of their pilot program, but did not examine training and experience directly in their analysis. Schoenwald, Letourneau, and Halliday-Boykins (2005) examined practitioner characteristics (i.e., experience with multisystemic therapy, degree field, and educational level) as predictors of MST adherence, but not in the context of climate variables. In contrast, Henggeler and colleagues (2008) included training and experience and climate variables in their analysis of contingency management implementation. Likewise, this study included training and experience variables that demonstrated relevance in preliminary analyses. These differences may explain the discrepant results regarding the role of climate in EBP impelmentation. It is possible, for example, that organizations with positive climates attract practitioners with more prior training, experience, knowledge, or skills related to EBPs which then translates to greater implemention. Given the literature suggesting that differences in training intensity and format relate to implementation (e.g., Shalomskas et al., 2005),

measurement and inclusion of these variables in future models may better inform the relation, if any, between climate and implementtion.

Finally, similar to the foregoing discussion regarding practitioner training and experience, climate may relate to implementation through attitudes or innovation attributes. In this study, climate was related to innovation attributes, and, although not the focus of the study, this finding is consistent with existing models and research exploring the relation between climate and attitudes toward EBPs (e.g., Aarons, 2005; Aarons & Sawitzky, 2006b; Saldana, Chapman, Henggeler, & Rowland, 2007). Climate was unrelated to implementation in this study, however, ruling out mediation (Baron & Kenny, 1986). Instead, climate may play an indirect role in EBP implementation (Holmbeck, 1997). Further study modeling this possibility is needed. Moreover, the direction of any potential relations among climate, attitudes, and implementation remains unspecified. As suggested by Aarons and colleagues (2009), it is plausible that implementing an EBP leads to improved climate perceptions rather than the reverse.

Organizational Facilitators

Organizational facilitators also did not contribute to the prediction of IDDT implementation. Organizational facilitators included installation efforts (e.g., staffing, funding, training) and leadership support of IDDT. These constructs did not provide information about IDDT implementation that was not provided by the other variables included in the study. These results were unexpected and conflict with initial research and consensus regarding best practice for EBP implementation (e.g., Fixson et al., 2005; Mancini et al., 2009; McHugh & Barlow, 2010; Panzano et al., 2005). The results are similar, however, to those reported by Henggeler and colleagues (2008): Organizational resources were related to contingency management implementation when no other predictors were included in the model, but did not predict implementation beyond practitioner characteristics, attitudes toward EBPs, and organizational climate.

In Frambach and Schillewaert's model, organizational facilitators are thought to influence innovation use through their impact on attitudes. Aarons' (2005) adaptation also places attitudes in a central role. As suggested by these models, it is possible that attitudes or innovation attributes mediate the relation between organizational facilitators

and implementation. In this study, however, organizational facilitators were unrelated to attitudes/innovation attributes. Furthermore, in the exploratory analysis, neither specific dimension of organizational facilitators was related to either implementation variable.

Methodological differences should be considered in the interpretation of these findings. In this study, the organizational facilitators construct was defined differently than previous models. In addition to the dimensions included in this study, Frambach and Schillewaert (2002) included social persuasion. Aarons (2005) included social influence, organizational culture, and climate. It is possible that these differences in definition account for the divergent findings. Given the scarcity of research testing these models, only future work will inform the most useful definition. Finally, organizational facilitators in this study were perceptions measured at the practitioner level. In contrast, previous studies have gathered organizational facilitator data from multiple sources (e.g., practitioners, program leaders, fiscal staff, and written materials; Panzano et al., 2005). It is possible that a more objective evauation of organizational facilitators is relevant to implementation more than the practitioner's subjective view.

Study Strengths and Limitations

The foregoing discussion must be interpreted in the context of this study's strengths and limitations. First, because the study design is correlational, causal inferences cannot be made. It is possible that implementing IDDT causes practitioners to have a positive view of its attributes. It is also possible that the relation between innovation attributes and implementation results from a third variable, such as practitioners' preexisting and natural inclinations to implement IDDT. Perhaps, a natural predisposition toward implementing IDDT interacts with training to impact implementation which then affects attitudes. In these cases, addressing practitioner attitudes may have no beneficial effect on implementation. Neither this study nor the current literature addresses these possibilities. Nevertheless, a variety of practitioner characteristics were examined and controlled in the analysis of the primary predictors (i.e., innovation attributes, workplace climate, and organizational facilitators). The measurement and inclusion of practitioner training and experience in the analysis represents a strength of this study. Furthermore, the real world setting of the study has

benefits in terms of generalizing the results. The results cannot be fully generalized to other EBPs, especially those very different from IDDT, but they may reasonably be generalized to other practitioners in state funded mental health and substance disorder treatment programs.

A second set of limitations reflects the fact that EBP implementation theory and research are in the early stages of development. First, no hypotheses were made regarding the importance or centrality of any one predictor in the model, and potential mediating and moderating variables were not formally explored. Given the results, however, applying diffusion of innovations theory to EBP implementation appears worthwhile and represents a strength of this study. Second, the variables in this study were assessed only at the practitioner level of analysis. Workplace climate and organizational facilitators were not aggregated to the organizational level, and multilevel relations were not assessed. Still, the practitioner level of analysis provides information essential to understanding EBP implementation where the rubber meets the road, so to speak.

Finally, measurement concerns require consideration when interpreting the results. All variables were measured through practitioner self-report, allowing for common method error variance. The implementation and organizational facilitators measures were developed for the study and did not demonstrate optimal reliability. Nonetheless, the IDDT and MI Surveys performed well in pilot tests and, with further development efforts, may prove to be cost effective alternatives to behavioral observation methods of assessing IDDT and MI implementation. Additionally, with the exception of organizational facilitators, the predictor variables were measured using scales with established and acceptable psychometric properties. This represents an advance in the current literature. As the body of research develops, including the precision of relevant measures, informed testing of more exact models of implementation can occur. The current study contributes toward this cause.

Conclusion

Current models of innovation adoption and implementation in the context of evidence-based practices and programs suggest that implementation involves multiple factors at multiple levels. At the practitioner level, a proliferation of research has

addressed attitudes toward EBPs. This study substantiates the link between practitioner attitudes toward a specific EBP and implementation of that practice. Attention to innovation attributes in the development, packaging, and dissemination of psychological treatments may enhance implementation in routine settings, improving service quality and, ultimately, service outcomes.

Appendix A

General Introduction:

This survey asks questions about different strategies you may use when working with clients who have dual disorders.

Each section has a brief set of instructions providing a context for the questions and defining important terms. Please note that each section has a different response format.

