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Navigating Two Alliances with Evidence-Based Practices: Relating Therapist Competence and Adherence to Youth and Caregiver Therapeutic Alliances

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Navigating Two Alliances with Evidence-Based Practices: Relating Therapist Competence and Adherence to Youth and Caregiver Therapeutic Alliances

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Dedication

I, Rebecca Yao Hay Woo, dedicate this work to the thoughtful teaching of Dr. Sarah Kate Bearman and the love and support of Mr. William Czaja, Dr. and Dr. Wing T. and Jennie H. Woo, Dr. and Dr. Victoria Woo and Brian Pridgen, and Ms. Madeline Woo.

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Abstract

Navigating Two Alliances with Evidence-Based Practices: Relating Therapist Competence and Adherence to Youth and Caregiver Therapeutic Alliances

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Despite extensive research on specific treatments and relationship factors in child and adolescent psychotherapy, comparatively little research has addressed in-session process variables concerning how a treatment is delivered. This study examines treatment integrity (therapist adherence and competence) in the delivery of evidence-based practice (EBP) elements and the two therapeutic alliances in youth psychotherapy: the youth-therapist alliance and the caregiver-therapist alliance. Data come from an initial test of a modular, trans-diagnostic therapy protocol of EBP elements with 14 therapists seeing 24 clients and were analyzed using Hierarchical Linear Modeling (HLM). Therapist adherence, competence, and alliance were all measured observationally. In this sample, therapist adherence contributed a small, statistically trending effect on child alliance (d_{wt} = 0.008, p = 0.055), while therapist competence did not predict child alliance. Therapist adherence exhibited a small, statistically significant effect on parent alliance (d_{wt} = 0.007,

$p = 0.023$). Therapist competence exhibited a large, statistically trending effect on parent alliance ($d_{wt} = 0.675$, $p = 0.059$). Results suggest that EBP does not harm the therapeutic alliance and may support a stronger alliance with caregivers. Future research should use larger samples to explore how these constructs interact with therapist, youth, and caregiver characteristics to produce outcomes.

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Chapter 1: Introduction

Researchers and practitioners have contentiously debated how and why psychotherapy causes change in clients. Many randomized controlled trials (RCTs) have investigated which specific treatments are most effective in improving outcomes for children and adolescents with specific disorders (Chorpita et al., 2011; Weisz, Jensen-Doss, & Hawley, 2005; Weisz, Jensen-Doss, & Hawley, 2006). A separate, but related area of research, which has become known as a common factors approach, has examined the therapeutic relationships between therapists and clients, the hope or expectancies that a therapist might cultivate in the client, and other factors that are not specific to a particular treatment or theoretical orientation (Laska, Gurman & Wampold, 2014).

Despite the vast amount of research on both specific treatments and common factors in therapy, few causal mechanisms of change in psychotherapy have been identified (Kazdin, 2007). To be considered a mechanism of change, a variable must be strongly and consistently associated with outcome through one or more identifiable pathways (Kazdin, 2007, p. 5-6). Ideally, mechanisms of action can be established through experimental manipulation in randomized, well-controlled trials. Because psychotherapy involves many different factors at work (including characteristics of the client, therapist, treatment, and setting, among others) establishing what exactly seems to cause improvement when, how, and for whom becomes complicated.

McLeod, Southam-Gerow, Tully, Rodriguez, and Smith (2013) recommend a theoretical framework of treatment indicators that includes all of these interacting factors. A visual representation of the model is presented in Figure 1. In a given set of treatment

psychotherapy sessions between a client and a therapist—or, in the case of youth therapy, a youth, his or her caregivers, and the therapist—treatment might be influenced by individual factors of the youth, the caregiver, the family, the therapist, or dyadic interactions between the therapist and youth, caregiver, or family. External, environmental factors might also vary. Between these structural elements and the ultimate outcomes of treatment are the in-session processes of therapy. In-session therapy processes include relationships among interested parties (in the case of child and adolescent therapy, the relationship between the youth and therapist and the relationship between the caregiver and therapist), and variables related to the delivery of the intervention, such as what kind of therapy is used and how skillfully the therapist delivers it. While these process variables co-exist temporally, and they are thought to effect therapeutic outcomes, causal relationships have not necessarily been established (Kazdin, 2007). The current study addresses these therapeutic process variables, all of which have been understudied or are otherwise poorly understood in the youth psychotherapeutic literature (Schoenwald et al., 2011; McLeod et al., 2013; Southam-Gerow & McLeod, 2013). The next sections offer a brief summary of the debate surrounding common factors and evidence-based practice followed by an introduction to each of the process variables delineated by McLeod et al., (2013) and examined in this study.

Evidence-Based Practice versus Common Factors

In the mid-nineties, the American Psychological Association's (APA) Division 12 (Clinical Psychology) Task Force published criteria for empirically validated treatments and several subsequent lists of treatments meeting those criteria (Chambless, 1996;

Chambless et al., 1998; Chambless & Ollendick, 2001; Task Force, 1995). These criteria specified that a well-established empirically supported treatment (EST) must include at least two between-group design experiments with randomized assignment from two different investigators that have demonstrated superiority to a pill, psychotherapy placebo, or already-established treatment with adequate sample sizes. Additionally, the samples' characteristics must be described and intervention procedures must be well-established and recorded in a treatment manual (Chambless et al., 1998). In 2005, the APA president created a new task force, the APA Presidential Task Force on Evidence-Based Practice, to integrate empirical research with practice. This task force described evidence-based practice (EBP) in psychology as a more comprehensive concept than ESTs. Whereas an EST describes a well-specified treatment and the circumstances in which it works, EBP begins with a patient and examines how the results of the best available research evidence could help inform treatment for that person (APA Presidential Task Force, 2006).

The EBP movement continues to grow, with a 2011 review noting 314 studies comparing families of treatment for eight common child and adolescent mental health problem areas, including anxiety and avoidance, attention and hyperactivity, autism spectrum, depression or withdrawal, disruptive behavior, eating problems, substance abuse, and traumatic stress (Chorpita et al., 2011). Numerous lists of treatments with "best support" can be found in online clearinghouses such as SAMHSAs National Registry of Evidence-Based Programs and Practices (NREPP, 2017) or the California for Evidence-Based Clearinghouse for Child Welfare (CEBC, 2017).

Critics of the emerging EBP movement have historically opposed the implication that better researched practices were superior to practices supported by fewer methodologically-rigorous studies. Wampold and colleagues (1997) conducted a controversial meta-analysis of adult psychotherapeutic interventions by combining 277 effects gleaned from a variety of studies and found that across treatments, effect sizes were effectively null. A later meta-analysis came to the same conclusion for child therapies (Miller, Wampold, & Varhely, 2008). Based on their early meta-analysis, the authors concluded that all bona fide psychotherapy interventions were equally efficacious, what they termed the "Dodo Bird Verdict" (Wampold et al., 1997) a term borrowed from the children's book *Alice's Adventures in Wonderland,* in which the Dodo Bird constructs a race with no rules and declares at its conclusions that "*everybody* has won, and all must have prizes" (Carroll, 1911, p .38). Instead of treatment outcomes being predicted by use of EBPs, Wampold and colleagues proposed that 'nonspecific factors'—not specific to a particular therapy and not consisting of particular therapy practices—were responsible for changes in treatment during psychotherapy. These non-specific factors eventually became known as common factors because they were proposed to exist across types of treatment. They most centrally include the relationship between therapist and client, and other factors of the therapist (Wampold, 2001; Duncan et al., 2010). In a later meta-analysis, Wampold's research group found that effect sizes were correlated with whether the researchers developed the therapy in question, which Wampold and colleagues interpreted as evidence that the findings of large-scale RCTs

are attributable to researcher bias rather than true therapeutic effects (Wampold, 2001; Miller, Wampold, & Varhely, 2008).

Wampold et al.'s meta-analyses, and others with similar arguments, have been criticized as over-generalizing findings because they make no distinction between different problems that psychotherapy seeks to treat; with such a heterogeneous group of studies, null findings are more likely (Chambless, 2002; Crits-Christoph, 1997; Chambless & Ollendick, 2001). Additionally, while researcher bias may indeed exist, it presents a confound because presumably, if therapists are trained and supervised by the treatment developers, their adherence to and competence in the therapy might be higher, which, if the therapy were effective, would also increase effect sizes. Subsequent meta-analyses have also produced findings different from those of Wampold and colleagues. One meta-analysis of meta-analyses, sometimes called a "megaanalysis" (Asnaani & Foa, 2014), found that many meta-analyses only include studies by authors who developed the treatment and that experimenter allegiance is only significant when the treatment integrity of the psychotherapy was not evaluated (Dragioti, Dimoliatis, Fountoulakis, & Evangelou, 2015). Additionally, this analysis found that experimenter allegiance was significant for all forms of psychotherapy except cognitive behavioral therapy (Dragioti et al., 2015). Another mega-analysis of 269 meta-analyses of adult treatments using cognitive-behavioral therapy found significant variability in types of treatment and their efficacy for various disorders, suggesting that different types of therapy produce different effects and are not equally efficacious (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012).

Several meta-analyses have also compared EBP to usual care with findings that dispute the Dodo Bird Verdict. Weisz, Jensen-Doss, and Hawley (2006) conducted a meta-analysis with 32 studies comparing EBPs to usual care in RCTs and found a weighted effect size of 0.30 of EBP. Usual care treatments, unlike placebo treatments used in many RCTs, are intended to have therapeutic effects and so are a fairer test of equivalence or superiority. More recently, Weisz and colleagues conducted a meta-analysis of evidence-based treatment practices tested against usual care treatments (2013). Studies were only included if similar rates of usual care participants received treatment as study treatment participants and included methodologically rigorous procedures. Weisz and colleagues also performed four different statistical tests of publication bias that all yielded null results. They found significant variability among studies and examined treatment dose between evidence-based treatments and usual care as a moderator in a subsample of 23 studies. When treatment dose was equal for usual care versus EBP treatment arms, effect sizes were higher in EBP treatment arms (d = 0.22), although the effect was not statistically significant, perhaps because only four studies included treatment doses that were roughly equal between usual care and EBP conditions. Additional meta-analyses on adult literature have also demonstrated that some bona fide treatments in some circumstances are in fact better than others (Tolin, 2010; Bell, Marcus, & Goodlad, 2013), and Lilienfield (2014) points out that several bona fide treatments have been found to be iatrogenic.

Results of Weisz and colleagues' meta-analyses and similar studies in community settings do not support the idea that all treatments are equally efficacious. Instead, these

studies support the idea that additional research must be done to identify sources of variability and moderators of treatment outcome in every way that might be clinically useful. For example, research might identify how differences in therapists, clients, service systems, settings, and processes might impact client and family outcomes in a variety ways.

While common elements and evidence-based practice might be interpreted as oppositional because they grew out of opposing lines of research, they do not have to be so. In fact, best practice would likely include the use of specific therapeutic techniques adapted appropriately to the characteristics of the client, therapist, and their relationship to produce best outcomes (Barth et al., 2012). Moreover, how the treatment is delivered might be inextricably linked to the client, therapist, and their relationship. The next sections explore current literature on the therapeutic alliance, therapist adherence, and therapist competence to demonstrate how these treatment delivery variables might be linked with one another and youth outcomes in psychotherapy.

