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The Influence of Client-, Family-, and Therapist-Level Pretreatment Characteristics on Therapist Delivery of Youth Psychotherapy Treatments

Adriana Rodriguez
Virginia Commonwealth University

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Clinical Psychology at Virginia Commonwealth University

by

Adriana Rodríguez
Bachelor of Arts; Psychology, University of California, Berkeley; May, 2008
Master of Science; Virginia Commonwealth University, Richmond, VA; December, 2012

Director: Michael A. Southam-Gerow, Ph.D.
Associate Professor of Clinical Psychology
Department of Psychology and Pediatrics

Virginia Commonwealth University
Richmond, Virginia
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Table of Contents

List of Tables

List of Figures

Abstract

THE INFLUENCE OF CLIENT-, FAMILY-, AND THERAPIST-LEVEL PRETREATMENT CHARACTERISTICS ON THERAPIST DELIVERY OF YOUTH PSYCHOTHERAPY TREATMENTS

By Adriana Rodríguez, M.S.

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Major Director: Michael A. Southam-Gerow, Ph.D.,

Associate Professor of Clinical Psychology

Department of Psychology

The purpose of this exploratory study was to examine the extent to which pretreatment characteristics influence therapist treatment adherence by using data sampled from a randomized effectiveness trial and an efficacy study. Research suggests that youth-, family-, and therapist-level pretreatment characteristics influence therapist behavior; however, this area is underdeveloped as most studies have focused on externalizing problem areas, family-based approaches, and the use of parent or therapist report to assess for therapist adherence. To date, no research has examined this question with anxiety as the target problem, individual-focused CBT, and with observational therapist adherence data. An observational coding measure, Cognitive-Behavioral Therapy Adherence Scale for Youth Anxiety, was used to assess

therapist adherence to CBT for youth anxiety. Hierarchical linear model analyses were conducted to estimate changes in therapist adherence over time, based on youth-, family-, and therapist-level pretreatment characteristic predictors. Results suggest that youth ethnicity/race, therapist openness to evidence-based practices, therapist theoretical orientation, and therapist age influence the *process* of therapy: in this case, therapist adherence. The current study provides essential evidence about potentially important predictors of therapist adherence for CBT youth anxiety and points to important clinical and treatment adoption implications.

The Influence of Client-, Family-, and Therapist-Level Pretreatment Characteristics on Therapist Delivery of Youth Psychotherapy Treatments

Treatment integrity, the degree to which a treatment is delivered as intended (Perepletchikova & Kazdin, 2005; Waltz, Addis, Koerner, & Jacobson, 1993), is a key concept in clinical research that can guide our understanding of therapeutic interventions, the processes, and characteristics of the client and therapist (Kazdin, 2003; McLeod, Southam-Gerow, & Weisz, 2009). In particular, treatment integrity is essential for validity in clinical trials to confirm implementation of the correct treatment (Campbell, Manuel, Manser, Peavy, Stelmokas, & Guydish, 2013). Research on treatment integrity, to date, has primarily focused on understanding how treatment integrity influences treatment outcomes (e.g., Webb, DeRubeis, & Barber, 2010). Although research on the outcome-integrity relationship has great importance to the field (e.g., Hogue, Liddle, Dauber, & Samuolis, 2004; Liber et al., 2010), little is known about the characteristics that may influence treatment integrity prior to treatment initiation. By identifying key pretreatment characteristics with the most influence over integrity, we may be able to leverage them for downstream influence over treatment mechanisms and eventually treatment outcomes. The pretreatment-treatment integrity findings in isolation, however, would serve to inform therapist training, treatment adoption efforts, and shed light on the ongoing debate about treatment adaptation.

Treatment integrity encompasses three components (a) therapist treatment adherence (referred to as therapist adherence and treatment adherence interchangeably), the degree to which a therapist utilizes prescribed procedures and avoids proscribed ones; (b) therapist competence, the level of therapist's skill and

judgment in delivering the prescribed procedures; and (c) treatment differentiation, the extent to which treatments under study differ along appropriate lines defined by the treatment manual(s) (McLeod, Islam, & Wheat, 2013; Perepletchikova & Kazdin, 2005; Schoenwald & Garland, 2013; Waltz et al., 1993). Treatment adherence is the more frequently measured element of treatment integrity (Perepletchikova & Kazdin, 2005; Schoenwald, Letourneau, & Halliday-Boykins, 2005), primarily through observational (e.g., audio- or video-taped therapy sessions are coded by trained raters) or questionnaire (parent, therapist, or supervisor report) (McLeod et al., 2013) methods. As with most research on treatment integrity, treatment adherence research has focused on its relation to treatment outcomes (e.g., Hogue et al., 2004; Huey, Henggeler, Brondino, & Pickrel, 2000; Liber et al., 2010). Despite the rise in treatment adherence research, fewer than half of child treatment outcome studies have included its measurement or have typically lacked in implementing quality methodology for measuring adherence (Hogue, Liddle, & Rowe, 1996; Perepletchikova, Treat, & Kazdin, 2007). Thus, treatment adherence is an important fundamental starting point.

The Therapy Change Process Model, developed and outlined by the work of Doss (2004) and McLeod and colleagues (2013), combines therapy process and treatment integrity research that proposes an applicable framework for treatment adherence. The model includes pretreatment characteristics (e.g., client, family, therapist), treatment delivery (e.g., treatment adherence), change mechanisms (e.g., cognitions), and outcomes (e.g., symptoms, functioning). Empirical research supports some components of the model; Figure 1 provides a graphical representation of treatment integrity and its theorized influence on treatment outcomes (McLeod et al.,

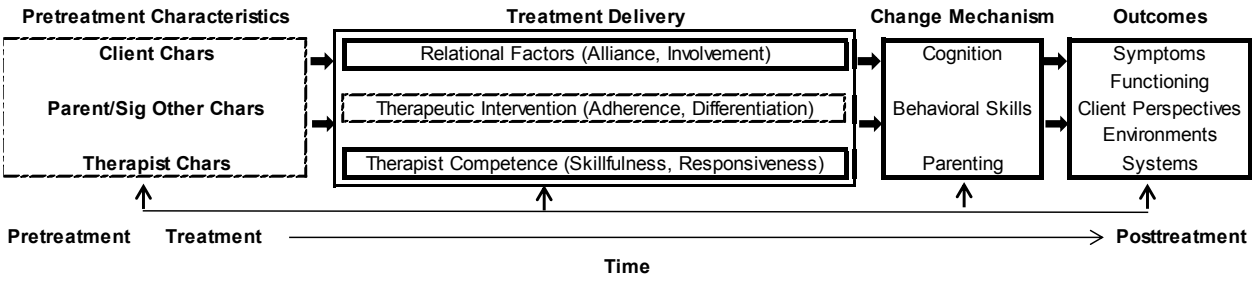
2013). This model illustrates how pretreatment characteristics influence client post-treatment outcomes (e.g., symptom reduction or improved functioning) through pretreatment characteristics, treatment delivery (i.e., treatment integrity), and change mechanisms of treatment (e.g., behavioral skills). Although the model makes clear the informative nature of client, family, and therapist pretreatment characteristics on treatment adherence, research to date has neglected this area of study. The pretreatment and therapist adherence (under treatment delivery) portions of the model will be most relevant to the proposed study.

The present focus on pretreatment characteristics does not imply a diminution of the importance of treatment outcomes and mechanisms of change. Instead, the study focuses on pretreatment characteristics because of their important implications for therapist training, treatment adoption, and inform the debate about treatment adaptations. For example, identifying therapist characteristics that predict higher fidelity to treatment innovations could empirically guide therapist training and team building. For example, if therapist attitudes toward EBTs influenced treatment delivery, training could emphasize ways to explore and change therapist attitudes. Further, it is possible that identifying understanding how therapist characteristics may influence treatment delivery could assist organizational choices in building treatment teams (i.e., ensuring range of characteristics to optimize delivery) and about choosing new treatments to adopt (e.g., if important therapist characteristics for the model are already present vs. need to be added to the team). Additionally, understanding the influence of pretreatment characteristics on treatment integrity could inform questions about the need for treatment adaptation across ethnicity, race, and other forms of diversity. Research

efforts on culture/ethnicity treatment adaptations, for example, have been inconclusive in demonstrating that cultural adaptations result in enhanced treatment outcomes (e.g., Huey & Polo, 2008; Huey & Polo, 2010).

The current study could therefore shed light on whether therapists vary significantly in delivery of treatment to diverse youth and families. Although this work cannot address reasons for the differences identified in treatment delivery or how those differences affect treatment outcomes, it can be a stepping stone to characterizing therapist adherence and developing further studies to understand those differences. Although increasing therapist cultural responsiveness to a certain group of diverse youth may be a most important goal; we first must demonstrate that relevant differences exist in the first place. This study thus represents an initial step toward understanding how pretreatment characteristics may influence treatment delivery.

Before reviewing the literature related to pretreatment characteristics thoroughly, key aspects of the Therapy Change Process Model will be described in detail with two examples of how therapist and client pretreatment characteristics may influence adherence.



Note: Hash-line boxes and **bolded** pretreament chars and treatment delivery factors represent foci of proposed study. Chars = characteristics

Figure 1. Therapy Change Process Model. Note: Hash-line boxes and **bolded** pretreatment chars and treatment delivery factors represent foci of proposed study. Chars = characteristics.

Overall, the Therapy Change Process Model depicts how each domain plays an important role in the process of change, including how (a) “therapy inputs” or pretreatment characteristics (referred to as pretreatment characteristics moving forward); (b) treatment delivery; (c) change mechanisms; and (d) outcomes relate in the therapy process. According to the first portion of the model, pretreatment characteristics are preexisting variables (i.e., client, family, therapist, and service characteristics at treatment baseline) that influence or moderate the process and outcome of therapy. In other words, pretreatment characteristics could lead to differences in treatment adherence, treatment competence (i.e., skill), or therapeutic alliance.

The second component of the model, “treatment delivery,” pertains to therapeutic processes, including therapeutic interventions (e.g., treatment adherence), therapist competence, and relational characteristics that may influence treatment outcomes. The concept of therapeutic interventions is specific to the technical aspects of a treatment; that is, the type of therapeutic interventions delivered by the therapist (e.g., cognitive skills for cognitive-behavioral therapy). This model depicts that differences in this domain can subsequently lead to differences in change mechanisms. For example, a therapist who fails to adhere in providing a client with cognitive skills will result in causal consequences to the effectiveness of change mechanisms in producing therapeutic change.

Given that change mechanisms, the third portion of the model, are the medium through which psychosocial treatment produces change (Doss, 2004; Kazdin, 2000), altered change mechanisms could ultimately affect psychosocial outcomes. They are particularly important in providing a better way of understanding and refining how EBTs

work, and ultimately improving outcomes. In this model, these mechanisms are represented as directly influencing treatment outcomes, the final component of the model.

The model by Doss (2004) and McLeod et al (2013) highlights how pretreatment characteristics influence the process and outcome of therapy. The model aids in understanding how various components can be studied in isolation or in combination to further understand these relationships, and thus is a suitable lens for the proposed study. Certainly there is empirical evidence to suggest that pretreatment characteristics moderate and mediate treatment outcomes (e.g., Hogue et al., 2004; Liber et al., 2010; Webb et al., 2010); however, limited attention has been granted to understanding the influence of pretreatment characteristics on the *process* of therapy (e.g., therapist treatment adherence).

A number of pretreatment characteristics in community settings may influence treatment adherence, including child- or youth – (terms used interchangeably), family-, therapist-, and system characteristics. It is possible that pretreatment characteristics such as therapist attitudes about evidence-based treatments may affect a therapist's willingness to implement an EBT with high adherence, subsequently reducing the efficacy of the treatment. It is also possible that client diversity (e.g., client symptoms, family stress) may influence therapist delivery of a treatment, such that it may be challenging for a therapist to adherence more faithfully with a more clinically complicated case. To date, much of the research focused on pretreatment characteristics and treatment integrity characteristics has primarily focused on family-based therapies (e.g., multisystemic therapy; MST) for addressing externalizing

problems (delinquency, substance use; e.g., Ellis, Weiss, Ham, & Gallop, 2010; Ryan, Cunningham, Foster, Brennan, Brock, & Whitmore, 2013; Schoenwald, Halliday-Boykins, & Henggeler, 2003) with the use of parent self-report assessments of therapist adherence (e.g., Ellis et al., 2010; Schoenwald et al., 2003 versus observational rating methods of treatment adherence). There is a deficiency in research focused on individual-based therapies (e.g., cognitive-behavioral therapy; CBT) for addressing internalizing problems (anxiety, depression). Therefore, here it is argued that research necessitates a focus on pretreatment characteristics (i.e., variables at baseline of treatment) that might affect therapist treatment adherence to internalizing problem areas, individual-based therapies, and observational coding methods. In this paper, an extensive review of the research on how these pretreatment characteristics may influence integrity (broadly) and adherence (specifically) is provided, but in brief, these may include client- (e.g., symptom severity; Ruma, Burke, & Thompson, 1996), family- (e.g., income level; Kazdin, 1995), and therapist (e.g., therapist attitudes; Aarons, 2005). The importance of focusing on the link between pretreatment characteristics and therapist adherence is best illustrated through examples focused on how client and therapist characteristics might influence therapist adherence.