Please complete the following items for your linkage code:

Month you were born (e.g., April): _____ First letter in mother's first name: ___
Day you were born (e.g., 12th): ___ First letter in father's first name: ___

Please answer all items to the best of your ability. The survey will take approximately 15 minutes to complete.

Thank you for your help!

Please complete the following questions:

1. **In the PAST 3 MONTHS, how many Integrated Dual Disorders Treatment training sessions have you had?** _____

2. **In the PAST 3 MONTHS, approximately how many *hours* of training have you had in Integrated Dual Disorders Treatment?** _____

3. **In the PAST 3 MONTHS, how frequently did you participate in Integrated Dual Disorders Treatment training?**

   ☐ Daily
   ☐ Weekly
   ☐ Monthly
   ☐ Quarterly
   ☐ Never

Integrated Dual Disorders Treatment Survey

Instructions:

The following questions address different strategies that may be used when working with clients who have co-occurring mental and substance use disorders. Each question follows the same stem, **"In the past month…"** Please answer each question in reference to your **clients who have dual disorders**.

Often, clinicians feel administrative or social pressure to answer self-report surveys in a desirable way. Please remember that neither you nor your job performance is being evaluated by this survey.

Please answer each question by marking the appropriate box. **IN THE PAST MONTH:**	Less than 20%	20 to 39%	40 to 59%	60 to 79%	80% or more
1. Approximately what percent of your interventions were consistent with your clients' motivational stages (i.e. stage of change)?	☐	☐	☐	☐	☐
2. You provided outreach to approximately what percent of clients in the engagement phase?	☐	☐	☐	☐	☐
3. You provided reality therapy (e.g. facilitated client self-evaluation) to approximately what percent of clients in the active treatment or relapse prevention stages?	☐	☐	☐	☐	☐
4. Approximately what percent of your interactions with clients were based on a motivational interviewing approach?	☐	☐	☐	☐	☐
5. You addressed *both* mental illness and substance abuse in approximately what percent of your interactions with clients?	☐	☐	☐	☐	☐
6. You provided cognitive behavioral substance abuse counseling (e.g., managing cravings) to approximately what percent of your clients in active treatment or relapse prevention stages?	☐	☐	☐	☐	☐
7. Approximately what percent of your clients did you refer to specialized residential or day treatment for substance abuse?	☐	☐	☐	☐	☐
8. Both mental illness and substance abuse were addressed in approximately what percent of your clients' recovery planning meetings?	☐	☐	☐	☐	☐

IN THE PAST MONTH:	Less than 20%	20 to 39%	40 to 59%	60 to 79%	80% or more
9. You provided psychodynamic counseling (e.g., explored unconscious motives for substance use) to approximately what percent of clients in the active treatment stage?	☐	☐	☐	☐	☐
10. Approximately what percent of your clients did you refer to self-help groups in the community (or follow-up on a past referral)?	☐	☐	☐	☐	☐
11. You attended self-help groups with approximately what percent of your clients newly referred to such groups?	☐	☐	☐	☐	☐
12. Approximately what percent of your interventions with clients were based on a gestalt approach (e.g. facilitating awareness of the here and now)?	☐	☐	☐	☐	☐
13. You provided dual disorders psycho-education to approximately what percent of your clients' families (or significant others)?	☐	☐	☐	☐	☐
14. Approximately what percent of your clients who are abusing substances did you help access medications for their mental illness?	☐	☐	☐	☐	☐
15. Approximately what percent of your interactions with clients were based on an abstinence-oriented approach (e.g., stressing the importance of abstinence from substances)?	☐	☐	☐	☐	☐
16. You provided education to promote health (e.g., how to avoid infectious diseases) to approximately what percent of your clients?	☐	☐	☐	☐	☐
17. For approximately what percent of your clients did you complete a contextual or functional analysis of substance use?	☐	☐	☐	☐	☐

18. Now, thinking *in general* about your work, how closely would you say your interventions matched integrated dual disorders treatment? **Please base your response on a scale from 0-100** (with 0 being no match and 100 being a perfect match). _____

Motivational Interviewing Survey

Instructions:

The following items represent different strategies that may be used when working with clients who have both severe mental illness and substance use disorders or **dual disorders**.

For each item, please circle the number that best indicates how frequently you have used the strategy **with your clients who have dual disorders** in the **past month.**

Often, clinicians feel administrative or social pressure to answer self-report surveys in a desirable way. Please remember that neither you nor your job performance is being evaluated by this survey.

		Never, and I don't intend to	Never, but I intend to	Sometimes	Often	Very often	Always
1.	Tried to gain a deeper understanding of the events and emotions experienced by my client.	0	1	2	3	4	5
2.	Tried to persuade my client to follow the team's recommendations about change.	0	1	2	3	4	5
3.	Conveyed to my client my understanding of his or her experience.	0	1	2	3	4	5
4.	Educated my client about the logical reasons for changing.	0	1	2	3	4	5
5.	Explored my client's views about how change can occur.	0	1	2	3	4	5
6.	Tried to persuade my client about the need for change.	0	1	2	3	4	5
7.	Drew out my client's own desire and reasons for changing.	0	1	2	3	4	5
8.	Conveyed a sense of urgency about the need to change.	0	1	2	3	4	5
9.	Gave my client the benefit of the doubt about wanting to change.	0	1	2	3	4	5
10.	Provided educational information about the risks of substance use even if not requested by my client.	0	1	2	3	4	5
11.	Conveyed to my client that the decision to change lies within him or her and that change cannot be imposed by others.	0	1	2	3	4	5
12.	Listened more than talked.	0	1	2	3	4	5

	Never, and I don't intend to	Never, but I intend to	Sometimes	Often	Very often	Always
13. Emphasized my client's control, freedom of choice, or ability to decide about change.	0	1	2	3	4	5
14. Questioned my client's honesty about his or her substance use.	0	1	2	3	4	5
15. Asked permission before giving advice or information.	0	1	2	3	4	5
16. Affirmed my client by saying something positive or complimentary.	0	1	2	3	4	5
17. Directed my client by giving an imperative (e.g., you need to…).	0	1	2	3	4	5
18. Supported my client with statements of compassion or sympathy.	0	1	2	3	4	5
19. Encouraged my client's acceptance of the disease of addiction.	0	1	2	3	4	5
20. Used open questions in conversations with my client.	0	1	2	3	4	5
21. Worked with my client's team to maximize external pressures to stop using substances.	0	1	2	3	4	5
22. Expressed hope and confidence in my client that he or she can recover.	0	1	2	3	4	5
23. Gave clear consequences for continued substance use.	0	1	2	3	4	5
24. Reflected back what my client said.	0	1	2	3	4	5
25. Offered suggestions or solutions even if not requested by my client.	0	1	2	3	4	5
26. Asked my client why he or she does not want to change.	0	1	2	3	4	5

	Never, and I don't intend to	Never, but I intend to	Sometimes	Often	Very often	Always
27. Guided my client see discrepancies between his or her goals and current behavior.	0	1	2	3	4	5
28. Used subtle coercion to get my client to stop using.	0	1	2	3	4	5
29. Reinforced my client when he or she talked about wanting to change.	0	1	2	3	4	5
30. Required abstinence as the only acceptable goal.	0	1	2	3	4	5
31. Challenged my client's perspective of their situation.	0	1	2	3	4	5

Now, thinking *in general* about your work over the past month with clients who have dual disorders, how closely would you say your interventions matched motivational interviewing? **Please base your response on a scale from 0-100** (with 0 being no match and 100 being a perfect match). _____

Thank You!