The Therapeutic Alliance

Historically, many scholars have emphasized the importance of the relationship between therapist and the client (Horvath & Luborsky, 1993). The therapeutic alliance describes the aspects of the relationship that facilitate the therapist and client working together. Bordin (1979) theorized the alliance to consist of three components: the interpersonal bond between therapist and client, the dyad's ability to collaborate on in-session tasks, and shared therapy goals for the client and therapist to work towards over the course of treatment. Additionally, Bordin contended that it was an important factor

across various types of therapy (1979). Adult studies of the therapeutic alliance report a correlation of about 0.25 between client outcome and alliance, indicating that alliance accounted for about 5% of the variability in outcome (Horvath & Bedi, 2002; Horvath, Del Re, Flückiger, & Symonds, 2011). While the therapeutic alliance is theoretically thought to be very important to client outcomes, it has also been characterized as one of the most understudied aspects of child and adolescent therapy because RCTs have historically failed to assess it (Green, 2006).

There are several methodological complications that researchers face in understanding alliance, the way that it might impact the therapeutic process, and child outcomes: 1) which alliance is assessed (youth-therapist or caregiver-therapist), 2) who reports on alliance (youth, caregiver, therapist, or observer), and 3) at what point in treatment alliance is assessed (beginning, middle, or end). Other factors that might impact the development of alliance might be individual client and therapist characteristics, dyadic interactions between therapist and client characteristics, such as racial or gender match, and organizational variables of how and where treatment is delivered.

Youth and caregiver perspectives. Research suggests that parents can be an important part of treatment for a variety of concerns including disruptive behavior, anxiety, and depression (Kazdin, Marciano & Whitley, 2005; Manassis et al., 2014; Tompson et al., 2017). Thus, measurements of alliance in child and adolescent therapy should ideally include measurements of both the youth-therapist alliance and the caregiver-therapist alliance, and, if self-report methods, should include multiple perspectives. While shared goals theoretically represent an important aspect of alliance

(Bordin, 1979), parents and children often disagree about initial referral questions for treatment. In a study of 381 parent-child pairs, of youths between the ages of 7 and 18, only 37% of parent-child pairs agreed on a single problem for treatment, while only 66% could agree on a general area for treatment (Yeh & Weisz, 2001). Additionally, parents and children often disagree on symptoms and functioning more generally (Achenbach, McConaughy, & Howell, 1987; Hawley & Weisz, 2005).

De Los Reyes and Kazdin (2005) offer a theoretical model to explain parent-child disagreement based on the actor-observer phenomenon: people are more likely to attribute another person's actions to that person's internal qualities but more likely to attribute their own behaviors to environmental causes. Thus, children are more likely to attribute problems in their lives to the environments around them, while parents are more likely to see a problem in the child. In the same vein, their goals for therapy are often also different: children might just want to be left alone while parents might want to change the child's behavior (De Los Ryes & Kazdin, 2005). In youth therapy, therapists must navigate these two differing sets of interests and goals. Therapists' reported problems for treatment tend to be in greater agreement with caregiver-reported treatment targets than youth-reported treatment targets (Hawley & Weisz, 2003). Additionally, therapists' targets of treatment are more similar to those of caregivers when identifying youth-centered problems, while therapist treatment targets are more similar to those of youth when identifying environment and relationship-focused problems (Hawley & Weisz, 2003).

Perhaps because youth and caregiver participants have different goals, studies find differential effects of these two alliances on therapy outcomes. In one study of 65 youth and parents receiving community-based mental health care, youth-therapist alliance was more predictive of child treatment outcome, while caregiver-therapist alliance was more predictive of drop-out (Hawley & Weisz, 2005). Another study of youth with disruptive behavior disorders in typical community care also found that caregiver-reported alliance predicted whether families ended treatment prematurely (Garland et al., 2012). These findings suggest that the youth and caregiver alliances may be important for different aspects of treatment. While the alliance with the youth may be more important in determining whether the youth gets better, the alliance with the caregiver determines whether the youth comes to treatment at all.

Several meta-analyses have sought to untangle the relationship between alliance and youth outcomes. Results generally identify weighted effect sizes in the small range according to Cohen's criteria for effect sizes (1988). Most estimates from meta-analyses have found weighted effect sizes that range from 0.14 to 0.27 (Karver, Handelsman, Fields, & Bickman, 2006; McLeod, 2011, Shirk & Karver, 2003; Shirk, Karver, & Brown, 2011), although one recent meta-analysis focusing exclusively on adolescents, and only using self-report measures to assess alliance, found an average weighted effect size of 0.33 (Murphy and Hutton, 2017). Interestingly, McLeod (2011) and Shirk and colleagues (2011) examined child age as a moderator of outcome, and found larger effect sizes for children as compared to adolescents. These analyses also both examined referral concern as a moderator of the youth-alliance outcome relationship and found larger effect

sizes for youths with externalizing problems than internalizing problems (Shirk, Karver, & Brown, 2011; McLeod, 2011).

Fewer studies report on the relationship of caregiver-therapist alliance to outcome than on the relationship of youth-therapist alliance to outcome, but have found effect sizes in similar ranges from 0.11 to 0.24 (Karver et al., 2006; McLeod, 2011; Shirk & Karver, 2003; Shirk, Karver, & Brown, 2011). A recent systematic review of the alliance between parents and mental health professionals found that of 37 studies identified examining that alliance, eight reported only positive associations with outcomes, 19 reported a combination of positive significant associations and non-significant associations between parent-alliance and outcome, seven reported non-significant associations, and three reported negative and non-significant relationships with outcome (de Greef, Pijnenburg, van Hattum, McLeod, & Scholte, 2017). This review also identified several theoretical factors from the literature that have been examined as potentially moderating the relationship between parent-alliance and outcome: child's diagnostic characteristics, child age, and parent sex (de Greef et al., 2017).

How should the alliance be assessed? Methodological differences in assessing alliance complicate the literature examining the relationship between alliance and outcome. For example, studies using self-report of alliance rather than observational methods appear to find larger effects (McLeod et al., 2011; Murphy & Hutton, 2017). Likewise, clients tend to report higher alliance than therapists (Accurso & Garland, 2015). A recent study of methodological instruments assessing alliance shed some light on these differential findings. McLeod, Southam-Gerow, and Kendall (2017) compared

multiple observational scales with one another and self-report scales with multiple informants and found that self-report of alliance was more strongly predictive of a child's outcome in therapy than observational reports of alliance (McLeod, Southam-Gerow, & Kendall, 2017). McLeod and colleagues suggested that this finding might have been due to shared method variance: if the same reporter completes the alliance measure and the outcome measure, answers to those measures are more likely to be correlated with one another. Additionally, McLeod et al. found that children under the age of 11 might not respond to self-report measures of alliance in the same way as adolescents. Child reported alliances were uncorrelated with observational measures, while those of adolescents were moderately correlated (McLeod et al., 2017).

The alliance over time. The alliance also might vary depending on when it is assessed. For example, researchers have wondered if measuring the alliance late in treatment, especially through self-report, might be confounded by treatment effects, such that people who are getting better seem to have better alliances because of symptom improvement (Shirk & Karver, 2003). The temporal relationship between alliance and outcome has been examined in some adult studies. Some adult studies have found a unique, preceding effect of alliance on adult outcomes (Zilcha-Mano, Dinger, McCarthy, Barber, 2014), while others have found a unique effect with a bidirectional relationship whereby reductions in symptoms also increase alliance (Falkenström, Granström, & Holmqvist, 2013; Falkenström, Granström, & Holmqvist, 2014). Other adult studies find that alliance does not predict improvement in symptoms, or that improvements in

symptoms predict alliance (Strunk, Brotman, & DeRubeis, 2010; Feeley, DeRubeis, & Gelfand, 1999).

In the youth literature, some studies have also examined how therapeutic alliance changes over time, and have found different trajectories of alliance, depending on whether alliance is assessed observationally or through self-report. In several observational studies measuring alliance, alliance over time does not appear to grow (Lerner Mikami, & McLeod, 2011; Langer, McLeod, & Weisz, 2011). Other observational studies exhibit a slight decrease in alliance over time (Hudson et al., 2014; Liber et al, 2010; McLeod et al., 2016). In a naturalistic community setting with a diverse group of therapists from a variety of fields (e.g. social work, psychology, and marital and family therapy) youths aged four to 13 referred for disruptive behavior problems reported a stable, high alliance with therapists over time, while caregivers also reported a stable, high alliance, and therapists reported lower alliances with a slight deterioration in alliance over time (Accurso & Garland 2015; Garland et al., 2014). In two different studies of alliance with anxious youths in a research setting, child alliance measured through self-report demonstrated a general positive trajectory, with alliance increasing quickly early in treatment and then exhibiting a flatter slope later in treatment (Kendall et al., 2009; Chu, Skriner, & Zandberg, 2014). For children with disruptive behavior disorders whose families received behavioral parent training or behavioral parent training with problem-solving, self-reported levels of alliance increased slightly according to the child, but did not change significantly according to the therapist (Kazdin & Durbin, 2012).

Client, therapist, dyadic, and organizational effects. Beyond the methodological considerations of how and when alliance is measured, client, therapist, and organizational variables might also affect the alliances. Client and therapist characteristics that might influence the development of alliance or its growth over time might include race or ethnicity and racial, ethnic, cognitive, or gender match with the psychotherapist (Accurso & Garland, 2015; Cabral & Smith, 2011; Wintersteen, Mensinger, & Diamond, 2005; Zane et al., 2005). Additionally, some evidence suggests that therapeutic alliance varies depending on organizational and setting factors. In a study of 49 public-sector mental-health programs providing services for youth and families, mental health providers who rated the climate of their organization as better also rated their working alliances with clients as better (Green, Albanese, Cafri, Aarons, 2014). One meta-analysis of adult studies found that initial therapeutic alliance is higher when treatments are administered by treatment developers (Flückiger, Del Re, Wampold, Symonds, & Horvath, 2012). In a study of CBT for youth anxiety administered in a research and community-based setting, early alliance was higher in the research setting than in the community setting even though implementation of practices was similar across the settings (McLeod et al., 2016). Alliance might vary based on setting because patients in research settings have different demographic and diagnostic profiles than community practice (Ehrenreich-May et al., 2011), or because researchers in higher-resourced settings are more adept at inspiring confidence in their clients, which could also increase their ratings of therapeutic alliance. Although McLeod and colleagues (2016) found setting differences despite similar implementation practices, treatment

integrity might also affect setting differences in alliance. Treatment integrity, the other key in-session process noted in the model by McLeod et al. (2013), are discussed next.

Treatment Integrity

Beyond youth-therapist and caregiver-therapist alliance, two other important process treatment indicators are both aspects of treatment integrity, which describes the degree to which a given therapist skillfully follows prescribed therapy procedures (McLeod et al., 2013). According to Perepletchikova, Treat, and Kazdin (2007), treatment integrity, also called treatment fidelity, consists of therapist adherence, therapist competence, and treatment differentiation. Therapist adherence is defined as the degree to which the therapist follows the treatment's established procedures. Therapist competence is the therapist's skill and judgement in delivering the intervention appropriately. Finally, treatment differentiation is the degree to which a given treatment differs from other potential treatments.