As an example, consider a client's symptom severity at the start of treatment. A child client presenting with more severe anxiety (e.g., multiple panic attacks with agoraphobia and multiple obsessive-compulsive symptoms) may prove to be more challenging for the therapist compared to a youth with mild to moderate anxiety (e.g., test anxiety). For example, the youth with more severe anxiety might require a focus on client compliance to medication or inclusion of family members into treatment.

Alternatively, it is also possible that the client with more severe symptoms could "pull" for greater protocol adherence because of this severity (e.g., focusing treatment on exposure therapy). In other words, symptom severity could plausibly lead the therapist to adhere more or less closely to the program. To date, very little data exist on baseline client characteristics and treatment adherence, such as client symptom level or comorbidity.

Therapist pretreatment characteristics may also affect treatment adherence. For example, therapist attitude about using evidence-based practices (EBPs) and therapist age, for example, may influence therapist adherence to a specified treatment. The literature on therapist attitudes about EBPs reveals that practitioner perspectives may determine whether clinicians utilize such practices with clients (e.g., Aarons & Sawitzky, 2006; Borntrager, Chorpita, Higa-McMillan, & Weisz, 2009). Age has also been observed to influence therapist attitudes; older practitioners tend to harbor significantly more negative attitudes toward EBTs than do younger clinicians (Aarons & Sawitzky, 2006). Therefore, it is possible that older aged therapists are less inclined to adhere to "new" treatments because of their already established repertoire of treatment practices. These examples illustrate how client symptoms, therapist attitudes, and therapist age may influence treatment adherence. Yet, few studies exist on the relationship between therapist pretreatment characteristics and treatment adherence.

The current study aims to understand further the extent to which pretreatment characteristics influence therapist treatment adherence by using data sampled from the Kendall efficacy (Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008) and the Child STEPs randomized effectiveness trial (Chorpita et al., 2013; Weisz et al., 2009).

In Child STEPs, therapists were trained to provide evidence-based treatments (EBTs) for three core problem areas (anxiety, depression, and conduct) along with therapists not trained in EBTs, all of whom were providing treatment to youth with primary anxiety disorders. In the Kendall, some therapist trained in CBT and others provided care as usual for youth with primary anxiety disorders.

The purpose of this study was exploratory, aimed at understanding the extent to which child-, family-, and therapist-level pretreatment characteristics might influence therapist adherence to youth psychotherapy treatments. Although it is certainly important to understand how organization- and system-level pretreatment characteristics might influence treatment adherence, the secondary data used for this study was limited to client, family, and therapist characteristics. Overall, there is some evidence to suggest that these core pretreatment characteristics influence therapist behavior (e.g., Ryan et al., 2013; Schoenwald et al., 2003).

A comprehensive literature review of the pretreatment characteristics is provided next, including client-, family-, and therapist-level characteristics that may influence therapist treatment adherence. After the review, the method, hypotheses, and analyses of the current study are detailed.

Literature Review

Pretreatment Characteristics

The focus of this paper was on pretreatment characteristics that might influence treatment adherence. The characteristics presented in this paper are the most commonly studied within the therapy process literature (e.g., Boswell et al., 2013; Chapman & Schoenwald, 2011; Ryan et al., 2013; Schoenwald et al., 2003). First, client

and family characteristics are covered, which include client demographic variables (e.g., sex, age), psychological/clinical variables (e.g., interpersonal style, mental health severity, reason for referral), and family-related variables (e.g., socioeconomic status, parental education, ethnic match). A review of therapist characteristics will also be provided, including demographic characteristics (e.g., sex), training (e.g., clinical experience, clinical specialty), and attitudinal variables (e.g., attitudes about evidence-based treatments). Research on each of these pretreatment characteristics and their relations with treatment adherence will be critically reviewed. Table 1 provides a description for each study and study findings.

Table 1.

Study Characteristics and Findings

Pretx Chars	Study Name	Client *N*	Age Group	Problem Area	Treatment	Adh Method	Measure Used	Relationship
YOUTH Sex	Schoenwald (2003)	233	Youth	Delinquent	MST	Parent-	TAM	Unrelated
Age	Schoenwald (2003)	233	Youth	Delinquent	MST	Parent-	TAM	Unrelated
Functioning	Carlson (2010)	22	Adult	Schizophrenia	CIT-S	Observer	Likert Scale	Related; Higher sx-->lower adhe
	Imel (2011)	461	Adult	Substance Use	MET	Observer	Likert Scale	Related; Higher sx-->lower adhe
	Ryan (2013)	185	Youth	Delinquent	MST	Parent	TAM-R	Related; Higher sx->lower adhe (moderated by ethnicity)
	Schoenwald (2003)	233	Youth	Delinquent	MST	Parent	TAM	(1) Related; Higher school susp >lower adherence
	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	(2) Unrelated with emo/beh func (1) Related; Higher sx->lower adherence
Personality	Boswell (2013)	256	Adult	Panic Disorder	CBT	Observer	Percentage	(2) Unrelated with number of ar and jail time Related; Higher interpersonal aggression -> lower adherence
	Imel (2011)	461	Adult	Substance Use	MET	Observer	Likert Scale	Related; Lower motivation->higl adherence
PARENT ethnicity match	Chapman (2011)	1,979	Youth	Delinquent	MST	Parent	TAM-R	Related; ethnicity match->highe adherence
	Halliday-Boykins (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Related; ethnicity match->highe adherence
	Schoenwald (2003)	233	Youth	Delinquent	MST	Parent	TAM	Related; ethnicity match->highe adherence
Sex	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Unrelated
Parent-therapist sex match	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Unrelated
Marital status	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Unrelated
Education	Schoenwald (2003)	233	Youth	Delinquent	MST	Parent	TAM	Related; less education->higher adherence
	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Related; less education->higher adherence
Income	Schoenwald (2003)	233	Youth	Delinquent	MST	Parent	TAM	Unrelated

Psychopathology	Ellis (2010)	82	Youth	Delinquent	MST	Parent	TAM	Related; Higher psychopatholog >lower adherence
Family cohesion	Ellis (2010)	82	Youth	Delinquent	MST	Parent	TAM	Related; Higher cohesion->high adherence
	Carlson (2010)	22	Adult	Schizophrenia	CIT-S	Observer	Likert Scale	Unrelated
	Imel (2011)	461	Adult	Substance Use	MET	Observer	Likert Scale	Related; Higher family stressors >lower adherence
	Weisman (1998)	26	Adult	Bipolar	BFM	Observer	BFM Therapist Comp/Adh Scale	Related; Higher expressed emo higher adherence (only Homew Assigned item)
Treatment expectations	Ellis (2010)	82	Youth	Delinquent	MST	Parent	TAM	Related; Higher positive levels c concern, higher adherence
THERAPIST Demographics, salary, Professional preparedness	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Unrelated
	Campbell (2013)	471	Adult	Substance Use	TST	Observer	ACES	(1) Related; Higher grad degree >higher adherence (2) Related; Higher self-efficacy skills->higher adherence
	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Unrelated
Therapist attitudes	Campbell (2013)	471	Adult	Substance Use	TSF	Observer	ACES	Related; Positive attitudes towa TSF->lower adherence
	Schoenwald (2005)	1,711	Youth	Delinquent	MST	Parent	TAM	Related; Positive attitudes towa MST->lower adherence
Perceived support & supervision	Schoenwald (2009)	1,970	Youth	Delinquent	MST	Parent	TAM	Related; Higher supervisor focu adherence->higher therapist adherence
	Schoenwald (2009)	1,970	Youth	Delinquent	MST	Parent	TAM-R	(1) Related; Higher levels of the advancement->higher adherenc (2) Related; Higher levels of em exhaustion->lower adherence (3) Related; Higher job satisfact higher adherence

Note. MET = Motivational Enhancement Therapy; CBT = Cognitive-Behavioral Therapy; MST = Multisystemic Therapy; TAM = Therapist Adherence Measure (Revised); CIT-S = Culturally Informed Therapy for Schizophrenia; BFM = Behavioral Family Intervention; TSF = Twelve Step Facilitation; ACES = Adherence Competence Empathy Scales; sx = symptoms; Pretx chars = Pretreatment Characteristic

Client/Family Pretreatment Characteristics

First, the most frequently studied set of pretreatment characteristics are reviewed: child and family factors. Because youth psychotherapy often focuses on both the child or adolescent and a caregiver, it is important to consider the extent to which each of these key players influence treatment adherence. For the purposes of this study, the term *youth* is used to denote both children and adolescents; however, age ranges will be specified to accurately describe study samples when necessary. In this section, the following youth/family characteristics are covered (a) sex (youth); (b) age; (c) personality traits; (d) pretreatment youth functioning (i.e., symptom complexity/severity); (e) family demographics and structure; (f) race/ethnicity (parent-therapist match); and (g) family functioning.

Sex. Youth sex is an important characteristic to consider for its possible influence on treatment adherence. Few studies have directly examined the sex-treatment adherence relationship, however, there are several lines of research driving this theorized relationship. First, data from epidemiological studies suggest some potentially important sex difference with some types of psychopathology[1]. For example, substantial sex differences in depression prevalence exist, such that the expression of depression in girls is twofold compared to boys by late childhood to adolescence (e.g., Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993). Likewise, girls are more likely to manifest symptoms of anxiety than boys (see Albano & Krain, 2005; Silverman & Carter, 2006, for reviews), a disparity that appears in middle childhood and remains throughout adolescence and adulthood (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1996;

[1] Note that sex does not appear to influence prevalence rates for all problem types; for example, substance abuse shows relatively equal rates of illicit drug use for adolescent girls and boys (9.1 and 9.5%; United States Department of Health and Human Services, 2008).

Roza, Hofstra, van der Ende, & Verhulst, 2003). Second, some evidence demonstrates that client-therapist sex match influences treatment outcomes, including client satisfaction and retention in treatment (Hall, Guterman, Lee, & Little, 2002; Fujino, Okazaki, & Young, 1994), and higher alliance compared to non-matches (Wintersteen, Mensinger, & Diamond, 2005). Furthermore, female-matched dyads report higher levels of alliance compared to male dyads (Wintersteen et al., 2005). Finally, the developmental literature suggests that girls identify themselves through relational connections and, in turn, may place greater value on relationships than boys (e.g., Wintersteen et al., 2005).

These three strands of research and theory suggest that sex might influence adherence. Past work has suggested that a strong alliance maximizes youth involvement in therapy (e.g., Chu & Kendall, 2004; Kendall & Ollendick, 2004), such as skill-building components of CBT that depend upon child participation (e.g., Chu & Kendall, 2004). Further, a strong child-therapist relationship marked by trust may help a child fully participate in emotionally demanding therapeutic tasks (Kendall & Ollendick, 2004). Given that the potential for interpersonal bonding in therapy may be very appealing to girls, it is possible that treatment adherence may be higher for girls compared to boys. This influence may be particularly potent when both therapist and youth client are female. That is, a female client who is motivated to engage in emotionally close relationships may be more compliant in therapy, increasing the probability that a therapist will be adherent to a treatment protocol. Additionally, given that the match of therapist and client sex improves outcomes in some studies, it is

reasonable to posit that the match may positively influence treatment adherence as well.