Appendix B

Informed Consent Form

PRACTITIONER AGREEMENT TO PARTICIPATE IN

Integrated Dual Disorders Treatment Implementation

Principal Investigator: Diane Wilson
2800 Woodlawn Dr. Suite #120
Honolulu, HI 96822
dsimonds@hawaii.edu
(808) 539-3939

Introduction to the Project: Integrated mental health and substance abuse treatment has been shown effective in helping consumers with dual disorders achieve recovery. This research study is designed to identify factors that may help practitioners use integrated treatment in their routine practice.

Invitation to Participate: You are being invited to take part in this research study because you have received training on integrated treatment. Before agreeing to be part of this study, please read and/or listen to the following information carefully and feel free to ask any questions you might have.

Description of Procedures: If you decide to be in this study, you will be asked to complete two questionnaires. You will complete the first questionnaire today and the second questionnaire approximately three months from today. The first questionnaire asks for your views about integrated treatment, about your job, and about your organization; it takes approximately 40 minutes to complete. The second questionnaire asks about your use of different treatment strategies for dual disorders; it takes approximately 20 minutes to complete.

Risks and Inconveniences: There is a possibility that responding to the questionnaires may make you feel uncomfortable or inconvenienced. If this happens you can choose not to answer certain questions or you can choose to stop your participation.

Benefits: This study is not being done to help you, personally. What we learn from you may help others in the future by making services and programs better.

Confidentiality: All information obtained from the questionnaires will be kept confidential as far as the law allows. The UH Committee on Human Studies has the right to look at the information that is collected. This information will be stored in a locked file in the principal researcher's office during the project. Your identity will be kept separate from your survey responses, linked only through a code. You will not be identified in anything published as a result of this project.

Voluntary Participation: Your participation in this study is entirely voluntary. Refusal to participate in any part of the study will not affect your employment. You can stop being in the study at any time without prejudice.

Questions: Please feel free to ask the principal investigator questions about this project at any time. You can also contact John Steffen, Ph.D., the supervisor of this project, at any time to ask questions about the research. His phone number at the Adult Mental Health Division is (808) 539-3939. If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808) 956-5007.

PRACTITIONER AGREEMENT TO PARTICIPATE IN

Integrated Dual Disorders Treatment Implementation

Participant:

I have read and understand the above information, and agree to participate in this research project.

_____
Name (please print)

_____ _____
Signature Date

The information you give now will be "linked" to your responses to questions you will be asked later (without using your name or information that can identify you).

Please complete the following items for your linkage code:

Month you were born (e.g., April): _____
Day you were born (e.g., 12th): ____
First letter in mother's first name: ____
First letter in father's first name: ____

Appendix C

Practitioner Survey

General Introduction:

This survey asks questions about how you view different aspects of your work and your organization.

Each section has a brief set of instructions providing a context for the questions and defining important terms. Please note that each section has a slightly different response format.

Additionally, a *linkage code* is requested so that information you give now can be "linked" to your responses to similar questions you may be asked later (without using your name or information that can identify you).

Please complete the following items for your linkage code:

Month you were born (e.g., April): _____ First letter in mother's first name: ___
Day you were born (e.g., 12th): ___ First letter in father's first name: ___

Please answer all items to the best of your ability. The survey will take approximately 25 minutes to complete.

Thank you for your help!

Instructions

This section asks about your opinions on different aspects of *your organization*.

Please circle the number indicating the extent to which you think each statement is false or true.	Definitely False	Mostly False	Mostly True	Definitely True
1. People feel decisions are frequently made over their heads.	1	2	3	4
2. Assistance in developing new ideas is readily available.	1	2	3	4
3. People's performance is measured on a regular basis.	1	2	3	4
4. People usually receive feedback on the quality of work they have done.	1	2	3	4
5. In general, it is hard for someone to measure the quality of their performance.	1	2	3	4
6. Management here is quick to spot the need to do things differently.	1	2	3	4
7. In general, people's workloads are not particularly demanding.	1	2	3	4
8. New ideas are readily accepted here.	1	2	3	4
9. People here are under pressure to meet targets.	1	2	3	4
10. Information is widely shared.	1	2	3	4
11. People are expected to do too much in a day.	1	2	3	4
12. This organization is very flexible; it can quickly change procedures to meet new conditions and solve problems as they arise.	1	2	3	4
13. Changes are made without talking to people involved in them.	1	2	3	4
14. People don't have any idea how well they are doing their job.	1	2	3	4
15. The pace of work here is pretty relaxed.	1	2	3	4
16. This organization is quick to respond when changes need to be made.	1	2	3	4
17. People in this organization are always searching for new ways of looking at problems.	1	2	3	4
18. There are often breakdowns in communication here.	1	2	3	4
19. Management involves people when decisions are made that affect them.	1	2	3	4
20. Management requires people to work extremely hard.	1	2	3	4
21. People don't have any say in decisions that affect their work.	1	2	3	4
22. The way people do their jobs is rarely assessed.	1	2	3	4

Instructions

This section asks about your opinions on different aspects of *your organization*.

Please circle the number indicating the extent to which you agree with each statement.

		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1.	Staff here all get along very well.	1	2	3	4	5
2.	You receive regular in service training.	1	2	3	4	5
3.	The workload and pressures here keep motivation for new training low.	1	2	3	4	5
4.	Staff here are always quick to help one another when needed.	1	2	3	4	5
5.	There is too much friction among staff members.	1	2	3	4	5
6.	Staff training and continuing education are priorities here.	1	2	3	4	5
7.	The staff here work together effectively as a team.	1	2	3	4	5
8.	The budget here allows staff to attend professional conferences each year.	1	2	3	4	5
9.	Mutual trust and cooperation among staff here are strong.	1	2	3	4	5
10.	You learned new skills or techniques at a professional conference in the past year.	1	2	3	4	5
11.	Some staff members do not do their fair share of work.	1	2	3	4	5

INSERT Maslach Burnout Inventory-Human Services Survey HERE

The Maslach Burnout Inventory is Copyrighted material not available electronically.