The final aspect of treatment integrity is especially important in randomized controlled trials (RCTs) and other studies where two distinct treatments or conditions are compared to one another; if active ingredients in the treatment condition are also present in the control condition, the study might misleadingly suggest that both conditions are efficacious and thus attenuate true treatment effects. In dissemination studies examining the extent to which community therapists trained in EBP can implement their newly developed skills, therapists are expected to implement practices flexibly among clients with different referral concerns. In these cases, adherence and differentiation may be assessed on an absolute scale for the presence or absence of evidence-based practice

elements rather than how they compare to the prescribed steps of a particular treatment program (McLeod et al., 2013). In this context, treatment adherence might be the ratio of EBP to other practices or activities that might occur in the session (McLeod et al., 2013). This method of characterizing adherence, which is used in the current study, conceptually includes both treatment adherence and differentiation.

Therapist adherence. Therapist adherence to an EBP must be present for therapist competence with the EBP to be exhibited. While both competence and adherence are important to evaluate, adherence may be thought of as a necessary first step in treatment delivery. Unfortunately, adherence has been understudied in treatment literature. In a review of treatment adherence from six impactful journals in psychiatry and clinical psychology, Perepletchikova, Treat, and Kazdin (2007) found that adherence procedures were implemented adequately in less than 9% of treatments.

Research has also often neglected to analyze relationships between adherence and outcome. A more recent systematic review of adherence measures identified 272 studies utilizing adherence measures, and noted that associations between adherence and client outcomes were reported in only 10.4% of journals (Schoenwald & Garland, 2013). Investigators might not feel the need to report such correlations because most efficacy studies include rigorously trained therapists who are well-supervised by research staff. Also, highly trained therapists likely produce better outcomes in treatment and also might have universally high adherence of therapists across the treatment, such that not enough variability exists to identify a relationship (Roth, Pilling, & Turner, 2010).

Additionally, several studies have examined relationships between adherence and outcome for a variety of EBPs. In a sample of adults treated for cocaine dependence with individual drug counseling, adherence exhibited a curvilinear relationship with outcome (Barber et al., 2006). This finding was replicated in a study with adolescent cannabis users (Hogue, Henderson et al., 2008). If counselors were not adherent or too highly adherent to the treatment protocol, clients appeared to do worse. Perhaps at an ideal, middle-level of adherence, therapists achieved an appropriate level of both fidelity and flexibility such that the he or she could use active ingredients of the treatment appropriately adjusted to the client's needs (Kendall & Beidas, 2007).

Additionally, adherence, like alliance, is an interactive effect between client and therapist. Imel, Baer, Martino, Ball, and Carroll (2011) examined adult substance users and their therapists' use of motivational interviewing and found substantial variability both within and between therapists in the study. With clients who were more motivated at the beginning of the session, therapists exhibited less adherence to motivational interviewing because they appropriately moved to other important skills or topics in session. Although these studies both concerned adult populations, similar phenomena could occur in child treatment sessions, during which successful child clients might not need as lengthy and extensive a presentation of therapeutic content to understand a given skill, which might result in a lower observed adherence rating for improving clients.

Because adherence is dependent on both therapist and client effects and might have a curvilinear relationship with outcome controlling for those effects, studies examining linear relationships between adherence and outcome have been mixed. Some

studies found positive associations between adherence and outcome (Hogue, Henderson, et al., 2008), while others have not (Liber et al., 2010). A meta-analysis of adult studies examined the effect of adherence on outcome and did not find an effect size significantly different from zero (Webb, DeRubeis, & Barber, 2010).

Therapist Competence. Many studies examining therapist adherence have also examined the related construct of competence, or therapist skillfulness in the delivery of treatment procedures. Theoretically, competence might be equally or more important than adherence, or even moderate the relationship between adherence and outcome (Barber et al., 2006). If adherence does have a curvilinear effect, one might expect therapist competence to be associated with the ideal middle ground of adherence because this might best represent skillful adaptation of the intervention. Skillful therapists might appear less adherent on measures if they more effectively adapt and specify an intervention to the needs of the client, or they might spend less time on a given skill if they provide a more efficient and specific explanation of that skill to their child or parent client.

Nevertheless, several methodological confounds also complicate examinations of therapist competence. As with adherence, in studies of evidence-based treatments that recruit highly trained clinicians there might not be sufficient variability in therapist competence to exhibit a significant relationship between competence and outcome (Barber et al., 2006; Hogue, Henderson, et al., 2008). Additionally, observational methods are the most reliable ways to assess therapist competence (Hogue, Dauber, Lichvar, Bobek, & Henderson, 2015; Hurlburt, Garland, Nguyen, Brookman-Frazee,

2010), but measuring competence observationally is often confounded by client effects. Therapists may exhibit more competence with more severe patients, who are also less likely to achieve positive outcomes (Bearman, Schneiderman, & Zoloth, 2016; Imel et al., 2011). Imel and colleagues (2011) also found significant variability within and between therapists for competence; therapists achieved lower ratings of competence in motivational interviewing for more motivated clients because the skill was less necessary to implement thoroughly. Hogue, Dauber, and colleagues (2008) found that variability in therapist competence in multi-dimensional family therapy was better explained by client factors than by therapist factors. Webb et al.'s meta-analysis (2010) also examined competence and, similarly, did not find an effect size significantly different from zero of therapist competence on client outcome.

Therapeutic Alliance with Therapist Competence and Adherence

Some research has explored relationships between alliance and therapist adherence, and alliance and therapist competence. For example, Barber et al. (2006) found an interaction between therapeutic alliance and treatment adherence, such that for high levels of client-reported alliance, therapist adherence did not seem to effect outcome, while for low levels of alliance, therapist adherence produced better client outcomes. Barber and colleagues also found that therapist competence did not moderate the relationship between curvilinear adherence and outcome (2006). Other adult studies have found that alliance was associated with competence (Guydish et al., 2014; Weck et al., 2012; Weck, Richtenberg, Jakob, Neng, & Hofling, 2015), but only sometimes with adherence (Guydish et al., 2014; Weck et al., 2015).

Few studies have examined relationships between therapist competence and youth-therapist alliance and therapist adherence and youth-therapist alliance. In a sample of anxious children treated with individual and group cognitive behavioral-therapy (CBT), treatment adherence was positively associated with alliance both early and late in treatment (Liber et al., 2010). Unfortunately, the study did not assess competence. Hogue, Dauber, and colleagues (2008) assessed both fidelity variables in relation to adolescent substance-abusing clients in both individual cognitive-behavioral therapy (CBT) and family therapy. Hogue, Dauber, et al. (2008) and found that adolescent alliance was associated with adherence and overall competence in the CBT condition, and only competence in the family therapy condition.

Few studies have examined treatment integrity in relationship to the parent-therapist alliance (Hukkelberg & Ogden, 2013, Hogue, Dauber et al., 2008). Hukkelberg and Ogden (2013) examined therapist integrity (and did not differentiate between competence and adherence) with a sample of 331 children with disruptive behavior disorders and their parents, who participated in Parent Management Training. Results found no relationship between integrity and alliance. Hogue, Dauber, and colleagues (2008) only examined parent alliance in their family therapy condition, and found that adherence and competence were unrelated to parent alliance.

The Current Study

Given the complications in understanding how adherence and competence function in relationship to treatment outcome, this study sought to explore a narrower set

of inter-relationships among process variables alone: therapist competence, therapist adherence, and therapeutic alliance, with both youth and caregiver clients.

While some suggest that the therapeutic relationship is "evidence-based" (Norcross & Wampold, 2011) and substantial attention in research has been placed on the therapeutic relationship, the alliance and other aspects of relationships still might not constitute a mechanism of action in psychotherapy (Kazdin, 2007). As noted by Kazdin (2007), neither therapeutic alliance nor the treatment integrity variables of adherence and competence vary randomly. The development of working relationships between a therapist and youth or therapist and parent usually depend on individual factors. The extent to which therapists adhere to treatment protocols and demonstrate treatment elements with skill also often depend on the client and context. Moreover, these variables should vary by client, because best practice, including EBP, requires that treatments be implemented with both fidelity and flexibility to be most appropriate for a given client (Kendall & Beidas, 2007). Given that these variables cannot easily be tested through experimental manipulation, Kazdin (2007) recommends an empirically-derived, thoughtful description of how a given process might function. Assessing what exactly happens in a given therapeutic context provides some helpful insight into why and how change occurs. This study contributes to the characterization of the therapeutic process by examining relationships among important but poorly understood process variables.

Additionally, given the importance of addressing mental health treatment as it is typically delivered, this study examines these variables in the context of a flexible, modular protocol developed for use in community mental health treatment (Weisz et al.,

2017). While evidence-based treatments usually consist of a treatment manual of many different therapeutic practice elements, researchers have used a novel methodological approach called distillation and matching to compile which treatment elements are most rigorously tested and evidence-based across trials (Chorpita, Daleiden, & Weisz, 2005). Such evidence-based elements have subsequently been organized into trans-diagnostic, modular treatment protocols which can be applied flexibly depending on client characteristics (Daleiden et al., 2006; Chorpita, Daleiden, & Weisz, 2005). Research on resulting protocols demonstrates both their clinical effectiveness and their appeal to clinicians (Borntrager et al., 2009; Chorpita & Weisz, 2005; Chorpita & Weisz, 2009; Chorpita et al., 2013; Weisz et al., 2012).

Several hypotheses were delineated: Given the finding that adherence and competence seem to be related to alliance in previous studies (Liber et al., 2008; Hogue, Dauber, et al., 2008), it was predicted that adherence and competence would predict youth-therapist alliance (Hypothesis 1). Although some studies on caregiver-therapist alliance did not find significant relationships between integrity and alliance (Hogue, Dauber et al., 2008; Hukkelberg & Ogden, 2013) other studies in the adult field suggest that there might be a relationship (Guydish et al., 2013; Weck et al., 2012; Weck et al., 2015), so it was further hypothesized that adherence and competence would also predict caregiver-therapist alliance (Hypothesis 2). Child demographic variables, such as age, sex, and diagnostic profile, which studies suggest might moderate the relationships between alliance and outcome (McLeod, 2011), were also examined as exploratory predictors with no hypotheses about their relationships to alliance.

Chapter 2: Method

Youth and Caregiver Participants

Participants included 24 youths aged 7 to 15 (M = 11.03, SD = 2.69) and their caregivers, recruited from two urban community mental health care centers in the northeastern United States. Descriptive statistics for youth and caregivers are given in Table 1. The sample was evenly divided between boys and girls and was 87% White, 12.5% was Latino, and 4.2% were Arab American. One child was adopted while the remaining 23 lived with their biological parents. A quarter of the sample's families earned less than $40,000 per year, while 29% earned $40-000-$79,000, 8% earned $80,000-119,000, and the last quarter earned $120,000 or more. Three families did not report income. Four percent of the sample of caregivers were never married, 42% were divorced or separated, and 54% were married. Youth in the sample met criteria for inclusion because they had at least one diagnosis from the Diagnostic and Statistical Manual of Mental Disorders (4th ed. [DSM-IV]; American Psychiatric Association, 1994), as assessed through a standardized diagnostic interview. In this sample, 66.7% of child participants had any disruptive behavior disorder diagnosis, 58.3% had any anxiety disorder diagnosis, and 20.8% had any depressive disorder diagnosis. The average number of diagnoses per client was 2.21.