To date, two studies have directly examined the influence of client sex on therapist adherence (Schoenwald, Halliday-Boykins, & Henggeler, 2003; Schoenwald, Letourneau, & Halliday-Boykins, 2005). In a preliminary study, Schoenwald, Halliday-Boykins, and Henggeler (2003) examined the relations between youth characteristics and therapist adherence to multisystemic therapy (MST; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998), a family-focused evidence-based treatment for youth with serious antisocial behaviors. The study consisted of 233 participant families and 66 therapists, primarily referred to MST by the juvenile justice (60.4%) and social services (35.2%). Youth averaged 14 years of age (M = 14.30, SD = 1.87), were primarily male (63.5%), and were predominantly Caucasian (59.7%) and African-American (20.2%). The caregiver education mean was twelfth grade, with over one-third of families receiving financial assistance (35.8%). Caregivers were asked to report on child/family demographics, and child functioning, symptoms, placement, and arrest history prior to the start of treatment. Therapist adherence to the nine principles of MST and the MST clinical processes was assessed using a 26-item MST Therapist Adherence Measure, which employs a 5-point Likert scale (TAM; Henggeler & Borduin, 1992) and has supportive psychometric studies (e.g., Henggeler, Melton, Brondino, Scherer, & Hanley, 1997). Adherence data were collected once every four weeks, starting with week two of treatment. A single TAM score per family was computed based on the mean of all TAMs administered. Among other findings, the regression analyses demonstrated that sex was *unrelated* to therapist adherence.

Schoenwald, Letourneau, and Halliday-Boykins (2005) followed up with a larger sample of families and therapists that included the participants from the earlier study, which included 1,711 families and 405 therapists. Youth were primarily referred to receive MST by the juvenile justice (46.3%), social services (22.4%), mental health agencies (16.5%), or other agencies (14.8%). Youth had a mean age of 16.2 years (*SD* = 2.40), were primarily boys (65.1%), and Caucasian (58.1%) or African-American (18.6%). Caregivers were primarily women (88.1%) and Caucasian (64.4%). Nearly half of all caregivers reported annual incomes less than or equal to $20,000 (49.3%), with a quarter having less than a high school education (25.1%), and over a third reported having a high school/GED education (38.5%) or some college (36.4%). Similarly to the preliminary study sample (Schoenwald et al., 2003), caregivers were asked to report on child/family demographics, and child functioning, symptoms, placement, and arrest history prior to the start of MST. Therapist adherence was collected using a caregiver self-report measure (MST Therapist Adherence Measure, TAM; Henggeler & Borduin, 1992). Adherence data were collected once every four weeks, and a single TAM score per family was computed based on the mean of all TAMs administered. Random effects regression modeling was employed to take into account the effects of nesting of families within therapists and therapists within organizations. Similar to the preliminary study, youth sex was *unrelated* to therapist adherence to MST. Unlike Schoenwald et al. (2003), this study showed a *significant* link between caregiver-therapist sex match and therapist adherence; therapist adherence to MST was higher when a caregiver and therapist were of the same sex. The overall conclusion from these two studies is that

caregiver-therapist sex matching, not youth-therapist sex match, might be related to treatment adherence for family-based treatments such as MST.

It is important, however, to consider the limitations of these two studies. First, reliance on untrained reporters for therapist adherence measurement can introduce issues with data reliability and validity. Parents and caregivers are reliable reporters on familiar behaviors, such as youth symptoms or family stress, however, are less equipped to reliably observe therapist adherence to MST, which is often characterized by broad treatment principles and not concrete, easily observable treatment approaches. Second, the sample characteristics were primarily female caregivers (88%), which may reduce the confidence that we understand how male sex may influence adherence. Third, studies on the same type of therapy may lack generalizability to other forms of therapy. For example, because MST is a family-focused treatment it is likely that caregiver sex and caregiver-therapist sex match might be more relevant to treatment, and thus linked to therapist adherence; whereas, youth sex might be most relevant for youth-focused treatments.

Overall, it is clear that little research exists in understanding the relationship between sex and treatment adherence. More research is necessary to better understand the relationship between sex and therapist adherence, especially for other therapeutic orientations and youth problem areas (e.g., cognitive behavioral therapy for anxiety). Preliminarily, though, it is warranted to examine sex broadly to include sex of the youth and the caregiver.

Client age. Youth age is an important demographic characteristic to consider for its possible influence on treatment adherence. Although few studies have assessed the

relationship between youth age and therapist adherence, the child development and peer relationship literatures contribute to our understanding of the potential link between the two variables. For example, research shows that once children reach adolescence, they develop more complex thinking processes, including abstract thinking (e.g., thinking about possibilities) and the ability to reason from known principles (e.g., Blakemore & Choudhury, 2006). Furthermore, the importance of peer influences is heightened for adolescent youth (e.g., Steinberg & Monahan, 2007).

Because prepubescent children tend to have underdeveloped cognitive functioning (compared to older youth), they may be less likely to understand more complex or abstract therapeutic themes (e.g., cognitive restructuring, emotion identification). It is foreseeable that therapists may often need to repeat or practice the more complicated concepts with younger aged children (compared to older youth), deviate from treatment sequence, thus decreasing treatment adherence. It is, therefore, reasonable to hypothesize that older aged youth may be associated with higher level of treatment adherence. Furthermore, because of the heightened importance of peer influence on adolescent psychosocial functioning, including increased need to be liked by peers (e.g., Steinberg & Monahan, 2007), older youth may be less interested in being liked by a non-peer, such as a therapist. In contrast, younger youth may have more interest in being liked by a "teacher" figure, such as a therapist. Therefore, it might also be reasonable to hypothesize that because younger aged youth are less focused on gaining peer acceptance, they may facilitate therapist adherence. Together, these bodies of research suggest that youth age may influence treatment adherence, though they each demonstration opposing conclusions.

Two recent studies assessed whether youth age is related to therapist adherence (Schoenwald, Halliday-Boykins, & Henggeler, 2003; Schoenwald, Letourneau, & Halliday-Boykins, 2005). In the preliminary and larger studies (Schoenwald et al., 2003; Schoenwald et al., 2005), detailed in the previous section, the authors assessed the relations between youth age and therapist adherence to MST. The preliminary study sample consisted of 233 youth, mean age of 14, while the larger study included all 1,117 youth, mean age 16.2 years. The results in both studies demonstrated that youth age was *unrelated* to therapist adherence to MST. The overall conclusion is that youth age might not be related to treatment adherence for family-focused treatment.

It is important to highlight the limitations of the two studies. First, the lack of detail provided for participant age range is an issue. This omission is problematic because it raises issues associated with the validity of the findings. For example, from the study description of youth participants it is impossible to know the extent to which the sample was diverse according to youth age. The second limitation pertains to the operationalization of *age.* Although age is an important variable to understand, perhaps including related variables, such as developmental age, in addition to chronological age, would provide more clarity to the youth age – treatment adherence relationship. Third, it is clear that the generalizability of findings to other forms of therapy (e.g., individual, group therapy) and problem areas (e.g., anxiety, depression) may bode differently in the age – adherence link. Given the paucity in research focused on this link, more research is necessary to determine whether youth age is related to treatment adherence.

Client personality traits and motivation to change. Youth personality traits, the genetically influenced disposition that individuals express through behaviors-

thoughts-emotions with some consistency across situations and over time (Shiner & Caspi, 2003), and client motivation to change represent another set of variables with potential influence on treatment adherence. The Big Five Model (John, Naumann, & Soto, 2008) is frequently used to describe the structure of traits in children and adolescents as well as adults (e.g., Tackett, 2006); it includes *openness to experience and intellect, conscientiousness, extraversion, agreeable*, and *neuroticism*. These personality traits can arguably influence therapeutic interactions between a client and therapist. For example, lower levels of agreeableness pertain to children with tendencies toward externalizing emotions like anger and irritability (e.g., Shiner & Caspi, 2003). It is possible that youth clients with lower agreeableness may be less willing to engage in therapy activities. In addition, lower levels of openness to experiences (i.e., limited curiosity creativity, and eagerness to learn) may be more difficult to engage in therapeutic activities, such as developing coping strategies to address problematic behaviors or emotions. In addition, this profile of personality traits (lower agreeableness and openness) may increase interpersonal problems between clients and therapists. Furthermore, emotional dysregulation present in clients may lead to a "deskilling" of the therapist (e.g., Bateman & Fonagy, 2004; Meehan, Levy, & Clarkin, 2012). Thus it seems plausible that personality traits may influence treatment adherence.

Similarly, a client's motivation to change may impact treatment adherence. The most frequently cited stages of change within a therapeutic context include the precontemplation (e.g., individuals may blame others), contemplation (e.g., individuals may ponder making changes), preparation (e.g., individuals may plan to make changes), action (e.g., individuals may actively make changes), and maintenance (e.g.,

individuals may work to prevent relapse and maintain changes; see Prochaska & DiClemente, 1982). Individuals in therapy and in the initial stages of change (e.g., precontemplation) may prove to challenge the therapeutic process, including treatment adherence. The influence of motivation to change on treatment adherence can result in either direction; that is, lower or higher levels of motivation to change may result in lower treatment adherence. For example, therapists may perceive clients with minimal-motivation-to-change as difficult, prompting therapists to proactively "push" the treatment element on to the clients, thus maintaining high levels of treatment adherence. On the contrary, therapists may do a cursory coverage of the treatment, or deviate from the treatment all together with those clients not yet ready to make changes in their lives, thus reducing levels of treatment adherence.

Only two studies have addressed client personality and motivation to change in relation to treatment adherence (Boswell et al., 2013; Imel, Baer, Martino, Ball, & Carroll, 2011; respectively). Boswell and colleagues focused primarily on identifying client characteristics (including personality) as predictors of therapist variability in treatment adherence and therapist competence to cognitive-behavioral therapy (CBT) for panic disorder. The study consisted of 256 adult participants and 21 therapists. The average age was 37 years (*SD* = 12 years). The majority of the sample was female (68%) and identified as White (85.5%), followed by African-American (5.8%), Asian or Pacific Islander (5.4%), and Hispanic or "other" (less than 4%). All therapists were trained in CBT (i.e., workshops, ongoing supervision, training cases), 13 of them held medical degrees or doctoral degrees in clinical psychology, six had master's degrees in clinical psychology, and two therapists were doctoral candidates in clinical psychology.

Therapist adherence was assessed with an observer-rated scale that was developed for the study, which included overall protocol adherence represented by a percentage (0-100%) of the specific concepts and techniques that were addressed during each of the 11 sessions. Trained raters, doctoral-level psychologists and psychiatrists, coded a subset of audiotaped sessions (*n* = 60) to demonstrate adequate reliability prior to the study (ICC = 0.80). Interpersonal/personality characteristics were assessed with a 15-item, 5-point Likert self-report instrument designed to capture different types of interpersonal problems and associated distress that, together, were used to identify individuals with personality disorder symptom clusters: interpersonal sensitivity (high affectivity and reactivity), interpersonal aggression (hostility), and interpersonal ambivalence (vacillating between collaborative and non-collaborative stances). Among other findings, multilevel modeling demonstrated that clients reporting higher levels of interpersonal aggression were *associated* with decrements in therapist adherence to CBT for panic disorder. The overall conclusions from this single study point to an interesting link between interpersonal aggression personality style and treatment adherence for a sample of adults diagnosed with panic disorder.

Imel and colleagues (2011) focused less on client personality traits, and more on client motivation to change in a sample of adults diagnosed with substance use disorders and treated with Motivational Enhancement Therapy (MET). There were 461 participants and 12 clinicians. The clients had a mean age of 34.5 (*SD* = 10.5) years and were 73% male, 46% Caucasian, 39% African America, 10% Hispanic American, and 2% multiracial. Therapist adherence and competence was measured using an Independent Tape Rater Scale (ITRS; Martino et al., 2008), which was coded based on

a 7-point Likert scale and assesses the frequency and extensiveness of particular interventions in the session and also the quality or skillfulness. Client motivation to change was measured using a 7-point Likert scale, and was coded by independent raters. Among other findings, multilevel modeling demonstrated that client motivation level was *related* to treatment adherence; when client's motivation at pretreatment was lower, therapist adherence to MET during the session was higher. Despite this advancement in understanding how initial client motivation might influence treatment adherence, it is important to consider how this finding may differ with a distinct therapeutic approach (e.g., CBT for anxiety). Because MET is rooted in the idea that therapists should resist the tendency to respond to client resistance with confrontation by maintaining empathy and strategy to elicit client statements in favor of change (Hartzler et al., 2009; Miller & Rose, 2009), MET may facilitate treatment adherence because of the overall mission of the approach.