Instructions
This section asks about your opinions on using Integrated Dual Disorders Treatment in your job now and into the future. **Integrated Dual Disorders Treatment**, referred to below as **IDDT**, includes both the general principles and specific interventions covered in your training series.

Please circle the number indicating the extent to which you agree with each statement.	Extremely Disagree	Disagree	Slightly Disagree	Uncertain	Slightly Agree	Agree	Extremely Agree
1. My boss does not require me to use IDDT.	1	2	3	4	5	6	7
2. Using IDDT enhances my effectiveness on the job (improves my clients' outcomes).	1	2	3	4	5	6	7
3. IDDT fits well with my work style.	1	2	3	4	5	6	7
4. Overall, I believe that IDDT is easy to implement.	1	2	3	4	5	6	7
5. I would have difficulty explaining why using IDDT may or may not be beneficial.	1	2	3	4	5	6	7
6. I think that using IDDT fits well with the way I like to work.	1	2	3	4	5	6	7
7. Using IDDT makes it easier to do my job.	1	2	3	4	5	6	7
8. People in my organization who use IDDT have a high profile.	1	2	3	4	5	6	7
9. Using IDDT enables me to accomplish tasks more quickly.	1	2	3	4	5	6	7
10. I believe I could communicate to others the consequences of using IDDT.	1	2	3	4	5	6	7
11. Using IDDT improves the quality of work I do.	1	2	3	4	5	6	7
12. People in my organization who use IDDT have more prestige than those who do not.	1	2	3	4	5	6	7
13. Using IDDT gives me greater control over my work.	1	2	3	4	5	6	7
14. My using IDDT requires a lot of mental effort.	1	2	3	4	5	6	7
15. Using IDDT is compatible with all aspects of my work.	1	2	3	4	5	6	7
16. Using IDDT is a status symbol in my organization.	1	2	3	4	5	6	7
17. The results of using IDDT are apparent to me.	1	2	3	4	5	6	7
18. Although it might be helpful, using IDDT is certainly not compulsory in my job.	1	2	3	4	5	6	7
19. I believe that IDDT is cumbersome to use.	1	2	3	4	5	6	7
20. Learning to use IDDT is easy for me.	1	2	3	4	5	6	7
21. I would have no difficulty telling others about the results of using IDDT.	1	2	3	4	5	6	7

Instructions

This section asks about your feelings about using new types of therapy, interventions, or treatments. Manualized therapy refers to any intervention that has specific guidelines and/or components that are outlined in a manual and/or are to be followed in a structured or predetermined way.

Please circle the number indicating the extent to which you agree with each statement.		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1.	Research-based treatments/interventions are not clinically useful.	0	1	2	3	4
2.	I would not use manualized therapy/interventions.	0	1	2	3	4
3.	Clinical experience is more important than using research-based practices.	0	1	2	3	4
4.	I know better than academic researchers how to care for my clients.	0	1	2	3	4

Instructions

This section asks about your opinions on different aspects of your organization with specific regard to Integrated Dual Disorders Treatment, referred to below as IDDT.

Please circle the number indicating the extent to which you agree with each of the following statements.		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1.	The leadership at your organization encourages your use of IDDT.	1	2	3	4	5
2.	Your co-workers encourage your use of IDDT.	1	2	3	4	5
3.	Your organization is prepared to implement IDDT (e.g. office space and equipment, staffing, funding).	1	2	3	4	5
4.	Staff at your organization have the skills they need to implement IDDT.	1	2	3	4	5

Please complete the following questions about your agency and yourself.

1. **What is the name of your agency or workplace?**
   _____

2. **Please mark which best describes your agency or affiliation:**

   ☐ Private provider with AMHD contract (POS provider)
   ☐ State operated mental health center
   ☐ Other (please describe) _____
   ☐ None

3. **Please mark which role best describes you (mark all that apply):**

   ☐ Administrator/Manager
   ☐ Case Manager
   ☐ Case Management Team Leader
   ☐ Nurse
   ☐ Physician
   ☐ Psychiatrist
   ☐ Psychologist
   ☐ Social Worker
   ☐ Student
   ☐ Substance Abuse Counselor
   ☐ Vocational Counselor
   ☐ Other (please specify) _____

4. **Approximately how long have you been in your present job?**
   _____year(s) _____month(s)

5. **Approximately how many years experience do you have in the mental health field?**
   _____year(s) _____month(s)

6. **How many clients are you currently treating at your agency (i.e., your caseload size)?**
   _____

7. **What type of case management services do you provide to your clients (mark all that apply)?**
   ☐ Not applicable ☐ Targeted case management ☐ Assertive community treatment
   ☐ Care coordination ☐ Intensive case management ☐ Other (please specify) _____

8. **What is your age?** _____years

9. **What is your sex?** ☐ Female ☐ Male

10. **Are you Hispanic or Latino?** ☐ Yes ☐ No

11. **What is your ethnic group (mark all that apply)?**

    ☐ Alaska Native
    ☐ American Indian
    ☐ Asian
    ☐ Black or African American
    ☐ Native Hawaiian or Other Pacific Islander
    ☐ White

    If there is a more specific ethnic group or nationality that describes you (e.g., Samoan, Cuban, Korean), please specify:_____

    If you marked more than one group, which one describes you the best? _____

12. What is your highest degree earned?

☐ High school diploma or equivalent
☐ Some college, but no degree
☐ Associate's degree
☐ Bachelor's degree
☐ Master's degree
☐ Doctoral degree
☐ Other (please specify _____)

13. How much continuing education do you participate in each year?

☐ None ☐ A little ☐ A fair amount ☐ Much ☐ Very much

14. How much training have you had on Evidence-Based Practices?

☐ None ☐ A little ☐ A fair amount ☐ Much ☐ Very much

15. How much training have you had on Integrated Dual Disorders Treatment?

☐ None ☐ A little ☐ A fair amount ☐ Much ☐ Very much

16. Approximately how many hours of training have you had in Integrated Dual Disorders Treatment?

☐ 0-10
☐ 11-20
☐ 21-30
☐ 31-40
☐ 41-50
☐ 51-60
☐ 61-70
☐ 71-80
☐ 81-90
☐ 91-100
☐ More than 100

17. How frequently do you participate in Integrated Dual Disorders Treatment training?

☐ Daily
☐ Weekly
☐ Monthly
☐ Quarterly
☐ Semi-annually
☐ Annually
☐ Less than annually