Therapist Participants

Fourteen therapists from two community agencies served the 24 youths and their families, with a mean age of 35.57 (SD = 8.69) and a mean of 7.96 (SD = 9.16) years of clinical experience. Descriptive statistics of therapists are provided in Table 2. Therapists

were 7% Latino, 93% Caucasian, and 79% female. In terms of training and licensure, therapists in the sample consisted of 43% psychologists, 50% social workers, and 7% Licensed Mental Health Counselors.

Procedures

Community mental health practitioners used a newly developed treatment protocol called FIRST. FIRST was co-designed by a team of treatment experts and community clinicians to condense and improve upon an earlier trans-diagnostic modular treatment protocol designed from existing evidence-based treatments for anxiety, depressive, and disruptive behavior disorders for children (Weisz et al., 2017; Chorpita & Weisz, 2009). Components are all treatment elements derived from empirically-supported treatment protocols; they consist of relaxation, effective use of parental attention and contingencies, cognitive restructuring, problem-solving, and doing the positive opposite of a child's problem behavior (an anxious child, for example, would face his or her fears, while a depressed child would be encouraged to pursue valued activities despite feeling apathetic; Weisz et al., 2017).

Clinic staff invited families who were referred for typical services to participate in the study if child and adolescent clients were between the ages of 7 and 15. Project staff administered phone screens to families who agreed to be contacted by the study. Families who appeared to meet initial criteria were invited for in-person assessments completed using the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS; Kaufman et al., 1997). Youth participants were chosen for the study if they met full diagnostic criteria for one or more anxiety,

depressive, or disruptive behavior disorders according to the results of the K-SADS (Weisz et al, 2017). For inclusion, youth could have comorbid disorders (such as attention deficit/hyperactivity disorder, or multiple anxious, depressive, and/or disruptive disorders), but had to have a primary diagnosis of an anxiety, depressive, or disruptive behavior disorder. Exclusion criteria were limited to comorbid active psychosis, recent (past 6 months) suicide attempt, and a primary diagnosis of an eating disorder. Participating child clients and their caregivers received services in the partner clinics from the therapists who were employed there. Study staff's contact with clients was limited to research assessments.

Therapists attended a 2-day interactive training in the FIRST protocol. The training involved both didactic presentation of the material and interactive practice through modeling and role-play. Over the course of the project, therapists attended group consultation with a study consultant for an hour each week during which they discussed FIRST implementation with youth enrolled in the study.

Measures

Treatment integrity. To assess the competence and adherence in treatment delivery of FIRST, each session selected for coding was coded using the Therapist Integrity in Evidence Based Interventions (TIEBI; Bearman, Herren & Weisz, 2012), originally derived from Weisz et al. (2012) and modified to fit FIRST (Weisz et al., 2017). The TIEBI as modified for FIRST includes 19 codes specific to the FIRST protocol. Examples of the specific codes include reviewing therapeutic homework,

discussing and teaching about effective parental praise, and explaining, scheduling, or reviewing exposure to feared stimuli to combat anxiety.

Within the TIEBI, session recordings are coded, in five-minute segments, for the presence/absence of the 19 items. Coding of adherence is based on the number of five minute segments in which prescribed content from FIRST was present divided by the total session time, thus constituting a ratio of EBP elements to other activities. Coding of therapist competence is based on coders' global ratings of skillfulness of delivery of each item of FIRST delivered over the course of the session, ranging from 1=incomplete or superficial to 4=expert.

TIEBI coders ($N = 8$) were bachelors and masters' level research assistants in the primary coding system developer's laboratory. Coder training for the TIEBI was a four-step process. First, coders observed a clinician training that included all content included in the FIRST protocol. Second, coders attended a didactic training on evidence-based practice elements included in the FIRST manual and the TIEBI coding manual. The trainer explained each TIEBI item and included video exemplars of practice elements. Third, coders practiced coding three example therapy sessions and then met again to review each session and compare their results to master codes developed by the coding system developer. Finally, coders independently coded the same six therapy sessions. Their coding results were compared to master codes also determined by the coding system developer. Coders were accepted to the study if they demonstrated good reliability (defined as an intraclass correlation coefficient above 0.59) according to the standards of Cicchetti (1994).

Following didactic training, practice sessions, and reliability screening, the coders coded sessions that were randomly selected using the following procedures: (1) First sessions were omitted (these often included clinic administrative content), (2) All remaining sessions were divided into thirds (early, middle, late phase of treatment), and (3) One session was randomly selected for coding from each of these three phases, omitting sessions shorter than 15 minutes or longer than 75 minutes (these were typically unrepresentative—e.g., clinic paperwork). Of the 360 total recordings, 67 were randomly assigned by session phase. Two families changed therapist over the course of therapy, and videos after the family changed therapist were excluded from the study. Videos were also excluded if they were inaudible or consisted only of audio data.

Integrity variables, such as therapist adherence and therapist comeptence, were calculated using the following procedures. To generate a mean adherence score for each coded treatment session for each FIRST content item, the number of five minute segments in which that item was coded "present" was summed, mulitiplied by five (number of minutes in each segment), divided by the total time of the session in minutes and multiplied by 100. This created a session-level adherence score. To generate a competence score for each treatment episode, the highest level of competency of any of the 19 items on the TIEBI in a given session was used to represent overall competence.

Over the course of the coding, 44 sessions were randomly selected for double coding, to assess agreement between independent coders. Reliability, across pairs of coders, ranged from ICC [1,1] =0.78 to ICC [1,1] = 0.98, with a mean of ICC [1,1] =0.92 for FIRST adherence, and from ICC [1,1] =0.56 to ICC [1,1] =0.99, with a mean of ICC

[1,1] = 0.91 for FIRST competence. According to the criteria set forth by Cicchetti and Sparrow, these averages constitute excellent reliability (1981; Cicchetti, 1994).

Therapeutic alliance. Alliance between therapist and child and between therapist and parent were assessed using the Therapist Process Observational Coding System for Child Psychotherapy – Alliance Scale (TPOCS-A; McLeod & Weisz, 2005). This 9-item measure assesses the bond between therapist and client and the collaboration of the dyad on therapeutic tasks, two domains theorized to predict alliance in child therapy (Shirk & Saiz, 1992). Sample items include "To what extent did the client indicate that s/he experiences the therapist as understanding and/or supporting?" and "To what extent did the client not comply with therapeutic tasks?" (McLeod & Weisz, 2005). Although the construct of therapeutic alliance was originally conceptualized to contain three domains, and this scale was designed to capture two, an exploratory factor analysis of the scale supported a single-factor model (Fjermestad et al., 2012). The measure also has shown acceptable internal consistency for both early and later therapy sessions ($\alpha = 0.95$; McLeod & Weisz, 2005).

TPOCS-A coders ($N = 2$) were one advanced undergraduate and one doctoral graduate student in School Psychology. Coder training for the TPOCS-A consisted of two didactic sessions in which coders reviewed the TPOCS-A manual and coded several therapy segments, discussing each item and their determinations of how items applied to the segment in question. Next, coders independently coded the same 10 videos. Results from the initial reliability sample indicated that reliability was good, according to standards recommended by Cicchetti & Sparrow (1981).

The same videos coded by the TIEBI coders were also coded by the TPOCS-A coders. 25% of videos were selected for double-coding. Mean ICC [1,2] across items the scale were 0.59 for child items (*SD* = 0.10), and 0.61 (*SD* = 0.10) for parent items in an article published by the scale's author (McLeod & Weisz, 2005), which are in the good range (Cicchetti, 1994). For TPOCS-A coders in the current study, ICC [1,2] for both parent and child items were in the good to excellent range (for child items: *M* = 0.81, *SD* = 0.12; for parent items: *M* = 0.64, *SD* = 0.21).

Data Analyses

Data were analyzed using SPSS and HLM 7.0 Student Version (IBM Corp., 2016; Raudenbush, Bryk, & Congdon, 2013). SPSS was used to examine the descriptive characteristics of the variables, and to calculate correlations between alliance and adherence, alliance and competence, and competence and adherence across all sessions to assess multicollinearity.

HLM 7.0's multi-level modeling was used to calculate correlations among those predictors accounting for the longitudinal and nested nature of the data. HLM uses three kinds of parameter estimates in their hierarchical linear models: empirical Bayes estimates of randomly varying level-1 coefficients, generalized least squares estimates of level-2 coefficients, and maximum likelihood estimates of variance and covariance components at levels 1 and 2 (Raudenbush, Bryk, Cheong, & Congdon, 2004). Hypothesis testing in two-level HLM models is done by default using restricted maximum likelihood estimation, which maximizes the likelihood function and estimates the variance components after removing fixed effects from the model; it has less bias than

full maximum likelihood estimation, although some argue that the differences are minimal (Hox, 2010). Hierarchical linear models improve upon earlier models because they are better equipped to handle missing data and uneven intervals between measurement (Raudenbush & Bryk, 2002).

A 3-level model was tested with sessions nested within cases and cases nested within therapists. Each session included a measurement of therapist adherence, therapist competence, and alliance. In sessions where both the child and parent were present for at least some part of the session, both the youth-therapist alliance and caregiver-therapist alliance were coded. In sessions where only the child or only a parent was present, only that alliance was measured. Separate models were run for parent and child alliance using a random effects model allowing for individual variance around intercept and slope. Level I consisted of individual therapy sessions across time, Level II consisted of cases and case effects (such as child diagnosis, age, and sex), and Level III consisted of therapists and therapist effects. Because there were few therapists, no therapist-level predictors were examined in this study. Residuals from each model were examined for normality assumptions.

Two sets of analyses were performed for youth-therapist and caregiver-therapist alliance. Although the analyses were originally planned as growth-curve analyses, and time in days was included as a predictor in the initial model, many cases did not include three time-points of measurement for both types of alliance. Across the 24 cases, nine included youth-therapist alliance at all 3 time-points, eight assessed the youth-therapist alliance at two timepoints, three assessed the child-therapist alliance at one timepoint, and

four did not include any measurements of child-therapist alliance. Eight cases assessed the caregiver-therapist alliance at all three timepoints, seven assessed the caregiver-therapist at two timepoints, eight assessed the caregiver-therapist alliance at one timepoint, and one did not assess the caregiver-therapist alliance at any timepoint. The youth-therapist alliance and caregiver-therapist alliance were each assessed in eight models, removing variables found to be non-significant in the previous model: (1) a model including only the time variable, (2) a model including no predictors at all, (3) a model including child age and gender, (4) a model including child diagnostic variables for the three central referral concerns addressed by FIRST: anxiety, depression, and disruptive behavior, (5) a model including therapist adherence to evidence-based practice, (6) a model including therapist competence in delivering evidence-based practice.