Several study limitations should be noted. First, in the study by Boswell and colleagues (2013), treatment adherence was operationalized according to the percentage of session that was covered during its appropriate sequence. Although the raters were trained in CBT and adequately reliable before coding the audio sessions, it is unclear whether raters had anchors for the range of percentages (e.g., what differentiates a 20% from 40% coverage?) to help guide coding and ensure consistency across data. In the study conducted by Imel and colleagues (2011), it appeared that the same independent raters coded both adherence and competence. Second, therapists in Boswell et al. were not penalized for covering relevant treatment issues that may not have specifically listed in the protocol adherence form for that session, but it is unclear

whether raters had guidance and training on differentiating what constituted “relevant treatment issues.” Third, in Boswell et al. a small percentage of the full sample of sessions that were available for coding were actually coded from each session; a total of 495 rated sessions (e.g., 18% of ratings were from Session 1; 20% from Sessions 9, 10, or 11). Fourth, in Boswell et al. the treatment focus was on CBT, a highly structured therapeutic approach, which provides less opportunity for client-guided therapy sessions. It is possible that a less structured treatment approach, such as client-centered therapies (O’Connor & Braverman, 1997), may offer a better match for individuals with aggressive interpersonal issues, and thus protect therapy from major deviations or decreases in treatment adherence. Fifth, because both studies focused on adult populations, generalizing findings to youth samples is problematic. Although the samples were not with a child or adolescent group, it is possible that the findings may generalize to youth populations. It is clear that more research is necessary to understand the link between youth interpersonal and personality traits-, motivation to change-, and treatment adherence.

Youth functioning. Youth pretreatment functioning, such as symptom severity or critical events (number of arrests/school suspensions) may relate to treatment adherence for a few reasons. Symptom severity is frequently shown to influence therapist processes, including therapist alliance and in-session engagement (e.g., Couture, Roberts, Penn, Cather, Otto, & Goff, 2006). In addition, therapists often nominate symptom complexity and severity as a major treatment barrier to engaging youth and families in session (e.g., Rodríguez, Southam-Gerow, O’Connor, & Allin, 2014). If youth with more severe clinical presentations prove to be more challenging in

session, it is possible that treatment adherence be affected. For example, a therapist may attempt multiple treatment components throughout therapy or change the components all together in attempts to identify the practice that "best" fits the needs of a youth with a more severe clinical profile, covering multiple treatment elements without extensively covering a single practice; this may result in a reduction of treatment adherence. It is also possible that certain problem areas affect treatment adherence differently. For example, research shows that youth diagnosed with antisocial behaviors find lower initial treatment attendance and twice the rate of treatment refusal, compared to youth without conduct problems (e.g., Watt, Hoyland, Best, & Dadds, 2007). If differences in treatment attendance exist in relation to problem area, it may be that treatment adherence differences may also result with different problem areas (e.g., depression versus antisocial behaviors).

To date, five studies have examined the effect of client functioning on treatment adherence, with two studies focused on an adult sample (Carlson & Weisman de Mamani, 2010; Imel, Baer, Martino, Ball, & Carroll, 2011) and three with a youth sample (Ryan, Cunningham, Foster, Brennan, Brock, & Whitmore, 2013; Schoenwald et al., 2003; Schoenwald et al., 2005). With a sample of adults, Carlson and Weisman de Mamani (2010) examined the influence of pretreatment psychotic symptoms on treatment adherence and therapist competence to a culturally informed therapy for schizophrenia (CIT-S). The study consisted of 22 patients diagnosed with schizophrenia and their families (n=23). Some families were randomly assigned to CIT-S (n = 15), a 15-week family therapy that aims to build a strong sense of family unity, utilize the family's preexisting spiritual beliefs to better conceptualize and cope with the illness,

strengthen family problem-solving skills, and develop effective communicating skills among family members; while the others (n = 8) were assigned to a psychoeducation control group (treatment as usual; TAU), a three module psycho-education therapy focused on schizophrenia. Participants were either diagnosed with schizophrenia or schizoaffective disorder, and were between the ages of 18 and 60 (*M* = 30.95, *SD* = 12.40). Participants identified primarily as Hispanic (n = 29), but also included White (n = 11), African-American (n = 1), and "other" (n = 2) groups. Most therapists were clinical psychology graduate students (n = 5) and one was a licensed psychologist. Two trained coders rated videotaped sessions using the CIT-S Therapist Competence Adherence Scale, a 24-item 7-point Likert-type scale, and the TAU Therapist Competence Adherence Scale, measure for adherence to psycho-education modules; the number of items coded were not provided. Severity of psychiatric symptoms was assessed through the Brief Psychiatric Rating Scale, a 24-item scale of positive/negative symptoms, resistance, activation, and affect (Ventura et al., 1993); the Depression Anxiety Stress Scale was used to measure general emotional distress in patients (Lovibond & Lovibond, 1995). Among other findings, hierarchical regression analyses demonstrated that psychiatric symptoms *negatively predicted* treatment competence/adherence to CIT-S; however, general emotional distress (e.g., anxiety and depression) was *unrelated* to therapist competence/adherence; there was no significant relationship between psychiatric symptoms and TAU competence/adherence.

Similarly, with a sample of 461 adults, Imel el al. (2011) examined variability in therapist adherence in Motivational Enhancement Therapy (MET) and the association between client severity of addiction at pretreatment among patients diagnosed with

substance use disorders; study method explained further in previous sections. In brief, therapist adherence and competence was measured using an Independent Tape Rater Scale (ITRS; Martino et al., 2008), which was coded based on a 7-point Likert scale and assesses the frequency and extensiveness of particular interventions in the session and also the quality or skillfulness. Client severity was measured using a structured interview (Addiction Severity Index; ASI; McLellan et al., 1992), which examines substance-related psychosocial problems. Multilevel modeling demonstrated that client substance use severity was inversely *related* to treatment adherence, indicating that as psychiatric severity increased at pretreatment, therapists demonstrated less MET adherence.

Three studies have examined this relationship with a youth sample. In a longitudinal study, Ryan and colleagues (2013) examined the effects of race/ethnicity as a moderator for youth problem behaviors early in treatment on therapist adherence to MST. The study included 185 youth (65.4% male), their caregivers, and 56 therapists. On average youth were 15.35 years of age, ranging from 12 to 18 years. Forty-eight percent of youth self-identified as Caucasian, 20% as African-American, 28% as Hispanic/Latino, and 4% as other (e.g., multiracial). Caregiver ethnicity was similar to youth; 53% Caucasian, 18% African-American, 26% Hispanic/Latino, and 3% as other. Therapists were primarily women (71%) who identified as Caucasian (86%) with master's degrees (85%) in Social Work, Psychology, Counseling, and related fields. All therapists received MST quality assurance training and improvement, which included a five-day training, weekly group supervision, an hour long consultation session with an MST expert, a booster training session, and a web-based implementation tracking and

feedback system. Caregivers reported on therapist treatment adherence twice at mid-treatment and at the end of treatment (on average at 3.90 months after start of treatment) using the MST Therapist Adherence Measure-Revised (TAM-R; 28-item rated on a 5-point scale). Results from this study provide preliminary evidence that therapeutic process differ across race/ethnic groups when youth exhibit high and low problem severity at treatment outset. Levels of youth problem behavior early in treatment were associated with disruptions in the therapeutic process only for Hispanic/Latino youth. Caucasian parents reported less linear increases in therapist adherence over the course of MST for youth with higher rates of self-reported delinquency at the outset of treatment. Higher externalizing behavior and polysubstance use at pretreatment was associated with lower treatment adherence at mid-treatment for Hispanic/Latino groups only. Overall, findings provide evidence that race/ethnicity interacts with problem severity in predicting therapist adherence.

In a preliminary study, with only 233 youth participants and 66 therapists, Schoenwald and colleagues (2003) focused on the relationship between pretreatment functioning and treatment adherence to MST; pretreatment functioning included both non-clinical complexity characteristics in youth (i.e., number of arrests, school suspensions, and reasons for referral) and emotional-behavioral symptoms. Refer to the previous sections and Table 1 for additional demographic information and study details. In brief, youth participants (average age of 14) and their families received MST to address serious youth antisocial behaviors. Caregivers reported on (a) the number of incidents of incarceration, psychiatric hospitalization, and other out-of-home placement experienced over the youth's lifetime; (b) school suspensions as the number of school

days youth missed over the previous 30 school days; (c) reasons for referral included five categories in various combinations of status offense, criminal offense, and substance abuse; and (d) emotional/behavioral symptoms were assessed through a four item parent-report measure on a 5-point Likert scale across a variety of symptoms. The regression analyses demonstrated that the following pretreatment characteristics were *unrelated* to treatment adherence: (a) the number of incarcerations, hospitalizations, and other out-of-home placements; and (b) emotional/behavioral functioning. Therapist adherence ratings were negatively *related* to school suspensions and reason for referral - substance abuse without criminal offense (versus substance abuse reasons with a criminal offense) only. Overall, these findings suggest that only youth school-related problems, such as number of school suspensions, are inversely related to adherence.

Schoenwald and colleagues (2005) followed with a larger sample of families and therapists that included the participants from the earlier study (Schoenwald et al., 2003), which included 1,711 families and 405 therapists. Refer to previous sections and Table 1 for additional demographic information and study details. Among other study aims, detailed in the previous sections, the authors examined the association between youth functioning and treatment adherence to MST. Treatment adherence was measured using a parent self-report (MST Therapist Adherence Measure; Henggeler & Borduin, 1992). Psychosocial functioning was assessed through a parent-report based on antisocial behavior, problems at home/school, problems with peers, and self-harm (Vanderbilt Functioning Index; VFI; Bickman, Lambert, Karver, & Andrade, 1998) and a broad-band measure of youth emotional and behavior symptoms (Child Behavior

Checklist; CBCL; Achenbach & Rescorla, 2001). Like the preliminary study, findings indicated that the number and nature of youth referral problems (e.g., criminal, substance use), the number of previous out-of-home placements, number of arrests, and amount of jail time prior to treatment was *unrelated* to adherence. Contrarily, however, youth psychosocial functioning was *related* to treatment adherence only based on the VFI and not the CBCL. The overall findings suggest that perhaps only the more "extreme" levels of symptomatology (e.g., problems with peers, psychotic symptoms, criminal/substance abuse experiences) are likely to interfere with treatment adherence; whereas, the less overtly challenging behaviors (e.g., internalizing symptoms) or less complexity of the case, may not significantly disrupt the flow of MST or family-based therapies.

It is important, however, to consider the limitations of these five studies. First, three of the studies relied solely on untrained reporters for treatment adherence measurement (i.e., caregivers), which can introduce issues with data reliability and validity; that is, parents are untrained in the concept of adherence or the treatment model. Although Carlson and Weisman de Mamani (2010) assessed treatment adherence/competence with two trained coders, the authors made no distinction between "adherence" and "competence" in the scale, introducing issues of validity; likewise, the measure had no supportive psychometric studies. Relatedly, the two coders rated adherence/competence for both treatment conditions, increasing risk for bias or halo/horn effects; situations where the scoring for one items is positively or negatively biased or influence by the scoring given to another item or by a global judgment about the whole session (McLeod et al., 2013). Second, all studies focused on

family-based therapies (MST and CIT-R) for antisocial behaviors and psychotic symptoms. Third, Carlson and colleagues (2010) used a small sample (n = 23 families) to address important questions. Further research would need to address these limitations by examining other forms of therapy (individualized therapy), other types of problem areas and levels of severity, and larger samples to improve upon the power of the study findings.

Overall, it is clear that little research exists in understanding the relationship between youth functioning and treatment adherence. More research is necessary to better understand the relationship between pretreatment symptoms, severity, comorbidity, functioning, and treatment adherence, especially for other therapeutic orientations and youth problem areas (e.g., CBT for anxiety).

Family demographics. Given the significant presence of family in a youth's life, family-level pretreatment characteristics can understandably be related to treatment adherence; these may include socioeconomic status, family income, caregiver demographics (sex, age, education), and family composition (ethnicity is described in the next section). This assertion is reasonable based on treatment engagement research. Family-level socio-demographic characteristics have also been identified as predictors for parent engagement in therapy; these include parent psychopathology, family poverty, family stress, single parent status, and family cohesion (Angold et al., 1998; Armbruster & Kazdin, 1994; Bannon & McKay, 2005). It is possible that these similar family-level pretreatment characteristics not only affect general treatment engagement, but also therapist in-session behavior, including treatment adherence.

Overall, this suggests that family pretreatment characteristics may influence treatment adherence in important ways.