18. Please evaluate the quality of your Integrate Dual Disorders Treatment training in each of the following areas:

	Poor	Fair	Good	Excellent
a. The content of the training was:	1	2	3	4
b. The format (e.g., mix of didactic, role play, exercises) was:	1	2	3	4
c. The trainers were:	1	2	3	4

Appendix D

Table 19.
Correlation Matrix for Predictor Subscales and Implementation Variables

Scale	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. EE	**.55**	**-.28**	**-.51**	**-.38**	**-.35**	**.44**	**-.36**	**-.28**	***.21***	.07	**-.28**	**-.30**	***-.22***	***-.23***	-.15	**-.30**	**-.31**	.01	-.01
2. PA		**-.33**	**-.35**	**-.29**	-.17	.20	***-.21***	-.02	.11	.16	-.17	***-.20***	***-.21***	***-.25***	-.09	**-.33**	-.14	.14	-.12
3. Depersonalization			.15	.20	.18	.13	.12	.10	-.07	.04	***.20***	.15	***.25***	**.29**	.07	.11	-.01	.12	.08
4. Involvement				**.68**	**.72**	**-.54**	**.53**	**.58**	**-.30**	.08	**.35**	**.29**	***.24***	***.21***	.11	**.30**	**.35**	-.04	.05
5. Performance Feedback					**.59**	**-.39**	***.25***	**.42**	**-.37**	.17	.16	.13	.09	.10	.03	.12	.15	-.09	-.03
6. Innovativeness						**-.43**	**.35**	**.56**	-.20	.12	***.23***	.09	.03	.03	.13	***.25***	**.34**	.03	-.02
7. Pressure to Produce							**-.29**	**-.48**	***.21***	-.09	**-.29**	**-.28**	-.18	-.12	.02	-.11	-.12	.01	-.06
8. Cohesion								**.43**	-.15	.10	**.27**	***.22***	.18	.10	.14	**.33**	***.26***	.06	***.20***
9. Training									***-.22***	.13	**.43**	**.36**	.20	**.36**	.05	.11	***.22***	.19	.14
10. Divergence										-.04	**-.48**	**-.41**	**-.26**	**-.40**	-.02	-.13	-.16	-.15	***-.23***
11. Voluntariness											-.01	-.09	-.16	-.18	.11	***-.23***	-.12	-.07	***-.20***
12. Relative Advantage												**.81**	**.42**	**.64**	***.23***	***.22***	.15	**.28**	**.32**
13. Compatibility													**.43**	**.58**	.12	.19	.09	***.23***	**.31**
14. Ease of Use														**.47**	.09	.16	.03	**.34**	**.31**
15. Demonstrability															.01	.06	.11	.14	**.39**
16. Image																.14	.11	.04	-.10
17. Leadership Support																	**.47**	.18	.15
18. Installation Efforts																		.17	.13
19. IDDT Implementation																			***.21***
20. MI Implementation																			

Note: EE, Emotional Exhaustion; PA, Personal Accomplishment; *N = 98*; Bold Italics, $p < .05$, Bold, $p < .01$

References

Aarons, G. A. (2005). Measuring provider attitudes toward evidence-based practice: Consideration of organizational context and individual differences. *Child and Adolescent Clinics of North America, 14,* 255-271.

Aarons, G. A. (2004). Mental health provider attitudes toward adoption of evidence-based practice: The Evidence-Based Practice Attitude Scale (EPBAS). *Mental Health Services Research, 6,* 61-74.

Aarons, G. A. (2006). Transformational and transactional leadership: Association with attitudes toward evidence-based practice. *Psychiatric Services, 57,* 1162-1169.

Aarons, G. A., Fettes, D. L., Flores, L. E., & Sommerfeld, D. H. (2009). Evidence-based practice implementation and staff emotional exhaustion in children's services. *Behavior Research and Therapy, 47,* 954-960.

Aarons, G. A., McDonald, E. J., Sheehan, A. K., & Walrath-Greene, C. M. (2007). Confirmatory factor analysis of the Evidence-Based Practice Attitude Scale (EBPAS) in a geographically diverse sample of community mental health providers. *Administration and Policy in Mental Health, 34,* 465-469.

Aarons, G. A. & Sawitzky, A. C. (2006a). Organizational climate partially mediates the effect of culture on work attitudes and staff turnover in mental health services. *Administration and Policy in Mental Health Services Research, 33,* 289-301.

Aarons, G. A. & Sawitzky, A. C. (2006b). Organizational culture and climate and mental health provider attitudes toward evidence-based practice. *Psychological Services, 3,* 61-72.

Addis, M. E. & Krasnow, A. D. (2000). A national survey of practicing psychologists' attitudes toward psychotherapy treatment manuals. *Journal of Consulting and Clinical Psychology, 68,* 331-339.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processed, 50,* 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32,* 665-683.

Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire. *Joumal of Occupational and Organisational Psychology, 72,* 441-462.

Bachman, S. S. & Duckworth, K. (2003). Consensus building for the development of service infrastructure for people with dual diagnosis. *Administration and Policy in Mental Health, 30,* 255-266.

Ball, S., Bachrach, K., DeCarlo, J., Farentinos, C., Keen, M., McSherry, T., et al. (2002). Characteristics, beliefs, and practices of community clinicians trained to provide manual-guided therapy for substance abusers. *Journal of Substance Abuse Treatment, 23,* 309-318.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44,* 1175-1184.

Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Bates, R. & Khasawneh, S. (2005). Organizational learning culture, learning transfer climate and perceived innovation in Jordanian organizations. *International Journal of Training and Development, 9,* 96-109.

Bond, G. R., Drake, R. E., McHugo, G. J., Rapp, C. A., & Whitley, R. (2009). Strategies for improving fidelity in the National Evidence-Based Practices Project. *Research on Social Work Practice, 19,* 569-581.

Brown, A. H. (2004). Integrating research and practice in the CSAT Methamphetamine Treatment Project. *Journal of Substance Abuse Treatment, 26,* 103-108.

Carr, J. Z., Schmidt, A. M., Ford, J. K., & DeShon, R. P. (2003) Climate perceptions matter: A meta-analytic path analysis relating molar climate, cognitive and affective states, and individual level work outcomes. *Journal of Applied Psychology, 88,* 605-619.

Carroll, K. M., Nich, C., & Rounsaville, B. J. (1998). Utility of therapist session checklists to monitor delivery of coping skills treatment for cocaine abusers. *Psychotherapy Research, 8,* 307-320.