Chapter 3: Results

Descriptive Statistics

Descriptive statistics at the session level (Level 1), case level (Level 2), and therapist level (Level 3) are visible in Table 3. In total, across 67 coded sessions, there were 46 sessions in which children were present and child alliance could be coded and 46 sessions for which parents were present and parent alliance could be coded. Adherence to and competence in evidence-based practice elements were coded in all 67 videos. Therapists had as few as one or as many as three cases. Of the 14 therapists in the study, only 12 were present in the 67 videos coded for the study. Associations among Level 1 variables are presented in Table 4, not controlling for the nested nature of the data.

Additionally, the presence of alliance data often associated with referral concern, such that more measurements of parent alliance were taken for children with conduct disorder, because in these cases, therapists were more likely to work with parents than with children (see Table 5 for associations among presence of data and diagnoses). This does not threaten the validity of HLM assumptions because diagnosis was a covariate rather than the outcome variable.

Session lengths were typical of outpatient care (M = 48.37 minutes, SD = 7.08). Adherence, operationalized as the number of minutes of each session used for evidence-based practice elements, ranged from 0 to 269.35 minutes, with a mean of 141.03 minutes (SD = 59.64). Minutes in which multiple treatment elements were used were counted multiple times, allowing for higher adherence minutes than the length of the session. This allowed therapists who used more treatment elements to be assigned higher adherence

scores. The mean number of practice elements used per session was slightly less than 5, indicating that therapists typically used many different skills in each session. Across treatment sessions, competence in the current study ranged from 0 to 4, with an unweighted mean of 3.18 (*SD* = 0.95), which indicates that in an average session the therapist's use of at least one skill was considerably skillful. Also across sessions, observed youth-therapist alliance scores ranged from 0.56 to 4.89 (*M* = 3.63, *SD* = 0.81), while observed caregiver-therapist alliances ranged from 1.78 to 4.89 (*M* = 3.92, *SD* = 0.68). Average alliances scores in this sample would represent halfway between "somewhat" and a "great deal" for positively worded items such as "To what extent did the client indicate s/he experiences the therapist as understanding and/or supporting?" These levels of alliance are comparable to those of other studies using the TPOCS-A (Chiu, McLeod, Har, & Wood, 2009; Langer, McLeod, & Weisz, 2011; Lerner, Mikami, & McLeod, 2011; Liber et al., 2010; McLeod & Weisz, 2005).

HLM Analyses

Because of the limited size of the sample (*N*=24), and limited number of repeated measures for multiple of the measures, models could only accommodate a limited number of predictors at a time without creating an overly-specified model that would not converge in HLM. Additionally, several of the Level-1 variables most of interest, therapist adherence to EBP and competence in delivery, were strongly associated with one another, which would make them multi-collinear in models that included both. For these reasons, EBP adherence and competence variables were included in separate models for each of the alliance analyses. Additionally, all analyses except for those of the

demographic characteristics were allowed to vary randomly at levels 2 and 3. Although most models did not demonstrate significant variance at level 2 or level 3, these models were maintained because they accurately represent the structure of the data and therefore most appropriately describe the data from a theoretical standpoint. Analyses were also run in alternative, two-level models (excluding the therapist level), and results were not significantly different.

Effect sizes for trending and significant variables were calculated using procedures outlined by Hedges (2009). Cohen (1988), provides guidelines for effect sizes for studies examining constructs without extensive literature on which to judge effects. According to his criteria, 0.2 constitutes a small effect size, 0.5 constitutes a medium effect size, and 0.8 constitutes a large effect.

Youth-therapist alliance. Models and results of youth-therapist alliance analyses are visible in Table 6 through Table 11. In all models, level-1 and level-2 variables were group-mean centered. Only the time variable was entered into Model 1. Level-1 residuals for Model 1 met normality assumptions according to a Shapiro-Wilks test (statistic = 0.966, p = 0.200). The time variable produced a very small co-efficient in this model and was not statistically significant (π_1 = -0.002, p = 0.618). The time variable did not predict significant variability at the case-level, suggesting that child-alliance did not vary significantly among children. The time variable did, however, account for statistically significant variability at the therapist level (u_{10}^2 = 0.0001, p = 0.013). Of total statistically significant variability of child alliance in this model, change in time at the therapist level accounted for 0.02%. While statistically significant, this percentage of variability is so

small that it is not practically significant. For this reason, and because HLM could not tolerate the variables of interest and the additional 5 parameters implied by including the time variable in one model, the time variable was excluded from subsequent models. Model 2 constituted an unconditional model with no predictors, allowed to randomly vary at the session, case, and therapist levels. This model did not show statistically significant variability at the case or therapist level.

Next, demographic variables were entered into a third model at level two, modeled as fixed effects at level three. In Model 3, Child sex and age were not significant predictors of youth-therapist alliance (Age: $\beta_{01} = 0.011$, $p = 0.879$; Sex: $\beta_{02} = 0.118$, $p = 0.723$), and were excluded from subsequent models. Next, child initial diagnoses on the were entered as Level-2 predictors in Model 4. Each of these variables were categorical variables representing whether a child had any disruptive behavior disorder, such as attention-deficit hyperactivity disorder, oppositional defiant disorder, and/or conduct disorder, any anxiety disorder, or any depressive disorder, according to either parent or child report on the KSADS. None of these variables were found to predict observed child alliance (Disruptive behavior: $\beta_{01} = -0.687$, $p = 0.340$, Anxiety: $\beta_{02} = -0.211$, $p = 0.699$; Depressive disorder: $\beta_{03} = -0.378$, $p = 0.474$). Demographic characteristics were excluded from subsequent analyses.

Finally, the variables of most interest were entered in two subsequent models. First, therapist adherence was added to Model 5. There was a non-significant trend of adherence on child alliance ($\pi_1 = 0.005$, $p = 0.055$). The effect size of adherence on child alliance was very small ($d_{wt} = 0.008$). In the last model, Model 6, therapist competence

was entered. This model did meet normality assumptions at level 1, suggesting a better fit of the data (Shapiro-Wilks = 0.973, p = 0.348). Therapist competence did not significantly predict child alliance ($\pi_1 = 0.197$, $p = 0.339$). Level 1 residuals from this final model also did not meet normality assumptions (Shapiro-Wilks = 0.908, $p < 0.01$). Hypothesis 1, that adherence and competence would predict youth-therapist alliance, was generally not supported, with only a small trending effect of therapist adherence.

While residuals of the first model did meet HLM assumptions, models 2, 3, 4, and 6 violated assumptions with non-normal level one residuals. In each of these models, a few data points were significantly below the estimated intercept, while many other data-points were clustered above the estimated mean. Because these outliers accurately represented the collected data, they could not be removed from the dataset. This indicates that these models did not describe the data well, and that making inferences about the relationships among these variables was difficult. Only Model 5, concerning adherence predicting youth-therapist alliance, also the only model with a predictor approaching statistical significance, did meet HLM assumptions for level-1 residuals.

Caregiver-therapist alliance. Results of caregiver-therapist alliance analyses and models run are presented in Table 12 through Table 18. The same models run for youth-therapist alliance were also run for caregiver-therapist alliance. In the time-only model, the time variable was also insignificant at level one ($\pi_1 = 0.00006$, $p = 0.97$) and the model did not meet level one residual assumptions (Shapiro-Wilk = 0.941, p = 0.021). There was significant variability at the case-level ($r_0^2 = 0.195$, p = 0.035), suggesting that parents varied significantly in their level of alliance with therapists, which did not vary as

a function of time. There was not significant variability at the therapist level, suggesting that parent alliance did not vary significantly as a function of therapist. Because it was not significant at any level, the time variable was excluded from further analyses. The unconditional model excluding the time variable also contain significant variability at the case level (r_0^2 = 0.185, p = 0.019), but no significant variability at the therapist level (r_0^2 = 0.023, p = 0.172), and level-1 residuals were also non-normally distributed (Shapiro-Wilk = 0.941, p = 0.022).

Next, child demographic variables were entered into subsequent models at level 2. Age and sex were entered in Model 3 as fixed effects at level two. Neither were statistically significant (Age: β_{01} = 0.074, p = 0.211; Sex: β_{02} = -0.423, p = 0.163). In Model 4, a diagnosis of any disruptive behavior disorder, any anxiety disorder, or any depressive disorder were entered. None of these were statistically significant (Disruptive Behavior: β_{10} = 0.331, p = 0.596; Anxiety: β_{20} = -0.007, p = 0.989; Depression: β_{30} = 0.044, p = 0.925). Significant variability remained at level 2 (r_0^2 = 0.185; p = 0.008).

Finally, the variables most of interest were entered into two subsequent models. In a test of Model 5, therapist adherence was statistically significant (π_{10} = 0.005, p = 0.023). Similar to the child model, the effect size was very small (d_{wt} = 0.007). Significant variability remained at the case level (r_0^2 = 0.251, p = 0.005). Adherence did not explain significant case-level variability (r_1 = 0.002, p = 0.058). Therapist competence was entered into Model 6. Competence exhibited a non-significant trend towards higher alliance at the session level (π_{10} = 0.468, p = 0.059). Competence exhibited a medium to large effect size, and represents a sample average session within

an average case with an average therapist (d_{wt} = 0.675). Competence significantly explained parent-alliance differences at the case-level (r_1^2 = 0.394, p = 0.001), although significant case-level variability in alliance remained (r_0^2 = 0.298, p < 0.001). In this model, level-1 residual normality assumptions were met (Shapiro-Wilk = 0.967, p = 0.205). Hypothesis 2, that therapist adherence and competence would predict parent alliance, was partially supported; therapist adherence had a small statistically significant effect, while therapist competence had a large trending effect.

For caregiver-therapist alliance, Models 1, 2, 4, and 5, normality assumptions were not met because level-1 residuals were platykurtic, indicating high variability across the residuals. Level 1 residuals in Model 3 met normality assumptions. These results are inconclusive in establishing relationships between youth-therapist alliance or caregiver-therapist alliance and child demographic variables.

Chapter 4: Discussion

This study examined the relationships among observer-rated therapeutic alliance and therapist delivery of evidence-based practice elements in a comorbid community sample with a newly developed trans-diagnostic modular therapy protocol. When a potential mechanism of action is impossible or difficult to manipulate, Kazdin (2007) recommends that research create a careful description of how a process seems to function so that mechanisms and moderators of treatment can be better identified and understood. This study examined how three poorly understood constructs in youth psychotherapy function together to add to a broader description of how these variables interact.

Prior research has demonstrated that both youth-therapist and caregiver-therapist alliance appear to be associated with positive outcomes in treatment, although the strength of these relationships depend on the types of alliance measures used and the age of the client (McLeod, 2011; McLeod, Southam-Gerow, & Kendall, 2017). Evidence of the relationships between therapist adherence and competence in the delivery of treatments and outcomes are more limited and are mixed, likely due to methodological limitations in how adherence and competence are exhibited in session and rated by observers (Webb et al., 2010). Very limited research has explored relationships among alliance, competence and adherence (Liber et al., 2010; Hukkelberg & Ogden, 2013; Hogue, Dauber, et al., 2008), though they are the three primary in-session quality indicators for treatment implementation (McLeod et al., 2013). This study addresses gaps in current literature by examining these three variables using gold-standard observational

methodology in a sample of therapists treating youth in community-based mental health care centers, where youths and families typically receive mental health care.