Two studies, one preliminary and a follow-up, have examined the influence of family demographics on treatment adherence, both of which have been with youth samples presenting with antisocial behaviors (Schoenwald et al., 2003; Schoenwald et al., 2005). The studies have focused on the extent to which family demographic characteristics – sex, family income, education, and marital status – influence treatment adherence to MST. In the preliminary study, caregiver education, family income, and number of parents in the home were assessed as predictors of treatment adherence (Schoenwald et al., 2003; see previous section and Table 1 for details on this study). The findings indicated that caregiver education was the only *significant* predictor of treatment adherence, such that adherence was higher for families in which caregivers had less than or equal to a high school education, compared with families in which caregivers had post-secondary education. Although family income and number of parents in the home were *unrelated* to treatment adherence, a negative trend was identified between family income and adherence; greater family economic disadvantage was associated with higher therapist adherence to MST. Similarly to the preliminary study, Schoenwald and colleagues (2005) assessed caregiver education and family income and found that treatment adherence was higher for caregivers with the lowest educational achievement (less than high school) as compared with caregivers having postsecondary education. In addition, family income was *unrelated* to levels of treatment adherence. The 2005 study also explored caregiver sex and marital status and found that both predictors were *unrelated* to treatment adherence.

From these two studies, it appears that caregiver education is the only significant family-level demographic predictor for therapist adherence to MST; however, it is unreasonable to make firm conclusions based solely on two studies. Cleary more research is necessary to better understand how family demographic characteristics relate to treatment adherence. One starting point is to evaluate the study limitations with aim of improving upon the two studies. One main limitation pertains to the types of family demographic variables examined, specifically caregiver education. Caregivers in both studies were asked to choose one option from several education categorical options. It might be important to consider related variables to best capture the relationship between caregiver education and treatment adherence. For example, it is possible that caregivers with higher education level often ask clarifying questions or bring up topics of conversation that diverge the treatment plan during session, thus reducing treatment adherence. In other words, it is possible that parents with higher education level are more proactive in introducing non-treatment related agenda items to therapy. On the contrary, therapists may assume that caregivers with lower education levels will necessitate thorough explanations of treatment concepts, and thus may proactively spend more time on selective treatment elements with these caregivers. This lack of clarity necessitates demographic variables that tap into caregiver education and how it might influence treatment adherence.

Race/ethnicity. Although caregiver ethnicity/race is clearly a family demographic variable, it is described in its own section (not under demographics) to allow for a more extensive discussion. A few lines of inquiry provide reason for the hypothesized ethnicity/race – therapist adherence relationship. The treatment dissemination and

implementation research raises concerns about the applicability of treatments across ethnic groups. Most treatments in efficacy studies have been tested with Caucasian and middle-class families (Huey & Polo, 2008), raising questions about treatment effectiveness for ethnic minority groups (e.g., Huey & Polo, 2008). For example, it is possible that a therapist may choose to adapt a treatment for an ethnic minority client through changes in treatment delivery (e.g., storytelling versus didactic delivery of content) or differences in delivery of treatment "dose" of specific treatment components (e.g., more relaxation versus cognitive work for anxiety), resulting in a lower level of therapist adherence.

Finally, some research suggests that individual expression of psychological disorders may differ across ethnic/racial minority groups (e.g., Alegria et al., 2008; Deisenhammer et al., 2012). For example, some Latino (e.g., Alegria et al., 2008) and Turkish groups (Deisenhammer et al., 2012) have a greater tendency to present psychological distress in the form of physical symptoms. Likewise, some mental health symptoms often go under-recognized because of cultural factors that influence presentation, such as "ataques de nervios," which is commonly used to describe anxiety-like symptoms but is different from traditional diagnostic criteria (e.g., Liefland, Roberts, Ford, & Stevens, 2014). The differences in ethnic/racial group symptom expression are relevant to treatment adherence. It is possible that because somatic symptoms are more prevalent among some ethnic/racial groups (e.g., Latino), it may necessitate the therapist to deviate from the treatment program, leading to increased adherence to somatic-type treatment elements (e.g., relaxation for anxiety) and

decrease in overall treatment adherence due to a lack in coverage of non-somatic-type practice elements (e.g., cognitive for anxiety).

Unfortunately, only one study to date has examined the direct influence of ethnicity/race on therapist adherence, so much of the work presented here stems from the client ethnicity/race-match literature. Three studies have examined the link between parent-therapist ethnic match (Chapman & Schoenwald, 2011; Halliday-Boykins, Schoenwald, & Letourneau, 2005; Schoenwald et al., 2003), with only one study focusing on the relationship between race/ethnicity on youth outcomes with treatment adherence as a mediator (Halliday-Boykins et al., 2005). Chapman and Schoenwald (2011) investigated the relations among ethnic/racial similarity in caregiver-therapist pairs of youth participating in MST, therapist adherence, and youth long-term behavioral and criminal outcomes. The study consisted of 1,979 youth and families treated by 429 therapists, primarily referred by the juvenile justice or corrections agencies (44.2%) and social services (23.05). The mean age for youth was 14.0 (*SD* = 2.35) and most participants were primarily male (65.0%). The ethnic group breakdown consisted predominantly of Caucasian (59.5%), with 19.3% African-American, 6.4% Asian or Pacific Islander, and 14.8% other; the majority of youth were of non-Hispanic ethnicity (92.7%). Similar to youth ethnic/racial groups, caregivers were Caucasian (65%), African-American (18.8%), Asian or Pacific Islander (6.2%), American Indian or Alaskan Native (0.9%), mixed heritage (4.0%), or other ethnicity (0.4%); most were of non-Hispanic ethnicity (95.1%). Therapists were primarily Caucasian (74.9%), with 14.4% African-American, 6.0% Asian or Pacific Islander, 2.1% Latino, 0.6% American Indian or Alaskan Native, 1.0% mixed ethnic heritage, and 1.0% other. Caregivers reported on

treatment adherence to MST using the Therapist Adherence Measure – Revised (TAM-R; Henggeler & Borduin, 1992). Adherence data were collected monthly and adherence scores for each administration were averaged by family to produce a mean level of therapist adherence experienced by a family during the treatment episode. Mixed effect regression models demonstrated that caregiver-therapist ethnic/racial similarity was *associated* with a significantly higher average level of therapist adherence for a youth's treatment. This finding translates into a caregiver rating a therapist as "adherent" on 1 to 2 more items (of 28) on the TAM-R when the therapist was of similar ethnicity/race. This finding was also true for youth with available post-treatment data; caregiver-therapist ethnic/ethnic similarity for this group was associated with a significantly higher level of therapist adherence for a youth's treatment.

Among other study aims, detailed in the previous sections, Schoenwald and colleagues (2003) also examined the association of caregiver-therapist ethnic/racial match and treatment adherence to MST. Relevant to this study (refer to Table 1 for study details), youth and caregivers were primarily Caucasian (59.7%) and African American (20.2%), but also included youth identified as Latino (10.7%), multiracia1 (6.4%), and other backgrounds (3.0%). Therapist ethnic/racial breakdown mirrored that of youth and caregivers, which consisted of the following: Caucasian (74.2%), African-American (16.7%), Latino (4.5%), and Asian American (1.5%); 3.0% reported no ethnicity. Caregivers reported on treatment adherence for MST on a monthly basis using a self-report measure (TAM; Henggeler & Borduin, 1992), and a single TAM score per family was computed based on the mean of all TAMs administered. The variable "ethnicity" was categorically operationalized as Caucasian versus not Caucasian.

Among other findings, the regression analyses demonstrated that ethnic match was *related* to treatment adherence; adherence was higher for ethnic matches, and this relationship did not differ for Caucasian and ethnic minority families.

Another study examined treatment adherence to MST as a meditational variable between caregiver-therapist ethnic/racial match and treatment outcomes; specifically focusing on whether the relationship between caregiver-therapist ethnic/racial match and different youth outcomes are mediated by therapist adherence to MST (Halliday-Boykins et al., 2005). The youth outcomes included youth symptoms (CBCL, VFI scores), treatment length (number of days spent in treatment from intake through discharge), and discharge success (success vs. unsuccessful discharge reason). Participants were 1,711 youths and 405 therapist based in a community setting. Most youth were male (65.1%) with a mean age of 16.2 years, seeking services primarily for delinquent behaviors and substance abuse. Caregivers were primarily women (88.1%) and Caucasian (64.4%), followed by 18.8% African-American. The majority of therapists were female (73.8%) and Caucasian (75.3%), with 6.1% African-American. Therapists and caregivers were asked to indicate their ethnic group by selecting from 21 mutually exclusive categories, which included five single-group options (Black/African-American, Asian or Pacific Islander, American Indian or Alaskan Native, Hispanic, and Caucasian) and 15 options indicative of mixed-ethnic/racial heritage (e.g., Latino and White). The ethnic/racial match category was determined based on ethnic/racial matches according to the 21 categories. If the therapist and/or caregiver chose a mixed heritage option, the pair was scored as "matching" if either of the caregiver or therapist ethnic/racial selections matched. For example, if a caregiver reported "Asian and Caucasian" and the

therapist indicated “African-American and Asian,” the pair matched on Asian and thus was coded as an ethnic/racial match. Mediational analysis revealed that the effects of ethnic/racial match on changes in client symptom scores (both CBLC and VFI) were *not mediated* by therapist adherence. On the contrary, ethnic/racial similarity was *significantly* associated with increased therapist adherence; the mediational effect of ethnic/racial match was also significant, indicating that the effects of ethnic/racial match on both treatment time and discharge success were partially mediated by therapist adherence.

These three studies, focused on the pretreatment characteristic of ethnicity/race, generally revealed that ethnicity/race plays a role in therapist adherence. First, an association was found between caregiver-therapist ethnic/racial match and therapist adherence compared to non-match groupings, such that ethnic/racial similarity predicted higher caregiver ratings of therapist adherence (Chapman & Schoenwald, 2011; Schoenwald et al., 2003). Second, treatment adherence also appears to play a mediating role between ethnicity/race and MST treatment adherence (Halliday-Boykins et al., 2005). Despite these progressive findings, the studies presented with methodological limitations that deem further discussion.

The limitations primarily relate to issues with adherence measurement and ethnic/racial diversity sampling. First, treatment adherence data was primarily collected from parent self-report on therapist’s adherence to MST. Caregiver ratings on the MST adherence measure may be influenced by other factors such as initial expectations of treatment or satisfaction with treatment, either of which could be greater among ethnically/racially similar pairs relative to dissimilar pairings. In particular, this method

lends itself to reporter bias and distortion, which refers to alteration of participants' responses in some way in light of their own motives or self-interest, often referred to as social desirability (Kazdin, 2003). Although research demonstrates parent report of treatment adherence as a better predictor of youth outcomes in MST studies (e.g., Henggeler et al., 1997), the risk of parents reporting in a socially desirable fashion is still an issue for validity and reliability; it would be important to address this issue with objective measurement approaches, such as with observational coding. Second, the "ethnic/racial pairings" reported were primarily composed of Caucasian-Caucasian pairings (e.g., 86% of the pairings in Chapman & Schoenwald, 2011). This is a critical issue related to the extent to which findings are relevant only to those groups most represented (Kazdin, 2003). For instance, it is possible that these findings (with predominately Caucasian participants) may not extend to different ethnic/racial groups. Third, the extent to which the ethnicity/race-adherence findings are generalizable to other youth treatment approaches and problem areas is questionable. Because MST therapists work intensively and extensively with caregivers to affect youth behavior, rather than with youth, therapists' efforts are likely more strongly affected by the caregiver's ethnic/racial background than that of the youth. It would, therefore, be important to examine the effects youth ethnic/race on treatment adherence on child-focused treatment approaches (e.g., CBT for anxiety, IPT for depression). Clearly, future research must address these issues by including more ethnically/racially diverse samples and examining different youth problem areas and treatment approaches.

Family functioning. Given the importance of caregivers in child-focused therapy, family functioning may influence treatment adherence. One reason for this

assertion stems from the treatment engagement literature, which suggests that one of the most challenging barriers in youth accessing and receiving therapeutic services pertain to difficulties with engaging caregivers in services (e.g., Gopalan, Goldstein, Klingenstein, Sicher, Blake, & McKay, 2010). These barriers may include parent-family perceptual barriers, such as parental beliefs and expectations about the therapeutic process or parents feeling supported by the youth's therapist (McKay and Bannon, 2004). For example, a family with more stressors, lower income, and negative perceptions about the need for treatment may demonstrate minimal motivation to engage in weekly therapeutic content, thus affecting therapist adherence to the treatment program. There are a few ways in which family-level pretreatment characteristics can influence treatment adherence. It is possible that these characteristics impede treatment adherence progress due the therapist's need to address other crisis or stressors within the family system (e.g., family cohesion). On the contrary, it is possible that these characteristics "drive" the therapist to adhere more closely to the treatment, due to the treatment's appropriate match to the youth's triggers – family-level stressors, and the severity of the family-level issues. The latter hypothetical may be truer with treatments that are family-based (e.g., multisystemic therapy). For the purposes of this study, family functioning includes cohesion/difficulty, family beliefs about treatment, and caregiver psychopathology.