Chamberlain, P. (2003). The Oregon Multidimensional Treatment Foster Care model: Features, outcomes, and progress in dissemination. *Cognitive and Behavioral Practice, 10,* 303-312.

Chambless, D. L. & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology, 52,* 685-716.

Chorpita, B. F., Becker, K. D., & Daleiden, E. L. (2007). Understanding the common elements of evidence-based practice: Misconceptions and clinical examples. *Journal of American Academy of Child and Adolescent Psychiatry, 46,* 648-652.

Chorpita, B. F., Daleiden, E. L. & Weisz, J. R. (2005). Identifying and selecting the common elements of evidence based interventions: A distillation and matching model. *Mental Health Services Research, 7,* 5-20.

Chorpita, B. F. & Regan, J. (2009). Dissemination of effective mental health treatment procedures: Maximizing the return on a significant invenstment. *Behaviour Research and Therapy, 47,* 990-993.

Corrigan, P. W., McCracken, S. G., Kommana, S., Edwards, M., & Simpatico, T. (1996). Staff perceptions about barriers to innovative behavioral rehabilitation programs. *Cognitive Therapy and Research, 20,* 541-551

Dariotis, J. K., Bumbarger, B. K., Duncan, L. G., & Greenberg, M. T. (2008). How do implementation efforts relate to program adherence? Examining the role of organizational, implementer, and program factors. *Journal of Community Psychology, 36,* 744-760.

Deans, C. & Soar, R. (2005). Caring for clients with dual diagnosis in rural communities in Australia: The experience of mental health professionals. *Journal of Psychiatric and Mental Health Nursing, 12,* 268-274.

Drake, R. E., Mercer-McFadden, C., Mueser, K. T., Mchugo, G. J., & Bond, G. R. (1998). Review of integrated mental health and substance abuse treatment for patients with dual disorders. *Schizophrenia Bulletin, 24,* 589-608.

Drake, R. E. & Mueser, K. T. (2000). Psychosocial approaches to dual diagnosis. *Schizophrenia Bulletin, 26,* 105-118.

Drake, R. E., Mueser, K. T., Brunette, M. F, & McHugo, G. F. (2004). A review of treatments for people with serious mental illnesses and co-occurring substance use disorders. *Psychiatric Rehabilitation Journal, 27,* 360-374.

Epstein J., Barker, P., Vorburger, M., & Murtha, C. (2004). *Serious mental illness and its co-occurrence with substance use disorders, 2002* (DHHS Publication No. SMA 04-3905, Analytic Series A-24). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Fals-Stewart, W., Logsdon, T., & Bircher, G. R. (2004). Diffusion of an empirically supported treatment for substance abuse: An organizational autopsy of technology transfer success and failure. *Clinical Psychology: Science and Practice, 11,* 177-182.

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). Implementation Research: A Synthesis of the Literature. Tamps, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network (FMHI Publication #231).

Forman, S. G., Fagley, N. S., Steiner, D. D., & Schneider, K. (2009). Teaching evidence-based interventions: Perceptions of influences on use in professional practice in school psychology. *Training and Education in Professional Psychology, 3,* 226-232.

Frambach, R. T. & Schillewaert, N. (2002). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. *Journal of Business Research, 55,* 163-176.

Garfield, S. L. (1998). Some comments on empirically supported treatments. *Journal of Consulting and Clinical Psychology, 66,* 121-125.

Garner, B. R. (2008). Research on the diffusion of evidence-based treatments within substance abuse treatment: A systematic review. *Journal of Substance Abuse Treatment, 36,* 376-399.

Glisson, C. (2002).The organizational context of children's mental health services. *Clinical Child and Family Psychology Review, 5,* 233-253.

Glisson, C. & Hemmelgarn, A. (1998). The effects of organizational climate and interorganizational coordination on the quality and outcomes of children's service systems. *Child Abuse and Neglect, 22,* 401-421.

Gold, P. B., Meisler, N., Santos, A. B., Keleher, J., Becker, D. R., Knoedler, W. H., et al. (2003). The Program of Assertive community Treatment: Implementation and dissemination of an evidence-based model of community-based care for persons with severe and persistent mental illness. *Cognitive and Behavioral Practice, 10,* 290-303.

Gordon, D. A. & Stanar, C. R. (2003). Lessons learned from the dissemination of Parenting Wisely, a parent training CD-ROM. *Cognitive and Behavioral Practice, 10,* 312-323.

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

Guydish, J., Manser, S. T. Jessup, M., Tajima, B., Sears, C., & Montini, T. (2005). Multi-level assessment protocol (MAP) for adoption in multisite clinical trials. *Journal of Drug Issues, Summer,* 529-546.

Halbesleben, J. R. B. & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management, 30,* 859-879.

Henggeler, S. W., Chapman, J. E., Rowland, M. D., Halliday-Boykins, C. A., Randall, J., Shackelford, J., & Schoenwald, S.K. (2008). Statewide adoption and initial implementation of contingency management for substance-abusing adolescents. *Journal of Consulting and Clinical Psychology, 76,* 556-567.

Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric

psychology literatures. *Journal of Consulting and Clinical Psychology, 65,* 599-610.

Jacobson, N. S., Dobson, K. S., Truax, P. A., Addis, M. E., Koerner, K., Gollan, J. K., et al. (1996). A component analysis of cognitive-behavioral treatment for depression. *Journal of Consulting and Clinical Psychology, 64,* 295-304.

Jacobson, N. S. & Gortner, E. T. (2000). Can depression be de-medicalized in the 21st century: Scientific revolutions, counter-revolutions and the magnetic field of normal science. *Behaviour Research and Therapy, 38,* 103-117.

James, L. R. & Sells, S. B. (1981). Psychological climate: Theoretical perspectives and empirical research. In D. Magnusson (Ed.), Toward a psychology of situations: An interactional perspective. Hillsdale, NJ: Lawrence Erlbaum Associates.

Jensen, P. S., Weersing, R., Hoagwood, K. E., & Goldman, E. (2005). What is the evidence for evidence-based treatments? A hard look at our soft underbelly. *Mental Health Services Research, 7,* 53-74.

Jensen-Doss, A., Lopez, M., Hawley, K. M., & Osterberg, L. D. (2009). Using evidence-based treatments: The experiences of youth providers working under a mandate. *Professional Psychology: Research and Practice, 40,* 417-424.

Jimmieson, N. L., White, K. M., & Peach, M. (2004). Employee readiness for change: Utilizing the theory of planned behavior to inform change management. *Academy of Management Proceedings,* C1-C6.

Joe, G. W., Broome, K. M., Simpson, D. D., & Rowan-Szal, G. A. (2007). Counselor perceptions of organizational factors and innovations training experiences. *Journal of Substance Abuse Treatment, 33,* 171-182.