Overall, in this sample, scores of therapist competence and adherence were both high, with therapists using many evidence-based treatment elements in typical sessions. The high levels of therapist adherence and competence in this sample is not reflective of typical usual care (Garland et al., 2010), but is comparable to other trials in which typical clinicians are trained and supervised to use evidence-based practices (Weisz et al., 2012). Levels of youth and caregiver alliance were also high and typical of other studies (Chiu, McLeod, Har, & Wood, 2009; Langer, McLeod, & Weisz, 2011; Lerner, Mikami, & McLeod, 2011; Liber et al., 2010; McLeod & Weisz, 2005).

In the current study, therapist adherence to EBP elements exhibited a trending but small effect on child alliance. Competence in the delivery of EBP elements was not related to child alliance. Although Liber et al., (2010) and Hogue, Dauber, and colleagues (2008) both did find associations between adherence and alliance, these studies presented their findings as inter-correlations between variables, rather than analyzed in a multi-level model as they were in this study. In fact, correlations from this study that did not account for the nesting of data evidenced a significant correlation between adherence and alliance of 0.40 (See Table 4), which is very similar to the correlations that Liber et al., (2010) reported for adherence and early alliance (0.44), and adherence and late alliance (0.45). Hogue, Dauber, and colleagues presentation of results evidenced a smaller relationship with adherence (0.28), but they might have had a significantly different sample. While Hogue, Dauber, et al. (2008) examined adolescents with substance use disorders, with an

average age of 15.5 (*SD* = 1.3, range = 13-17), the current sample had an average age of 11.03 (*SD* = 2.69, range = 7-15), which is much closer to Liber et al.'s population of anxious children with an average age of 10.22 (*SD* = 1.15, range = 8-12). Hogue, Dauber et al. (2008) additionally examined therapist competence and found a positive relationship between therapist competence and youth-therapist alliance. This could also be due to differences in client characteristics like age or referral concern.

For the parent alliance, adherence also exhibited a small significant effect, while competence exhibited a medium-to-large effect of trending significance. This study adds to previous literature suggesting that the nature of caregiver and youth alliances are different. The medium to large effect size identified in this study of therapist competence on caregiver-therapist alliance suggest that demonstrated competence in EBPs may be an important way to build alliance with parents.

Other research has demonstrated that caregiver alliance contributes to youth participation in therapy and reduces the chances of drop-out, while youth-therapist alliances are more predictive of youth outcome (Hawley & Weisz, 2005). Perhaps because parents are the agents often responsible for initiating therapy and maintaining youth participation, they may be more invested than youths themselves in positive outcomes for therapy, and so respond better to EBPs skillfully delivered. Additionally, given the finding that therapists are more likely to agree with therapy targets of parents than children (Hawley & Weisz, 2003), caregivers might find therapists more responsive to their concerns than do youth. Several researchers have explored the construct of cognitive match to understand therapeutic alliance in racial/ethnically matched client-

therapist dyads (Sue, 1998; Zane et al., 2005; Yeh et al., 2016). Zane and colleagues operationalized cognitive match as consisting of problem perception, coping orientation, and goals for treatment. Developmental differences between youths and adults would likely make cognitive match different between youths and caregivers. Therapist competence, which includes a cogent explanation of treatment rationale, might contribute both to problem perception and coping orientation. Thus, it could be that competence contributes to cognitive match with caregivers, thereby improving alliance.

The findings of this study differ from Hukkelberg and Ogden's study (2013), which found that alliance and fidelity were unrelated. These different findings could be attributable to differences in the operationalization of both the fidelity and alliance constructs. Firstly, Hukkelberg and Ogden did not differentiate between adherence and competence in their analyses. It could be that the adherence component of their fidelity variable obscured a relationship between therapist competence and alliance. Alternatively, the current study used an observational measure of alliance, whereas Hukkelberg and Ogden used self-report measures of alliance in their study. Self-report measures may be influenced if parents feel pressured to respond in a kinder manner than they truly experience the relationship (McLeod & Weisz, 2005). In fact, in the current study, a self-report of alliance was collected for 19 of the 24 caregivers in the study at the end of treatment, and results were not correlated with the observational measure (r = 0.317, p = 0.186). Additionally, cultural differences between Hukkelberg and Ogden's Norwegian sample and this study's Northeastern United States sample may have resulted in different relationships among interpersonal variables.

Findings of the current study also differed from Hogue, Dauber, et al.'s findings (2008), which evidenced no relationship between adherence and parent-therapist alliance, and no relationship between therapist competence and parent-therapist alliance. These also could have been due to differences in client age between the two studies. Working with parents of teens with substance abuse problems might be significantly different than working with parents of younger children with anxious, depressive, and disruptive behavior.

Findings in this study support the idea that therapist adherence, or the extent to which they include prescribed elements of an EBP, has a small impact on the youth and caregiver alliances. Effect sizes of adherence on alliance were small for both parents and children. In the parent relationship, this might be because some amount of adherence is necessary in order to deliver an intervention competently. The previous finding of a curvilinear relationship between adherence and outcome (Barber et al., 2006; Hogue, Henderson, et al., 2008) may also apply to the relationship between adherence and alliance. That is, it is possible that too little or too much adherence to a prescribed treatment does not predict alliance, whereas the "ideal" amount is related. This possibility should be explored further in larger youth samples where a potential curvilinear relationship could be explored.

Historically, practitioners of psychotherapy report that they believe the therapeutic alliance to be one of the most important contributors to successful treatment (Kazdin, Siegel, & Bass, 1990). Some research has shown that clinicians might be wary of research, treatment manuals, and EBP because they worry that these practices might

endanger the therapeutic relationship with clients (Stewart, Stirman, & Chambless, 2012; Pagoto et al., 2007). This study adds to accumulating evidence that therapist use of a treatment manual, and evidence-based treatment generally, does not harm the youth-therapist alliance (Langer, McLeod, & Weisz, 2011; McLeod et al., 2016), and extends that finding to caregiver-therapist relationships. The results of this study suggest that not only does skillful delivery of EBP not damage the therapeutic alliance with children, it may actually improve alliance with parents. While clinician attitudes constitute only one barrier to EBP (Weisz, Ugueto, Cheron, & Herren, 2013), this evidence may nevertheless help those clinicians who are hesitant towards adopting EBPs to consider their use.

Additionally, results of this study support the idea that common factors, like the therapeutic alliance, assumed to be an active ingredient in all therapies, can be complementary to an EBP perspective (Barth et al., 2012). Proponents of the common factors perspective, additionally, have asserted that rather than examine specific treatment practices, or even continue to examine mechanisms of action in psychotherapy, that researchers should instead examine therapist effects (Laska, Gurman, & Wampold, 2014; Saxon & Barkham, 2012). Many consider any effect of the therapist, rather than a specific treatment, to be a common factor (Duncan et al., 2010), and they might include the therapist's years of experience, field of training (e.g., psychology, social work, marriage and family therapy, etc.), theoretical orientation, or the therapist's general ability to form relationships with clients (Okiishi, Lambert, Nielsen, & Ogles, 2006). Research suggests that therapists' years of experience are not associated with improved patient outcomes (Tracey, Wampold, Lichtenberg, Goodyear, 2014), nor are theoretical

orientation or field of training (Okiishi et al., 2006). Therapist effects, however, cannot reasonably be separated from the types of practices used. Competence in a given skill, in this case, evidence-based practice elements, constitutes a measurable and mutable place for the potential improvement of underperforming therapists. Competence and adherence to particular practices can also be thought of as aspects of therapist effects that could very meaningfully impact outcomes along with the therapeutic alliance. Thus, researchers should continue to examine the particular practices used (evidence-based and otherwise) along with how therapists use them to better understand client outcomes.

Strengths and Limitations

Some major strengths of this study were the use of observational measures to assess therapist competence, adherence, and alliance. Research suggests that, in general, therapists are not reliable reporters of the practices that they use in therapy (Hogue et al., 2015), especially not in terms of the extensiveness to which they used practices (Hurlburt et al., 2010). In evaluating therapeutic alliance as well, some consider observer-rated alliance to be the "gold standard" for youth treatment (McLeod, Southam-Gerow, & Kendall, 2017). Another strength of this study was the use of multiple measurements for each client of alliance, competence, and adherence so that more reliable estimates of their inter-relationships could be measured. Additionally, the inclusion of a time variable in discerning difference across time in alliance was helpful in assessing whether youth and parent alliances seemed to grow. Given the inclusion of multiple measurements for a given alliance, another strength of this study was the use of multi-level modeling, which was able to account for the nested nature of the data and allowed for random variation at

session level, case level, and therapist level so that these levels of variability could be examined.

Nonetheless, some important limitations remain. One limitation of the study is the limited size of the sample. With only 24 cases, the sample provided limited power to make inferences about relationships between the variables of interest. While therapist competence seemed to have a substantial effect on alliance, the finding was trending rather than significant. Nevertheless, with such limited power afforded by the small number of participants, the identification of even trending relationships shows promise for further investigation. A larger sample size would also allow for analyses controlling for additional parameters in one model. While many of the analyses did not demonstrate significant variability at the case or therapist level, the addition of more therapists and therapy cases would likely increase variability at those levels and give additional insight into organizational and therapist effects of treatment practices on alliance. An examination of an additional larger sample using the same therapy protocol is currently under investigation.

Another limitation of the study was that data for parent and child alliance separately did not necessarily represent the whole, trans-diagnostic sample. Therapeutic alliance for parents was more likely to be coded for caregivers of youths with disruptive behavior disorders, since those parents were attending sessions more frequently. Nevertheless, data on parent alliance for non-conduct cases was not so much missing as intentionally not present, and did not violate the statistical assumptions made by HLM in analyzing multi-level models.

HLM assumptions were violated in several of the models because level-1 residuals were not normally distributed (Raudenbush & Bryk, 2002). Violations of assumptions do not necessarily threaten the conclusions of this study. Research indicates that violations of residual normality do not effect point estimates, and instead only effect the standard error of the variance components, which are not of central concern to this study (Maas & Hox, 2004). Moreover, the models addressing the relationship between therapist competence and caregiver-therapist alliance did meet residual normality assumptions, suggesting that the conclusions drawn are valid.

Another limitation of the current study was the lack of sufficient data points to construct a true growth curve model. Research on the alliance in laboratory settings for child anxiety using self-report measures have generally found that child alliance exhibits growth from the beginning to the middle of therapy and then has a shallower or even non-existent after exposures begin (Kendall et al., 2009; Chu, Skriner, & Zandberg, 2014). Studies using observational measures, such as the TPOCS-AS, however, have found either that time did not significantly predict alliance, or that changes in time of alliance were statistically significant but small in size (Hudson et al., 2014; Liber et al, 2010; Lerner, Mikami, & McLeod, 2011; Langer, McLeod, & Weisz, 2011; McLeod et al., 2016). Although group effects might not have shown meaningful growth in alliance even with additional data points, they would have allowed an examination of individual change that might have provided additional insight. Other studies also suggest that additional ratings of therapist competence and adherence might also offer more stable

relationships among these variables, which would also have provided more reliable estimates (Dennhag, Gibbons, Barber, Gallop, Crits-Christoph, 2012).