Four studies have examined the relationship between family functioning variables – family cohesion, family expressed emotion, parental psychopathology, client-parent interactions – and therapist adherence (Carlson et al., 2010; Ellis, Weiss, Han, & Gallop, 2010; Imel, Baer, Martino, Ball, & Carroll, 2011; Weisman, Okazaki, Gregory, &

Goldstein, 1998). One study focused on a youth sample (Ellis et al., 2010), while the remaining three focused on adult samples diagnosed with schizophrenia (Carlson et al., 2010), bipolar disorder (Weisman et al., 1998), and substance use problems (Imel et al., 2011). Interestingly, the treatment focus for most studies was on family-based therapies (MST, family-focused treatment for schizophrenia and bipolar).

Three studies examined family cohesions and its relation to treatment adherence with adult populations. For example, Carslon and Wesiman de Mamani (2010) studied the link between level of family cohesion and treatment adherence to a family-based therapy for adults with schizophrenia; see previous section and Table 1 for details on this study. Family cohesion was measured using the Family Cohesion subscale of the Family Environment Scale (FES; Moos & Moos, 1986), a nine item scale intended to measure the degree of commitment, help, and support family members provide for one another through a series of statements; respondent indicates whether the statement is 0=mostly true or 1=mostly false. Treatment adherence was evaluated by independent coders who watched the videotaped sessions and coded for adherence based on a psychometrically sound scale (CIT-S; Weisman et al., 1998). Hierarchical linear regressions revealed that family cohesion was *unrelated* to treatment adherence; that is, therapists do not have more difficulty adhering when working with families who view themselves as disconnected.

Imel and colleagues (2011) examined family/social stressors in relation to treatment adherence to Motivational Enhancement Therapy (MET) for adult clients diagnosed with substance use disorders. Additional demographic and study methodology for this study can be found on Table 1 and are detailed in previous

sections. In brief, the 461 adult participants (average age of 34.5, *SD* = 10.5 years) were primarily male (73%) and 46% were Caucasian. The Independent Tape Rater Scale (ITRS; Martino et al., 2008) was used to measure therapist adherence and competence, based on a 7-point Likert scale. Family/social stressors (e.g., level of social or family problems) were measured with the Family/Social subscale from the Alcohol Severity Index (ASI; McLellan et al., 1992), which is a structured interview that generally measures indicators of substance-related psychosocial problems. Among other findings, multilevel models demonstrated that family/social stressors were a *negative predictor* of MET adherence, indicating a decrease in therapist adherence to MET as family/social problems increased.

Weisman and colleagues (1998) investigated how family expressed emotion (EE) status, a relatives' attitude toward a mentally ill family member, relates to treatment adherence. The participants were 26 adult patients who met criteria for a manic episode. Participants ranged in age from 18 to 46 (*M* = 26.19), and had an average of two years post-high school education. Over half of the participants resided with their relatives (64%) and were Caucasian (62%), in addition to African-American (24%) and Asian American (4%). All participants received behavioral family intervention (BFM), a family-based treatment focused on providing families and patients with psycho-education about bipolar disorder, family communication, and problem solving. All therapy sessions were videotaped and coded for BFM adherence and therapist competence by three independent raters (the two authors and one graduate student trained in BFM) using the BFM Therapist Competence/Adherence Scale (Weisman et al., 1998). Family EE was coded by an independent coder, not the same integrity

coders, using a semi-structured interview about family attitudes toward the patient and the effect that the patient's illness has on the family. Relatives who made six or more critical comments, who expressed hostility, or who scored three or more points on a five-point scale on emotional over-involvement were rated as having high-EE; two categories were developed (a high-EE and low-EE). A series of *t*-tests revealed that therapists working with high-EE families were rated as *significantly* more adherent to BFM (assigning homework component only) than were therapists working with low-EE families; adherence to all other BFM components were *unrelated* to EE group.

Ellis and colleagues (2010) focused on a youth sample and evaluated the effects of parental beliefs about treatment effectiveness, psychopathology, family functioning (i.e., cohesion), and parent-child interaction styles on therapists adherence to MST principles. The sample consisted of 82 youth participants, their families, and three therapists. On average youth were 14.6 years of age (*SD* = 1.3). Youth were primarily male (84%), African-American (56%), and Caucasian (44%). The average annual income for these families was $17,550; the mean age for caregivers was 41.7 (*SD* = 9.6); and the average education level was 12.8 years. Therapists were trained in MST, had weekly consultant supervision, and weekly on-site supervision. Most therapists had master's degrees in social work, psychiatric nursing, family therapy, divinity, and rehabilitation counseling. The Therapist Adherence Measure (TAM), a 26-item parent report on therapist adherence to MST, was used to examine treatment adherence and administered at 1, 2, 3, 4, 5, 6 months after the start of treatment. Predictors were measured one month before the first TAM administration; parent-child interactions, family functioning, parent beliefs about treatment, and parental psychopathology. The

Children's Report of Parental Behavior Inventory (CRPBI; Schludermann & Schludermann, 1970) consisted of 30-items and was used to assess parental discipline and parent–child interactions. Family functioning was measured using a 20-item parent report, Family Adaptability and Cohesion Evaluation Scales-III (FACES-III; Olson et al. 1985), which examines family cohesion and adaptability (i.e., adjustment to family stressors). Parents' pretreatment expectations about treatment were assessed using the Behavior Intervention Rating Scale (BIRS; Elliot & Treuting, 1991), which measures parental expectations about treatment effectiveness, parental concerns about problems, parental beliefs about the need for parental involvement in treatment, parental beliefs that they have the ability to improve the situation with their child. Parental psychopathology was assessed using a self-report inventory of adult personality and psychopathology (Personality Assessment Inventory; PAI; Morey, 1991). Hierarchical linear models revealed that parental psychopathology, expectations about treatment outcomes, family functioning, and level of functional involvement in child-rearing practices were all *related* to MST adherence. Specifically, families with healthier functioning (higher closeness and adaptability), parents with more positive levels of concern regarding the youth's problems, and parents with absence of parental psychopathology facilitate adherence to MST; this was only true for the MST intervention aimed at family-therapist developing a working relationship.

Overall it appears that negative family characteristics of functioning (high EE, family problems, presence of parental psychopathology, lower levels of concern for youth's problems) interfere with treatment adherence for family-based therapies. Furthermore, it seems that negative family functioning affects treatment adherence

negatively; that is, treatment adherence is lower for the cases with more complex or negative family functioning. Despite these enriching findings, it is important to consider the limitations before making firm conclusions.

The study limitations primarily relate to issues with adherence measurement, problem areas, and sample diversity. First, two of the studies failed to rate treatment adherence and competence as separate dimensions of skills, despite both reflecting different concepts (e.g., Ellis et al., 2010; Weisman et al., 1998). Relatedly, one study had the same coders rate both adherence and competence simultaneously (e.g., Imel et al., 2011). Although there is minimal empirical support showing that one method is more valid and reliable than the other, it is possible that simultaneously rating both concepts increase risk for coder bias (e.g., concepts are rated similarly or halo/horn effects). Second, most studies included adult, primarily male, and more severe psychopathology samples (schizophrenia, manic symptoms, substance use), which limits the generalizability of the findings. Lastly, many of the studies included a small sample and examined hypotheses with the use of statistical analysis (e.g., *t*-tests) that limit the generalizability and interpretation of findings (e.g., *t*-tests only examine means, not individual scores). Future research must differentiate between concepts, include more diverse samples, and utilize statistical approaches that more readily allow for examining the intricate relationship between family functioning variables and therapist adherence.

Client/Family pretreatment characteristics summary. Together, these findings suggest that there are numerous client and family pretreatment characteristics that may influence treatment adherence. The studies have highlighted the influential role that youth-level (sex, age, personality traits, ethnic match, and youth functioning) and family-

level (demographics and family functioning) characteristics have on therapist adherence. However, there are only a handful of studies, and those that do exist, have primarily focused on MST or family-based therapies (versus individual-based therapy), antisocial behaviors (versus internalizing problems), and caregiver report of therapist adherence (versus observable coding methods). Research focusing on the integrity of child interventions in real-world settings has traditionally evaluated clinician behavior (e.g., Waltz et al. 1993), ignoring the influence of youth and parent/caregiver pretreatment characteristics such as youth ethnicity, readiness to engage in therapy, or parent expectations about the therapeutic process and psychopathology. Therefore, the purpose of the present study was to address this gap by assessing a variety of youth and caregiver pretreatment characteristics that potentially influence therapist adherence to a child-focused treatment, with a sample of youth diagnosed with anxiety.

The current literature focused on the relationship between pretreatment characteristics and treatment adherence has significant methodological weaknesses, including the reliance on caregiver-reported adherence; lack of reliable information about therapist adherence; and use of data analytic strategies that do not control for the effects of nesting of clients within therapists. Moreover, MST is the treatment approach examined most frequently, which raises concerns about generalizability to other treatment approaches and problem areas. It is clear that although progress has been made with this research endeavor (i.e., pretreatment characteristics-treatment adherence), it necessitates improvements. Accordingly, research is needed that examines the effects of client and family-level pretreatment characteristics on treatment adherence.

Therapist Pretreatment Characteristics

Now a review focused on the less frequently studied set of pretreatment characteristics: therapist factors. This is surprising given the potential importance of therapist-level predictors for treatment adherence. Given the paucity in research focused on the relation between therapist-level characteristics and treatment adherence, assertions based on relevant research and studies that examine these relationships directly are developed and presented next. In this section, the following therapist characteristics will be covered (a) demographics; (b) professional preparedness; (c) perceived supports; and (d) attitudes about evidence-based practices (EBPs).

Demographics. Research on therapist attitudes has consistently linked therapist demographic variables – age, ethnicity/race, level of education, training, primary discipline, and amount of professional experience – to attitudes toward adoption of evidence-based practices, such that psychology interns (versus full-time staff) present with more "openness" to new practices and willingness to engage in new practices when required to do so (Aarons, 2004; Aarons, 2005). It is possible that therapists who are younger in age or less experienced are also more willing to implement and engage in a specific treatment, and thus are more diligently adherent to the treatment protocol.

Only one study to date has focused on therapist demographics as they relate to treatment adherence (Schoenwald, Letourneau, & Halliday-Boykins, 2005). The study focused on the relations between therapist demographics and therapist adherence to MST. Participants were 1,711 youth/families and 405 therapists. Youth had a mean age of 16.2 years (*SD* = 2.40), and more than half of youth had been arrested at least once

(57.0%). Most youth were boys (65.1%) and Caucasian (58.1%), with 18.6% African-American, 5.8% Asian or Pacific Islander, 4.5% Hispanic, and 13.0% indicating another race or ethnicity. Most of the caregivers were women (88.1%) and Caucasian (64.4%), with a mean age of 43.0 (*SD* = 8.40). Nearly half of all caregivers (49.3%) reported annual incomes less than or equal to $20,000. Most of the caregivers were women (73.8%) and Caucasian (75.3%). Most therapists held a master's degree (60.0%) or bachelor's degree (31.9%), whereas only a few held doctoral or associate's degree. Approximately half of the therapists had three months or less experience with MST (51.5%). Caregivers completed the Therapist Adherence Measure (TAM; Henggeler & Borduin, 1992), a 26-itme Likert-format measure of treatment adherence to MST principles. Among other findings, random effects regression modeling revealed that ethnicity/race, sex, age, and marital status, and salary were *unrelated* to treatment adherence.

The dearth in studies focused on therapist demographics is a major weakness in this area of study. The main study limitations pertain to the use of a monthly caregiver rating of therapist adherence. The stability of caregiver ratings over administrations indicates the lack of a practice effect in completing the measure, which is a desirable characteristic. Conversely, such stability raises the possibility that the measure indexes some other construct such as likability of the therapist or therapeutic alliance, which may not vary much over a treatment episode. Also, as noted about previous studies, it is clear that the generalizability of findings to other forms of therapy (e.g., individual, group therapy) and problem areas (e.g., anxiety, depression) will likely differ. Overall, it is clear that little research exists in understanding the relationship between therapist

demographics and adherence. More research is warranted to best understand the relationship between therapist pretreatment characteristics and treatment adherence, especially for other therapeutic orientations and youth problem areas (e.g., CBT for anxiety).