Kaner, E., Steven, A., Cassidy, P., & Vardy, C. (2003). Implementaiton of a model for service delivery and organization in mental healthcare: A qualitative exploration of service provider views. *Health and Social Care in the community, 11,* 519-527.

Kazdin, A. E. (2004). Evidence-based treatments: Challenges and priorities for practice and research. *Child and Adolescent Clinics of North America, 13,* 923-940.

Kellogg, S. H., Burns, M., Coleman, P., Stitzer, M., Wale, J. B., & Kreek, M. J. (2005). Something of value: The introduction of contingency management interventions

into the New York City Health and Hospital Addiction Treatment Service. *Journal of Substance Abuse Treatment, 28,* 57-65.

Knudsen, H. K., Ducharme, L. J., Roman, P. M., & Link, T. (2005). Buprenorphine diffusion: The attitudes of substance abuse treatment counselors. *Journal of Substance Abuse Treatment, 29,* 95-106.

Leffingwell, T. R. (2006). Motivational Interviewing Knowledge and Attitudes Test (MIKAT) for evaluation of training outcomes. *MINUET, 13,* 10-11.

Lehman, A. F. & Steinwachs, D. M. (2003). Evidence-based psychosocial practices in schizophrenia: Lessons learned from the Patient Outcomes Research Team (PORT) project. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry, 31,* 141-154.

Lehman, A. F., Kreyenbuhl, J., Buchanan, R. W., Dickerson, F. B. Dixon, L. B., Goldberg, R., et al. (2004). The Schizophrenia Patient Outcomes Research Team (PORT): Updated treatment recommendations 2003. *Schizophrenia Bulletin, 30,* 193-217.

Lehman, W. E. K., Greener, J. M., & Simpson, D. (2002). Assessing organizational readiness for change. *Journal of Substance Abuse Treatment, 22,* 197-209.

Liddle, H. A., Rowe, C. L., Quille, T. J., Dakof, G. A. Mills, D. S., Sakran, E., et al. (2002). Transporting a research-based adolescent drug treatment into practice. *Journal of Substance Abuse Treatment, 22,* 231-243.

Lochman, J. E., Boxmeyer, C., Powell, N., Qu, L., Wells, K., & Windle, M. (2009). Dissemination of the coping power program: Importance of intensity of counselor training. *Journal of Consulting and Clinical Psychology, 77,* 397-409.

Lochman, J. E., Wells, K. C., Powell, N. P., Boxmeyer, C. L., Qu, L., & Windle, M. (2009). Implementation of a school-based prevention program: Effects of counselor and school characteristics. *Professional Psychology: Research and Practice, 40,* 476-482.

Madson, M. B., Loignon, A.C., & Lane, C. (2009). Training in motivational interviewing: A systematic review. *Journal of Substance Abuse Treatment, 36,* 101-109.

Mancini, A. D., Moser, L. L., Whitley, R., McHugo, G. J., Bond, G. R., Finnerty, M. T., & Burns, B.J. (2009). Assertive community treatment: Facilitators and barriers to implementation in routine mental health settings. *Psychiatric Services, 60,* 189-195.

Maslach, C. & Jackson, S. E. (1986). MBI-Human Services Survey. Mountain View, CA: CPP.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). Maslach Burnout Inventory manual (3rd ed.). Mountain View, CA: CPP.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52,* 397-422.

McHugh, R. K. & Barlow, D. H. (2010). Dissemination and implementation of evidence-based psychological treatments. *American Psychologist, 65,* 73-84.

McFarlane, W. R., McNary, S., Dixon, L., Hornby, H., & Cimett, E. (2001). Predictors of dissemination of falily psychoeducation in community mental health centers in Maine and Illinois. *Psychiatric Services, 52,* 935-942.

McGovern, M. P., Fox, T. S., Xie, H., & Drake, R. E. (2004). A survey of clinical practices and readiness to adopt evidence-based practices: Dissemination research in an addiction treatment system. *Journal of Substance Abuse Treatment, 26,* 305-312.

Michie, S., Hendy, J., Smith, J., & Adshead, F. (2004). Evidence into practice: A theory based study of achieving national health targets in primary care. *Journal of Evaluation in Clinical Practice, 10,* 447-456.

Mikkelsen, A., Saksvik, P. O., & Holger, U. (1998). Job stress and organizational learning climate. *International Journal of Stress Management, 5,* 197-209.

Miller, W. R., Brown, J. M., Simpson, T. L., Handmaker, N. L., Bien, T. H., Luckie, L.F., et al. (1995). What works? A methodological analysis of the alcohol treatment outcome literature. In R. K. Hester and W. R. Miller (Eds.) *Handbook of Alcoholism Treatment Approaches: Effective Alternatives* (2nd ed.) (pp.12-44). Boston: Allyn, & Bacon.

Miller, W. R. & Wilbourne, P. L. (2002). Mesa Grande: A methodological analysis of clinical trials of treatments for alcohol use disorders. *Addiction, 97,* 265-277.

Moore G. C. & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2,* 192-222.

Moser, L. L., DeLuca, N. L., Bond, G. R., & Rollins, A. L. (2004). Implementing evidence-based psychosocial practices: Lessons learned from statewide implementation of two practices. *CNS Spectrums, 9,* 926-942.

Moyers, T. B., Martin, T., Manuel, J. K., Hendrickson, S. M. L., & Miller, W. R. (2005). Assessing competence in the use of motivational interviewing. *Journal of Substance Abuse Treatment, 28,* 19-26.

Moyers, T. B., Martin, T., Manuel, J. K., & Miller, W. R. (n.d.). The Motivational Interviewing Treatment Integrity (MITI) Code: Version 2.0. Retrieved from http://motivationalinterview.org/training/index.html

Nelson, T. D. & Steele, R. G. (2007). Predictors of practitioner self-reported use of evidence-based practices: Practitioner training, clinical setting, and attitudes toward research. *Administration and Policy in Mental Health Research and Mental Health Services Research, 34,* 319-330.

New Freedom Commission on Mental Health. (2003). *Achieving the promise: Transforming mental health care in America: Final report*. (DHHS Publication No. SMA-03-3832). Rockville, MD: U.S. Department of Health and Human Services.

Obert, J. L., Brown, A. H., Zweben, J., Christian, D., Delmhorst, J., Minsky, S., et al. (2005). When treatment meets research: Clinical perspectives from the CSAT Methamphetamine Treatment Project. *Journal of Substance Abuse Treatment, 28,* 231-237.