Finally, some caution should be taken when interpreting the results of this analysis. Although competence and adherence were considered predictors while alliance was considered an outcome in this study, causality was not established. All of the variables were measured simultaneously, so it could be that competence caused increases in parent alliance, or it could be that a better alliance allowed the therapist to deliver interventions more competently.

Conclusions and Future Directions

Many researchers have noted that the process variables are understudied in child and adolescent literature, and that this research is essential to build effective models of dissemination for EBPs (Schoenwald et al., 2011; McLeod et al., 2013; Southam-Gerow & McLeod, 2013). The FIRST protocol improves upon treatment manuals and even other modular therapies by providing evidence-based practice elements to clinicians in an accessible way with limited training requirements (Weisz et al., 2017). The additional finding that competence in delivery is also associated with improvements in alliance allows FIRST to address two of the barriers EBPs more generally: that misconception that EBP ignores relationships with clients, and that delivery of EBPs is inaccessible or irrelevant to real clinicians (Bellamy et al., 2006; Stewart Stirman & Chambless, 2012; Pagoto et al., 2007).

Nevertheless, many questions remain regarding the relationships of these variables to other treatment indicators at the client, therapist, and systems levels. The

findings of this study should be replicated in a larger sample, as is currently underway. Additionally, the ultimate goal of understanding the inter-relationships between process variables is to understand how they might contribute uniquely to treatment outcome. Future studies should examine how therapist competence, adherence, and the youth and parent alliances contribute to the improvement of a host of treatment outcomes. These outcomes might include a reduction in symptoms, an improvement in individual functioning, and improvements in family relationships and family functioning. Studies should also examine client, therapist, and organizational effects that might moderate the relationships between adherence, competence, alliance, and outcome.

Furthermore, while this study helps to elucidate some relationships of variables that are believed to be mechanisms and moderators of outcomes, it is only one piece of evidence in a larger puzzle of therapeutic variables and outcomes. While the small sample of this study did not allow for extended exploration of therapist effects, it does offer some insight into what a therapist might do to encourage the development of the therapeutic alliance, and additional research should address therapist effects more deeply.

Future research should explore therapist competence, adherence, and alliance in regards to therapist effects. In general, therapist effects have been understudied because they are methodologically difficult to address. Therapist effects could be explored using standardized patients, although they may not always mirror practice with real patients (Imel et al., 2014). Therapist effects have also been explored in naturalistic samples using multi-level models, but very large samples are necessary (i.e. 30 therapists seeing 30 patients each) to estimate reliable effects (Shiefele et al., 2017). To date, large-scale

studies of therapist effects have examined the therapeutic alliance (Zuroff et al., 2010; Del Re et al., 2012; Tschuschke et al., 2015) but not often treatment integrity variables like competence or adherence (Baldwin & Imel, 2013; Webb, DeRubeis, & Barber, 2010; Tschuschke et al., 2015). Some research from such studies have suggested that many therapist characteristics, such as years of experience, type of training program, and theoretical orientation are not related to client outcomes (Tracey et al., 2014; Okiishi et al., 2006). Thus, partitioning client and therapist components of interactive process variables like adherence and competence might be particularly helpful in elucidating the best practices of effective clinicians and worst practices exhibited by ineffective clinicians. This research would be particularly helpful in bridging the gap between a common factors perspective and evidence-based practices by elucidating how particular practices interact with client, therapist, and relationship variables in session.

Exploring mechanisms of action and processes of therapy in a typical community context, as explored in this study, will help researchers, practitioners, and administrators of systems of care make community practice most efficient and responsive to client needs. Creative solutions are needed to address the acute unmet mental health need in youth mental health (Kazdin & Blase, 2011). Untangling therapist and client effects in the process variables of psychotherapy would also assist in the design and implementation of novel types of therapy to alleviate the burden of mental health of youth and families.

Appendix

Table 1.
Characteristics of Youth and Caregivers (*N*=24)

Youth	*M* (*SD*)	Caregivers	*M* (*SD*)
Age (Range: 7-15)	11.03 (2.69)	Age (Range: 33-55)[a]	42.75 (5.32)
	N (%)		*N* (%)
Female	12 (50)	Female	18 (69)
Race/Ethnicity		Yearly Household Income[b]	
Caucasian	21 (87)	$39,000 or less	6 (25)
Latino/Hispanic	3 (12.5)	$40,000-$79,000	7 (29.2)
Arab American	1 (4.2)	$80,000-$119,000	2 (8.3)
KSADS Diagnosis		$120,000 and above	6 (25)
Disruptive Behavior	16 (66.7)	Marital Status[c]	
Anxiety	14 (58.3)	Never Married	1 (4.2)
Depression	5 (20.8)	Divorced or Separated	10 (41.7)
		Married	13 (54.2)

[a]four did not report age
[b]three did not report
[c]one did not report

Table 2.

Therapist Characteristics (*N* = 14)

	M (*SD*)
Age (Range: 28-61)	35.57 (8.69)
Years of Experience	7.96 (9.16)
	N (%)
Female	11(78.6)
Ethnicity	
Caucasian	13 (92.9)
Latino/Hispanic	1 (7.1)
Professional Licensure	
Licensed Mental Health Counselor	1 (7.1)
Psychologist	6 (42.9)
Social Worker	7 (50)

Table 3.

Descriptive Statistics of Alliance, Adherence, and Competence at Three Levels

Variable	*N*	*Min*	*Max*	*M* (*SD*)
Level 1 (Session Level)				
Youth-Therapist Alliance	46	0.56	4.89	3.6313 (0.810)
Caregiver-Therapist Alliance	46	1.78	4.89	3.9275 (0.678)
EBP[a] Adherence	67	0	312.5	144.5895 (72.612)
EBP[a] Competence	67	0	4	3.1791 (0.952)
Level 2 (Case Level)				
Youth-Therapist Alliance	20	2.61	4.24	3.5954 (0.476)
Caregiver-Therapist Alliance	23	1.78	4.5	3.7665 (0.708)
EBP[a] Adherence	24	0	269.35	141.0298 (59.644)
EBP[a] Competence	24	0	4	3.1042 (0.888)
Level 3 (Therapist Level)				
Youth-Therapist Alliance	12	2.61	4.24	3.6088 (0.484)
Caregiver-Therapist Alliance	12	1.78	4.33	3.7276 (0.690)
EBP[a] Adherence	12	71.77	193.14	140.0873 (32.016)
EBP[a] Competence	12	1.61	3.67	3.088 (0.665)

[a]EBP = evidence-based practice

Table 4.

Associations Among Level-1 Variables (Not Controlling for Nested Data)

Variables
1. Child Alliance
2. Parent Alliance
3. Adherence
4. Competence

*$p < 0.05$. **$p < 0.01$

Table 5.

Correlations Between Presence of Alliance Data and Child Diagnosis

	1	2	3	4	5	6
1. Any Data on Child Alliance	-					
2. Any Data on Adult Alliance	-.093	-				
3. Complete Data on Child Alliance	.447*	-.209	-			
4. Complete Data on Parent Alliance	-.486*	.192	-.585**	-		
5. Disruptive Behavior Diagnosis	-.335	-.156	-.516*	.456*	-	
6. Anxiety Diagnosis	.529**	.247	.338	-.410*	-.456*	-
7. Depression Diagnosis	.229	.107	.103	-.266	-.058	-.191

*$p < 0.05$. **$p < 0.01$

Table 6.

Fixed and Random Effects from Youth-Therapist Alliance Model 1: Time Variable Only

Level 1: $YOUTHALL_{tij} = \pi_{0ij} + \pi_{1ij}*(DAYS_{tij}) + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0 For INTRCPT2, β_{00} INTRCPT3, γ_{000}	3.612375 (0.135)	26.716 (11)	<0.001
For DAYS slope, π_1 For INTRCPT2, β_{10} INTRCPT3, γ_{100}	-0.002181 (0.004)	-0.513 (11)	0.618

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.34572			
INTRCPT1,r_0	0.00663	5	5.00192	0.416
DAYS slope,r_1	0.00003	5	6.492	0.26
INTRCPT1/INTRCPT2,u_{00}	0.12118	11	23.07849	0.017
DAYSSINC/INTRCPT2,u_{10}	0.00012	11	23.9943	0.013

Deviance (number of parameters estimated)
106.473527 (9)

YOUTHALL = Youth-therapist alliance; DAYS = Days since first alliance measurement; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 7.

Fixed and Random Effects from Youth-Therapist Alliance Model 2: Time Variable Excluded

Level 1: YOUTHALLtij = $\pi_{0ij} + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0 For INTRCPT2, β_{00} INTRCPT3, γ_{000}	3.631121 (0.119)	30.606 (11)	<0.001

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.64036			
INTRCPT1,r_0	0.00091	8	3.46355	>.500
INTRCPT1/INTRCPT2,u_{00}	0.00113	11	13.07527	0.288
			Deviance (number of parameters estimated)	
			110.17917 (4)	

YOUTHALL = Youth-therapist alliance; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 8.

Fixed and Random Effects from Youth-Therapist Alliance Model 3: Youth Age and Sex Variables

Level 1: $YOUTHALLtij = \pi_{0ij} + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + \beta_{01j}*(AGE_{ij}) + \beta_{02j}*(GENDER_{ij}) + r_{0ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{01j} = \gamma_{010}$
$\beta_{02j} = \gamma_{020}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.61965 (0.123)	29.39 (11)	<0.001
For AGE, β_{01}			
INTRCPT3, γ_{010}	0.011443 (0.073)	0.156 (10)	0.879
For GENDER, β_{02}			
INTRCPT3, γ_{020}	0.117924 (0.324)	0.364 (10)	0.723

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.63897			
INTRCPT1,r_0	0.00081	6	3.63912	>.500
INTRCPT1/INTRCPT2,u_{00}	0.00071	11	12.80481	0.306

Deviance (number of parameters estimated)
110.042083 (6)

YOUTHALL = Youth-therapist alliance; AGE = Youth age; GENDER = Youth gender; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 9.

Fixed and Random Effects from Youth-Therapist Alliance Model 4: Youth Diagnosis Variables

Level 1: $YOUTHALLtij = \pi_{0ij} + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + \beta_{01j}*(DISRUPTIVE_{ij}) + \beta_{02j}*(ANXIETY_{ij}) + \beta_{03j}*(DEPRESSION_{ij}) + r_{0ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{01j} = \gamma_{010}$
$\beta_{02j} = \gamma_{020}$
$\beta_{03j} = \gamma_{030}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00j}			
INTRCPT3, $\gamma 000$	3.595548 (0.132)	27.154 (11)	<0.001
For DISRUPTIVE, β_{01}			
INTRCPT3, γ_{000}	-0.687897 (0.682)	-1.008 (9)	0.34
For ANXIETY, β_{02}			
INTRCPT3, γ_{020}	-0.211022 (0.529)	-0.399 (9)	0.699
For DEPRESSION, β_{03}			
INTRCPT3, γ_{030}	-0.377662 (0.505)	-0.748 (9)	0.474

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.61834			
INTRCPT1, r_0	0.00047	5	2.45417	>.500
INTRCPT1/INTRCPT2, u_{00}	0.00052	11	12.98362	0.294
			Deviance (number of parameters estimated)	
			108.496039 (7)	

YOUTHALL = Youth-therapist alliance; DISRUPTIVE = Any youth diagnosis of a disruptive behavior disorder; ANXIETY = Any youth diagnosis of an anxiety disorder; DEPRESSION = Any youth diagnosis of a depressive disorder; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 10.