Professional preparedness. Professional preparedness, or clinical years of experience, educational degree attained, or treatment orientation, can be important predictors of treatment adherence. A few bodies of research drive this hypothesis. First, research indicates that paraprofessionals (defined as providers without extensive clinical training) are more open to use of evidence-based practices compared to professionals with extensive training and experience (e.g., Aarons, 2005; Jensen-Doss, Hawley, Lopez, & Osterberg, 2009). This suggests that perhaps therapists with less professional preparedness may be more "open" to trying a specific treatment, and likewise, may more readily be a "clean slate" for learning new treatments and implementing them with their clients. Second, therapist level of education, training, and amount of professional experience have all been linked to attitudes toward adoption of evidence-based practices (Aarons, 2004; Aarons, 2005). Therefore, it is possible that those therapists with less experience and "clean slates" for learning new treatment approaches may adhere more to the treatment program compared to therapists with more professional preparedness.

Two studies have focused on professional preparedness as it relates to treatment adherence (Campbell, Buti, Fussell, Srikanth, McCarty, & Guydish, 2013; Schoenwald, Letourneau, & Halliday-Boykins, 2005). Campbell et al. (2013) examined associations between treatment fidelity and therapist education, experience, treatment

orientation, and perceived skills in a randomized, multi-site trial of Twelve Step Facilitation (TSF); TSF is an evidence-based treatment that seeks to increase client engagement in 12-Step activities beyond formal treatment. Study participants were 471 adults with stimulant abuse/dependence as either a primary or secondary drug of abuse, seeking admission or enrollment in outpatient treatment. Participants were randomly assigned to either treatment-as-usual (TAU; 5-15 hours of weekly treatment) or TAU plus TSF. All therapists (N = 39) at study sites (N = 10) were credentialed to provide substance abuse treatment and were familiar with the 12-Step orientation. Therapists were predominantly Caucasian (69%), women (69%), with a mean age of 51 years (SD = 9.4). Most therapists had at least five years of counseling experience and 53% had graduate degrees. Treatment fidelity was defined in context of five dimensions: treatment adherence (i.e., delivery of specific treatment content); treatment competence (i.e., skill of content delivery); global empathy (i.e., therapist effort to understand client perspectives); proscribed therapist behavior (i.e., behaviors that detract from general therapist skill and should not occur; e.g., excessive self-disclosure); and global session rating (i.e., overall session performance). Treatment fidelity was measured using the Twelve Step Facilitation Adherence Competence Empathy Scales (ACES; Campbell et al., 2013), a measure of the five dimensions based on a 6-point Likert scale. Nine independent coders rated a total of 966 audiotaped TSF sessions using the ACES. Coders were graduate students with an average of five years of clinical experience, seven years of research experience, and one year of coding experience. Coders completed a one-day training (i.e., watched a therapist training video) and achieved a criterion level of inter-rater reliability with the

coder expert on audio recorded sessions (practice sessions conducted by TSF counselors). Therapist demographic and professional preparedness characteristics included (a) therapist education (graduate degree vs. non-graduate degree); (b) therapist experience (<5 years vs. ≥5 years); (c) frequent use of 12-Step (yes vs. no); and (d) self-efficacy (i.e., counselor's confidence in basic, addiction counseling, and group counseling skills; Murdock, Wendler, & Nilsson, 2005). Among other findings, hierarchical models revealed that therapists with graduate degrees (versus non-graduate degree) had *significantly* higher adherence and global performance fidelity ratings. In addition, therapists reporting higher self-efficacy in basic counseling skills had *significantly* higher overall fidelity ratings.

Schoenwald et al. (2005) examined the relations between professional preparedness pretreatment characteristics and therapist adherence to MST. As described previously, participants were 1,711 youth/families and 405 therapists. Youth had a mean age of 16.2 years (*SD* = 2.40), and more than half of youth had been arrested at least once (57.0%). Approximately half of the therapists had three months or less experience with MST (51.5%). Caregivers completed the Therapist Adherence Measure (TAM; Henggeler & Borduin, 1992), a 26-itme Likert-format measure of treatment adherence to MST principles. Random effects regression modeling revealed that professional experience (i.e., degree field) and previous training were *unrelated* to treatment adherence.

The two studies focused on professional preparedness reveal conflicting findings related to the extent to which therapist professional preparedness play a role in treatment adherence. Schoenwald et al. found that education degree was unrelated to

treatment adherence, while Campbell et al. found that education level predicted treatment adherence (i.e., therapists with graduate degrees had higher adherence ratings than non-graduate degree therapists). There are a few possible reasons for this discrepancy. First, the two studies focused on different age groups (Campbell et al. on adults; Schoenwald et al. on youths), indicating that perhaps therapist pretreatment characteristics influence treatment adherence differently for these distinct age cohorts. Second, and possibly the most practical reason, the dearth in studies focused on therapist demographics and professional preparedness is a major weakness in this area of study. Finally, the studies differed in methodological rigor, including therapist sampling and adherence measurement; these limitations are explored in more detail next.

The study limitations primarily relate to issues with therapist sample and adherence measurement and methods. First, the therapist samples selected for the studies differed significantly. Although a similar percentage of therapists from both studies held graduate degrees (53% in Campbell et al.; 60%, Schoenwald et al.), it is possible that therapists differed on clinical experience to the treatment approach. For example, therapists in the Campbell et al. study were required to be credentialed in providing substance abuse services prior to beginning the study, which suggests that therapists were likely highly experienced in substance use treatments like 12-Step or TSF. Contrarily, approximately half of the therapists (51.5%) in the Schoenwald et al. study had three months or less of MST experience. These variations in therapist training could affect therapist adherence differently, suggesting that caution is needed in interpreting the results. Second, Campbell et al. failed to include basic

sociodemographic information (e.g., sex, age, income, education level) about the adult sample. This omission may not directly influence the study findings, which were focused on therapist characteristics, however, it limits study interpretations regarding generalizability and comparison to other study findings. For example, it is possible that the adult sample had a higher rate of client-therapist match based on sociodemographic variables (e.g., income, education level), possibly influencing treatment adherence differently; according to previously described studies, parent education level seems to influence treatment adherence (Schoenwald et al., 2003). Lastly, the method for measuring treatment adherence in the Campbell et al. study was a strength, as it was more objective – observational measure and independent coders – however, the measurement was based on a single adherence item. The item fails to capture unique aspects of the treatment because it compresses many treatment practices into a single item, making it difficult for a coder to base overall adherence impressions on a 6-point Likert scale. Given the paucity in research focused on the relationship between therapist demographic and professional preparedness characteristics with treatment adherence, more research is necessary to determine the extent to which therapist characteristics are related to treatment adherence.

Overall, it is clear that little research exists in understanding the relationship between therapist demographic and professional preparedness characteristics and treatment adherence. More work in this area is necessary to better understand the relationship between therapist pretreatment characteristics and treatment adherence, especially for other therapeutic orientations and youth problem areas (e.g., CBT for anxiety).

Attitudes about EBPs. Therapist attitudes about evidence-based practices (EBPs) may relate to treatment adherence for a few reasons. Primarily, research focused on therapist attitudes toward EBPs suggests that clinician attitudes can be a precursor to the decision of trying new practices and the affective component of attitudes can impact decision processes regarding innovation (Candel & Pennings, 1999; Frambach & Schillewaert, 2002). Aarons (2004; 2005) developed a theoretically driven measure to assess for EBPs, consisting of four domains: intuitive *appeal,* attitudes toward the organizational *requirements, openness* to the innovation, and perceived *divergence* of research-based innovation. Various studies have linked these various dimensions to therapist-level characteristics, including specialty of intervention (e.g., Stahmer & Aarons, 2009), level of education status (Aarons, 2005), and intern level status (Aarons, 2004; 2005). Recent theory-driven approaches to understanding and changing clinician behavior, the Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB), suggest that many behaviors that an individual performs can be predicted simply from a person's intentions to perform those behaviors – that is, intention to engage in a behavior is the key to whether people follow through with the behavior (Ajzen & Fishbein, 2005; Radecki & Jaccard, 1999). This is relevant to understanding how therapist attitudes about treatments may be linked to clinician intentions, which may then impact therapist behavior. It is possible that if providers decide to try a new practice, attitudes can impact decision processes regarding the actual implementation and use of the innovation (Aarons, 2005; Candel & Pennings, 1999).

To date, two studies have assessed the relationship between therapist attitudes about interventions and treatment adherence (Campbell, Buti, Fussell, Srikanth, McCarty, & Guydish, 2013; Schoenwald, Letourneau, & Halliday-Boykins, 2005). As described in the previous section, Campbell et al. (2013) examined the relationship between treatment fidelity and therapist pretreatment characteristics – attitudes about treatment – in a randomized, multi-site trial of Twelve Step Facilitation (TSF) for adults (n = 471) with stimulant abuse/dependence. See Table 1 and previous section for comprehensive details on the study. Treatment adherence was defined as the delivery of specific treatment content, and was measured via observational coding methods. Nine independent coders rated the audiotaped sessions using the Twelve Step Facilitation Adherence Competence Empathy Scales (ACES; Campbell et al., 2013). Measures for therapist beliefs about treatment included (a) therapist commitment to TSF (i.e., intention to integrate the TSF intervention into ongoing treatment practices; Hollenbeck, Williams, & Klein, 1989); and (b) general attitudes toward 12-Step groups and attitudes toward controversial aspects of 12-Step groups (i.e., 3-items and 9-items on Attitudes and Beliefs about 12-Step Groups Scale; Laudet, 2003; Laudet & White, 2005). Hierarchical models revealed that therapists reporting more positive attitudes toward the 12-Step groups and higher commitment to implementing the treatment post-clinical trial were both *significantly associated* with lower adherence ratings. In other words, it appears that the therapists with a more positive perspective on the treatment are actually less likely to adhere to the program. One explanation for this relates to social desirability; that is, therapists might feel pressured to report positive attitudes about evidence-based treatments despite not having positive perceptions about the

treatment. This in line with research suggesting that our mental health landscape has shifted to one that openly endorses such practices (Eliason, Arndt, & Schut, 2005; Hartzler, Baer, Dunn, Rosengren, & Wells, 2007), which likely perpetuates therapists to report positively and in a socially desirable manner.

Schoenwald et al. (2005) assessed the association between therapist perceptions about MST (at pretreatment phase of therapy) and therapist adherence to MST. Specifically, the authors were interested in understanding therapist's experience with MST, including therapist endorsement of the MST theoretical model, perceptions of similarity of the model to treatments previously provided, perceptions of the difficulty and rewards of doing MST, and difficulty presented by the flexible hours required to implement MST. The previous section and Table 1 provide more information on the study method; in brief, youth participants included 1,711 youth (M = 16.2, SD = 2.40) and 405 therapists. Approximately half of the therapists had three months or less experience with MST (51.5%). Therapists were asked to rate their experience with MST on a 5-point Likert scale ranging from 1 (not at all) to 5 (completely). Caregivers completed the Therapist Adherence Measure (TAM; Henggeler & Borduin, 1992), a 26-itme Likert-format measure of treatment adherence to MST principles. Among other findings, random effects regression modeling revealed that therapist perceptions that the flexible hours required to implement MST are problematic predicted lower adherence. Random effects regression modeling indicated that therapist endorsement of the MST model, perceived difficulty and rewards of doing MST, and perceived similarity to treatments previously used were *unrelated* to MST adherence. Therapist perceptions on the flexible hours required to implement MST was *significantly related* to

MST adherence; therapists who viewed the flexible hours required by the MST model as problematic had lower MST adherence scores.

The studies had two related limitations – measurement of therapist beliefs/attitudes. Both research teams (Campbell et al., 2013; Schoenwald et al., 2005) failed to use psychometrically sound measures for assessment of therapist beliefs/attitudes. Schoenwald and colleagues used a 5-point Likert scale to assess therapist perceptions on single item questions, while Campbell and colleagues were unclear about the scale's validity and reliability. The limitations in psychometric properties for an important concept of the study pose a threat to result interpretations and generalizations. A second, and related, issue pertains to the failure to control for variables that may influence attitudes, such as social desirability or knowledge about the treatments.