Olade, R. A. (2003). Attitudes and factors affecting research utilization. *Nursing Forum, 38,* 5-15.

Panzano, P. & Herman, L. (2005). Developing and sustaining evidence-based systems of mental health services. In R. E. Drake, M. R. Merrens, & D. Lynde (Eds.). *Evidence-based mental health practice.* (pp. 243-272). Norton: New York.

Panzano, P. C. & Roth, D. (2006). The decision to adopt evidence-based and other innovative mental health practices: Risky business? *Psychiatric Services, 57,* 1153-1161.

Panzano, P. C., Roth, D., Crane-Ross, D., Massatti, R., Carstens, C., Seffrin, B., et al. (2005). The innovation diffusion and adoption research project (IDARP): Moving from the diffusion of research results to promoting the adoption of evidence-based innovations in the Ohio mental health system. In D. Roth, & W. J. Lutz (Eds.), New research in mental health, Vol. 16 (pp. 78-89). Columbus, OH: Ohio Department of Mental Health.

Parker, C. P., Baltes, B. B., Young, S. A., Huff, J. W., Altmann, R. A., Lacost, H. A., et al. (2003). Relationships between psychological climate perceptions and work outcomes: A meta-analytic review. *Journal of Organizational Behavior, 24,* 389-416.

Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., et al. (2005). Validating the organizational climate measure: Links to managerial practices, productivity and innovation. *Journal of Organizational Behavior, 26,* 379-408.

Priebe, S., Fakhoury, W., White, I., Watts, J., Bebbington, P., Billings, J., et al. (2004). Characteristics of teams, staff and patients: Associations with outcomes of patients in assertive outreach. *British Journal of Psychiatry, 185,* 306-311.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47,* 1102-1114.

RachBeisel, J., Scott, J., & Dixon, L. (1999). Co-occurring severe mental illness and substance use disorders: A review of recent research. *Psychiatric Services, 50,* 1427-1434.

Regier, D. A, Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S. J., Judd, L. L., et al. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiological Catchment Area (ECA) study. *JAMA, 264,* 2511-2518.

Reimer, M., Rosof-Williams, J., & Bickman, L. (2005). Theories related to changing clinician practice. *Child and Adolescent Psychiatric Clinics of North America, 14,* 241-254.

Rogers, E. M. (2003). Diffusion of innovations (5th ed.). New York: Free Press.

Roth, D., Panzano, P. C. Crane-Ross, D., Massatti, R., & Carstens, C. (2002). The innovation diffusion and adoption research project (IDARP): Moving from the diffusion of research results to promoting the adoption of evidence-based innovations in the Ohio mental health system. In D. Roth (Ed.), New research in mental health: Vol. 15. (pp. 149-156). Columbus, OH: Ohio Department of Mental Health.

Rowe, P. A. & Boyle, M. V. (2005). Constraints to organizational learning during major change at a mental health services facility. *Journal of Change Management, 5,* 109-117.

Saldana, L., Chapman, J. E., Henggeler, S. W., & Rowland, M. D. (2007). The Organizational Readiness for Change scale in adolescent programs: Criterion validity, *Journal of Substance Abuse Treatment, 33,* 159-169.

Schoenwald, S. K., Letourneau, E. J., & Halliday-Boykins, C. (2005). Predicting therapist adherence to a transported family-based treatment for youth. *Journal of Clinical Child and Adolescent Psychology, 34,* 658-670.

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

Schoenwald, S. K., Chapman, J. E., Sheidow, A. J., & Carter, R. E. (2009). Long-term youth criminal outcomes in MST transport: The impact of therapist adherence and

organizational climate and structure. *Journal of Clinical Child and Adolescent Psychology, 38,* 91-105.

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

Shalomskas, D. E., Syracuse-Siewert, G., Rounsaville, B. J., Ball, S. A., Nuro, K. F., & Carroll, K.M. (2005). We don't train in vain: A dissemination trial of three strategies of training clinicians in cognitive-behavioral therapy. *Journal of Consulting and Clinical Psychology, 73,* 106-115.

Shipton, H., Fay, D., West, M. Patterson, M, & Birdi, K. (2005). Managing people to promote innovation. *Creativity and Innovation Management, 14,* 118-128

Simpson, D. D., (2002). A conceptual framework for transferring research to practice. *Journal of Substance Abuse Treatment, 22,* 171-182.

Stahmer, A. C. & Aarons, G. A. (2009). Attitudes toward adoption of evidence-based practices: A comparison of autism early intervention providers and children's mental health providers. *Psychological Science, 6,* 223-234.

Substance Abuse and Mental Health Services Administration. (2003). Co-occurring disorders: Integrated dual disorders treatment implementation resource kit. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.

Texas Christian University Institute of Behavioral Research. (2005).Organizational readiness for change. Retrieved from http://www.ibr.tcu.edu/pubs/datacoll/tcutreatment.html

Torrey, W. C., Lynde, D. W., & Gorman, P. (2005). Promoting the implementation of practices that are supported by research: The National Implementing Evidence-Based Practice Project. *Child and Adolescent Clinics of North America, 14*, 297-306.

U.S. Department of Health and Human Services. (1999). *Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for

Mental Health Services, National Institutes of Health, National Institute of Mental Health.

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

Wandersman, A., Duffy, J., Flaspohler, P., Noonan, R., Lubell, K., Stillman, L. et al. (2008). Bridging the gap between prevention research and practice: The interactive systems framework for dissemination and implementation. *American Journal of Community Psychology, 41,* 171-181.

Webb, T. L. & Sheeran, P. (2006). Does changing behavioral intention engender behavior change? A meta-analysis of the experimental evidence. *Psychological bulletin, 132,* 249-268.

Weersing, V. R., Weisz, J. R., & Donenberg, G. R. (2002). Development of the Therapy Procedures Checklist: A therapist-report measure of technique use in child and adolescent treatment. *Journal of Clinical Child Psychology, 31,* 168-180.

Welch, M. & Mooney, J. (2001). Managing services that manage people with a coexisting mental health and substance use disorder. *Australasian Psychiatry, 9,* 345-349.

Whitley, B. E. (2002).Principles of research in behavioral science (2nd ed.). Boston: McGraw Hill.

Wieder, , B. L., Boyle, P. E., & Hrouda, D. R. (2007). Able, willing, and ready: Practitioner selection as a core component of integrated dual disorders treatment implementation. *Journal of Social Work Practice in the Addictions, 7,* 139-165.

Wilson, D. C. & Crisanti, A. S. (2009). Psychometric properties of the Dual-Disorder Treatment Fidelity Scale: Inter-rater reliability and concurrent validity. *Community Mental Health Journal, 45,* 171-178.