Fixed and Random Effects from Youth-Therapist Alliance Model 5: Adherence to Evidence-Based Practice

Level 1: $YOUTHALL_{tij} = \pi_{0ij} + \pi_{1ij}*(ADHERENCE_{ij}) + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.619078 (0.114)	31.667 (11)	<0.001
For INTRCPT1, π_1			
For INTRCPT2, β_{10}			
INTRCPT3, γ_{100}	0.005388 (0.003)	2.147 (11)	0.055

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.30058			
INTRCPT1,r_0	0.12147	5	6.12364	0.294
ADHERENCE slope,r_1	0.00003	5	5.92879	0.313
INTRCPT1/INTRCPT2,u_{00}	0.00124	11	13.14549	0.283
ADHER/INTRCPT2,u_{10}	<0.00001	11	9.13919	>.500
			Deviance (number of parameters estimated)	
			92.092054 (9)	

YOUTHALL = Youth-therapist alliance; ADHERENCE = Therapist adherence to evidence-based practice elements; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 11.

Fixed and Random Effects from Youth-Therapist Alliance Model 6: Competence in Evidence-Based Practice

Level 1: $YOUTHALL_{tij} = \pi_{0ij} + \pi_{1ij}*(COMPETENCE_{tij}) + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.627098 (0.118)	30.753 (11)	<0.001
For INTRCPT1, π_1			
For INTRCPT2, β_{10}			
INTRCPT3, γ_{100}	0.197197 (0.197)	0.999 (11)	0.339

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.4164			
INTRCPT1,r_0	0.08968	2	2.84109	0.24
COMPETENCE slope,r_1	0.13948	2	1.6729	>.500
INTRCPT1/INTRCPT2,u_{00}	0.00071	11	12.60966	0.319
COMPETENCE/INTRCPT2,u_{10}	0.00077	11	7.98296	>.500
			Deviance (number of parameters estimated)	
			101.121825 (9)	

YOUTHALL = Youth-therapist alliance; COMPETENCE = Therapist competence in delivery of evidence-based practice elements; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 12.

Fixed and Random Effects from Caregiver-Therapist Alliance Model 1: Time Variable Only

Level 1: $CAREGIVERALL_{tij} = \pi_{0ij} + \pi_{1ij}*(DAYS_{tij}) + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.848116 (0.124)	30.97 (11)	<0.001
For DAYS slope, π_1			
For INTRCPT2, β_{10}			
INTRCPT3, γ_{100}	0.000063 (0.002)	0.038 (11)	0.97

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.28391			
INTRCPT1, r_0	0.19528	5	11.93204	0.035
DAYS slope, r_1	<0.00001	5	8.54128	0.128
INTRCPT1/INTRCPT2, u_{00}	0.00068	9	6.18075	>.500
DAYS/INTRCPT2, u_{10}	<0.00001	9	4.6396	>.500
				Deviance (number of parameters estimated)
				92.00 (9)

CAREGIVERALL = Caregiver-therapist alliance; DAYS = Days since first alliance measurement; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 13.

Fixed and Random Effects from Caregiver-Therapist Alliance Model 2: Time Variable Excluded

Level 1: $CAREGIVERALL_{tij} = \pi_{0ij} + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0 For INTRCPT2, β_{00} INTRCPT3, γ_{000}	3.851317 (0.123)	31.255 (11)	<0.001

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.29329			
INTRCPT1,r_0	0.18522	11	22.79785	0.019
INTRCPT1/INTRCPT2,u_{00}	0.00053	11	15.23304	0.172
			Deviance (number of parameters estimated)	
			92.29 (4)	

CAREGIVERALL = Caregiver-therapist alliance; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 14.

Fixed and Random Effects from Caregiver-Therapist Alliance Model 3: Youth Age and Sex Variables

Level 1: $CAREGIVERALL_{tij} = \pi_{0ij} + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + \beta_{01j}*(AGEij) + \beta_{02j}*(GENDERij) + r_{0ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{01j} = \gamma_{010}$
$\beta_{02j} = \gamma_{020}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.882794 (0.108)	35.829 (11)	<0.001
For AGE, β_{01}			
INTRCPT3, γ_{010}	0.073742 (0.055)	1.336 (10)	0.211
For GENDER, β_{02}			
INTRCPT3, γ_{020}	-0.423067 (0.281)	-1.507 (10)	0.163

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.32099			
INTRCPT1,r_0	0.08556	9	14.92767	0.092
INTRCPT1/INTRCPT2,u_{00}	0.00377	11	18.27379	0.075

Deviance (number of parameters estimated)
88.18 (6)

CAREGIVERALL = Caregiver-therapist alliance; AGE = Youth age; GENDER = Youth gender; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 15.

Fixed and Random Effects from Caregiver-Therapist Alliance Model 4: Youth Diagnosis Variables

Level 1: $CAREGIVERALL_{tij} = \pi_{0ij} + e_{tij}$

Level 2: $\pi_{0ij} = \beta_{00j} + \beta_{01j} *(DISRUPTIVE_{ij}) + \beta_{02j}*(ANXIETY_{ij}) + \beta_{03j}*(DEPRESSION_{ij}) + r_{0ij}$

Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$

$\beta_{01j} = \gamma_{010}$

$\beta_{02j} = \gamma_{020}$

$\beta_{03j} = \gamma_{030}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.838167 (0.124)	30.927 (11)	<0.001
For DISRUPTIVE, β_{01}			
INTRCPT3, γ_{010}	0.33093 (0.603)	0.549 (9)	0.596
For ANXIETY, β_{02}			
INTRCPT3, γ_{020}	-0.007305 (0.501)	-0.015 (9)	0.989
For DEPRESSION, β_{03}			
INTRCPT3, γ_{030}	0.043946 (0.454)	0.097 (9)	0.925

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.28844			
INTRCPT1, r_0	0.18505	8	20.73915	0.008
INTRCPT1/INTRCPT2, u_{00}	0.00059	11	15.7871	0.149
			Deviance (number of parameters estimated)	
			91.72 (7)	

CAREGIVERALL = Caregiver-therapist alliance; DISRUPTIVE = Any youth diagnosis of a disruptive behavior disorder; ANXIETY = Any youth diagnosis of an anxiety disorder; DEPRESSION = Any youth diagnosis of a depressive disorder; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 16.

Fixed and Random Effects from Caregiver-Therapist Alliance Model 5: Adherence to Evidence-Based Practice

Level 1: $CAREGIVERALL_{tij} = \pi_{0ij} + \pi_{1ij}*(ADHERENCE_{ij}) + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0			
For INTRCPT2, β_{00}			
INTRCPT3, γ_{000}	3.82919 (0.129)	29.618 (11)	<0.001
For INTRCPT1, π_1			
For INTRCPT2, β_{10}			
INTRCPT3, γ_{100}	0.005059 (0.002)	2.65 (11)	0.023

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.22245			
INTRCPT1,r_0	0.25119	5	16.89699	0.005
ADHERENCE slope,r_1	<0.00001	5	10.66132	0.058
INTRCPT1/INTRCPT2,u_{00}	0.00278	9	5.96115	>.500
ADHERENCE/INTRCPT2,u_{10}	<0.00001	9	8.92961	>.500

Deviance (number of parameters estimated)
88.09 (9)

CAREGIVERALL = Caregiver-therapist alliance; ADHERENCE = Therapist adherence to evidence-based practice elements; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

Table 17.

Fixed and Random Effects from Caregiver-Therapist Alliance Model 6: Competence in Evidence-Based Practice

Level 1: $CAREGIVERALL_{tij} = \pi_{0ij} + \pi_{1ij}*(COMPETENCE_{tij}) + e_{tij}$
Level 2: $\pi_{0ij} = \beta_{00j} + r_{0ij}$
$\pi_{1ij} = \beta_{10j} + r_{1ij}$
Level 3: $\beta_{00j} = \gamma_{000} + u_{00j}$
$\beta_{10j} = \gamma_{100} + u_{10j}$

Fixed Effect	Coefficient (*SE*)	*t* (*df*)	*p*
For INTRCPT1, π_0 For INTRCPT2, β_{00} INTRCPT3, γ_{000}	3.808849 (0.137)	27.799 (11)	<0.001
For INTRCPT1, π_1 For INTRCPT2, β_{10} INTRCPT3, γ_{100}	0.467773 (0.222)	2.106 (11)	0.059

Random Effect	Variance Component	*df*	χ^2	*p*
level-1, *e*	0.16576			
INTRCPT1,r_0	0.29811	2	17.53506	<0.001
COMPETENCE slope,r_1	0.39397	2	13.91324	0.001
INTRCPT1/INTRCPT2,u_{00}	0.01696	8	5.65159	>.500
COMPETENCE/INTRCPT2,u_{10}	0.0546	8	7.48436	>.500
			Deviance (number of parameters estimated)	
				85.77 (9)

CAREGIVERALL = Caregiver-therapist alliance; COMPETENCE = Therapist competence in delivery of evidence-based practice elements; INTRCPT1 = Level 1 intercept; INTRCPT2 = Level 2 intercept; INTRCPT3 = Level 3 intercept

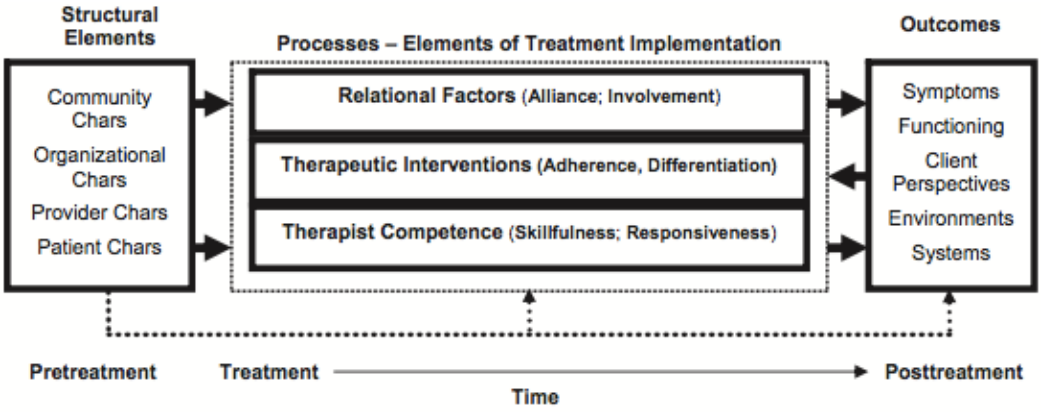

Figure 1. Model of treatment implementation within a quality of care framework. From "Making a Case for Treatment Integrity as a Psychosocial Treatment Quality Indicator for Youth Mental Health Care," by B. D. McLeod, M. A. Southam-Gerow, C. B. Tully, A. Rodriguez, and M. M. Smith, 2013, Clinical Psychology: Science and Practice, 20 (1), p. 17 by Wiley-Blackwell. Reprinted with permission.

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