The findings for the link between therapist attitudes and adherence are mixed. Contrary to study hypothesis, Campbell et al. found that selecting therapists who are familiar with and endorse the treatment (12-Step-oriented therapy) may actually interfere with adherence to an EBT for substance abuse (Campbell et al., 2013). Contradictorily, Schoenwald et al. revealed that therapist beliefs about the difficulty/rewards of using the therapy and endorsement of the therapy (MST) was unrelated to adherence; while therapist who perceived the need for flexible therapy hours as difficult were also those therapists who adhered less (Schoenwald et al., 2005). It is clear that more research is necessary to better understand how therapist attitudes/beliefs may relate to therapist adherence.

Perceived support and supervision. Support for therapists and supervision are clearly organization-level pretreatment characteristics; however, the nature of how the data were collected (i.e., therapists perceptions) allow for these characteristics to also represent important therapist-level variables that may influence treatment adherence. Theory and research pertinent to this proposition has often been generated from the therapy burnout literature, as well as outside of psychotherapy and mental health services research. First, research on management practices in several industries suggests the importance of proactive strategies to sustain on-the-job performance of new skills and complex tasks (e.g., Burke & Baldwin, 1999). For example, research on increasing physician use of evidence-based medical procedures in the United States indicates that training with follow-up in the workplace is more effective than training alone (e.g., Grimshaw et al., 2001). Second, Kolb's multicomponent theory of experiential learning proposes that the acquisition of skills and understanding is optimized when reflection, conceptualization, planning, and practical experience occur within structured learning environments and that a facilitator, such as a supervisor or consultant, is needed to help the learner through the experiential learning cycle (Kolb, 1984). It is possible that an acquisition of skills to a therapeutic approach facilitate treatment adherence. Finally, the literature on clinician burnout shows that burnout is linked to reduced work engagement (Halbesleben, 2010), turnover (Green, Miller, & Aarons, 2013), and lower levels of job satisfaction (Prosser et al., 1997). All of these factors may also impact treatment adherence. For example, a therapist with lower engagement and passion for his/her work as a clinician, may lack motivation to pursue trainings focused on sharpening skills to a specific treatment, and thus affect his/her

overall adherence to a treatment. Likewise, a therapist with few perceived opportunities to receive supervision or guidance on a specified treatment practice, and this lack of support may influence his/her treatment adherence.

To date, two studies have examined therapists' perceptions of supports, and related constructs, such as access to a supervisor, therapist job satisfaction, and organization-level supports and effects on treatment adherence. In a recent study, Schoenwald, Sheidow, and Chapman (2009) used mixed-effects regression models to examine the relations among supervisor adherence to a clinical supervision protocol, therapist adherence, and changes in youth functioning. Relevant to this review is focus on the influence of supervisory adherence (i.e., clinical supervision to support the implementation of a treatment; Weisz, Donenberg, Weiss, & Han, 1995) on therapist adherence to MST. The sample consisted of 1,970 youth and their families seeking treatment for delinquent behaviors and substance use problems. The 429 therapists were primarily female (74%) and held master's degrees (61%, with another 32% holding a bachelor's degree, 3% holding doctoral degrees, and 3% having unspecified degrees). The primary clinical supervisors for therapists (n = 122) were primarily female (78%), and most held master's degrees (73%, with another 19% holding a bachelor's degree and 7% holding doctoral degrees). Therapists received weekly on-site group supervision, which necessitated therapists to provide a weekly case summary for each family. The supervisor reviewed these summaries and identified clinical priorities in advance of the supervision meeting. MST adherence was measured through parent-reports using the MST Therapist Adherence Measure – Revised (TAM-R; Henggeler, Borduin, Schoenwald, Huey, & Chapman, 2006). Supervisor adherence to the *MST*

supervisory manual was assessed using the Supervision Adherence Measure (SAM[2]; Schoenwald, Henggeler, & Edwards, 1998), a 43-item Likert-like measure completed by therapists on supervisor adherence at two-month intervals. The findings revealed that greater supervisor focus on adherence to treatment principles (i.e., SAM) *predicted* greater therapist adherence (i.e., TAM); supervisors with higher SAM scores on the Adherence to Principles subscale demonstrated a 12% higher TAM score (versus lowest SAM score for this subscale). The remaining SAM subscales were *unrelated* to therapist adherence.

Using the same data set, Schoenwald, Chapman, Sheidow, and Carter (2009) examined the relations among therapist adherence to MST for youth with serious antisocial behaviors, organizational climate and structure, and youth treatment outcomes. Although the study was focused on organization-level factors, conceptualizing this study under "therapist perceived supports" is important because of the way in which the organization-level data were collected – therapist-report surveys. Participants were 1,979 youth and families treated by 429 therapists across 45 provider organizations. The mean age for youth was 14.0 (*SD* = 2.35), and most were male (65.0%) and Caucasian (59.5%), with 19.3% of youth identified as African American, 6.4% Asian or Pacific Islander, and 14.8% other. The majority of therapists were female (74%) and held master's degrees (61%). Therapists treated on average four families each. Therapist adherence was assessed monthly during the treatment using caregiver

[2] The measure includes the following scales: Adherence to the Structure and Process of Supervision (e.g., "Case summaries were used during discussion of the cases"); Supervisor Promotes Adherence to the MST Treatment Principles (e.g., "Interventions discussed targeted sequences of interaction between family members"); Supervisor Promotes Use of the MST Analytic Process (e.g., "When interventions were not successful, discussion focused on identifying the barriers to success and actions clinicians should take to overcome them"), and Supervisor Promotes Clinician Development of the Competencies Needed to Implement MST (e.g., "Within the past two months, the supervisor and I have set goals for my development of specific competencies in MST").

reports on the MST Therapist Adherence Measure-Revised (TAM-R; Henggeler et al., 2006). Organizational climate and organizational structure were assessed at baseline and semiannually during the treatment portion of the study using ten scales from the Psychological Climate Questionnaire (Glisson & Hemmelgarn, 1998) and an organizational structure measure, respectively. For organizational climate, item responses were based on a five-point Likert-type and included concepts of psychological climate (i.e., work environment impact on one's own well-being), organizational climate, fairness, role clarity, role overload, role conflict, cooperation, growth and advancement, job satisfaction, emotional exhaustion, personal accomplishment, and depersonalization. Organization structure included items related to degree of formalization (i.e., explicit rules and procedures governing employee behavior) and centralization (i.e., degree to which authority and decision making are concentrated). The study revealed several interesting findings; job satisfaction, emotional exhaustion, and growth and advancement were *significantly associated* with therapist adherence. Specifically, therapists who perceived higher levels of job satisfaction relative to the average for their provider organization had significantly higher average level of caregiver-reported therapist adherence. Additionally, therapists who perceived higher levels of emotional exhaustion relative to their provider organizations had significantly lower average level of adherence. Finally, provider organizations with higher average growth and advancement scores had significantly higher adherence.

Some limitations of these studies should be noted. First, although therapist reports on organizational climate and structure are important, objective measures of organization climate/structure might supplement the findings; that is, having an

independent assessment team evaluate organization on these indices. Second, as has previously been highlighted, both studies included youth with antisocial problems, thus little is known about the generalizability of findings to internalizing problem types. It is possible that therapists working with behaviorally challenging youth (versus therapists working primarily with internalizing problems) are more likely to be affected by a lack of focused supervision (technical aspects of therapy) or lack of organizational support. This is an empirical question that deems further investigation.

Despite the limitations presented, the two studies suggest that therapist level and/or type of supports may impact treatment adherence for a family-based therapy. Specifically, greater supervisor focus and support with MST principles (supports for technical aspects of MST) is related to higher therapist adherence to MST; interestingly, other subscales of supervision related to general indexes of supervisory efforts to address the therapists' goals, skills, and competences (not technical supports) were unrelated to therapist adherence to MST. Additionally, therapists with more emotional exhaustion (i.e., psychological burnout) demonstrated less adherence to MST. These findings parallel previously discussed findings related to therapist burnout and its impact on client outcomes (e.g., Morse et al., 2012), reduced work engagement (e.g., Halbesleben, 2010), lower levels of job satisfaction (Prosser et al., 1997), and turnover (e.g., Green, Miller, & Aarons, 2013). It is possible that therapists with these deficiencies in support expend less effort in treatment adherence to a manual.

Therapist pretreatment characteristics summary. In this section, studies focused on the impact of therapist pretreatment characteristics on treatment adherence were examined; these included demographics, ethnicity/race, professional

preparedness, perceived supports, and attitudes about EBPs. The research on therapist pretreatment characteristics is sparse; to date, only eight studies have examined these relations. Overall, the findings suggest a few tentative hypotheses to probe or explore in future research. First, the research on the link between therapist demographics and professional preparedness on treatment adherence is mixed; which is incentive enough to explore this domain in future research. Second, the research focused on the influence of therapist perceived supports on treatment adherence provides some clarity; supervision appears to influence treatment adherence, such that help on technical aspects of the treatment was related to increased treatment adherence. Additionally, lower job satisfaction, emotional exhaustion, and lack of opportunities for growth within an organization all predict lower treatment adherence. Finally, the attitude – treatment adherence literature reveals mixed findings as well; negative attitudes about the model requirements (only therapist time flexibility) predicted lower adherence in therapists; and overall positive attitudes about the treatment model (substance use for adults) was related to lower adherence ratings. The mixed findings, coupled with the scarcity in research, call for more research to explore the influence of therapist pretreatment characteristic on treatment adherence.

Overall Summary

Although research on the outcome-integrity relationship has great importance to the field (e.g., Hogue, Liddle, Dauber, & Samuolis, 2004; Liber et al., 2010), few studies have examined the pretreatment characteristics that may influence treatment adherence. The current state of the literature that focuses on the relationship between child, family, and therapist pretreatment characteristics and treatment adherence was

summarized and critically reviewed. The study findings suggest that youth-, family-, and therapist-level pretreatment characteristic contribute to treatment adherence. The following characteristics were examined and deemed influential for therapist adherence: (a) youth-level characteristics - sex, age, personality traits, ethnicity/race, youth functioning; (b) family-level characteristics - family demographics and family functioning; and (c) therapist-level characteristics - therapist demographics, professional preparedness, perceived supports, and attitudes about EBPs. This area is underdeveloped, however, because most studies focused on specific problem areas (e.g., substance use, antisocial behaviors), treatment approaches (e.g., family-based therapies), and used parent-report methods for assessing treatment adherence. Together, these gaps shed light on the need for research to focus on other treatment modalities (e.g., individual CBT), treatments aimed at addressing internalizing problem areas (e.g., anxiety, depression), and objective methods for assessing treatment adherence (e.g., observational coding).

The purpose of this study was to examine the extent to which pretreatment characteristics influence therapist treatment adherence by using data sampled from the Child STEPs randomized effectiveness trial (Chorpita et al., 2013; Weisz et al., 2009) and the efficacy Kendall Coping Cat Study (Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008). In Child STEPs, therapists were trained to provide evidence-based treatments (EBTs) for three core problem areas (anxiety, depression, and conduct); whereas in the Kendall study, therapists were trained in CBT for youth anxiety. The focus of the current study only examined the anxiety arm of each study (i.e., youth diagnosed with anxiety disorders and anxiety-focused interventions only). An

observational coding measure, Cognitive-Behavioral Therapy Adherence Scale for Youth Anxiety (CBAY-A; see Appendix), was used to assess therapist adherence to CBT for youth anxiety. The CBAY-A was designed to be sensitive to common practice elements found in individual CBT for youth anxiety.

The purpose of this study was exploratory, aimed at understanding the extent to which client-, family-, and therapist-level pretreatment characteristics influence therapist adherence to youth CBT. Although it is certainly important to understand how organization- and system-level pretreatment characteristics are related to therapist adherence, the secondary data used for this study was limited to client, family, and therapist characteristics. The literature presented in the previous section provided evidence for the influence of pretreatment characteristics on therapist behavior (e.g., Campbell et al., 2013; Ryan et al., 2013; Schoenwald et al., 2003). The next section details the method utilized for the study.

Method

Overview

The objective of the study was to examine how therapist delivery of child CBT is influenced by pretreatment characteristics. Data for this study were drawn from two randomized trials (1) the Child STEPs randomized effectiveness trial (Weisz et al., 2012; Chorpita et al., 2013) and (2) the Kendall Coping Cat Study (Kendall et al., 2008). The current study only included youth diagnosed with a primary anxiety disorder and focused on anxiety-based interventions. Youth participants in both studies met the following criteria: (a) a minimum of two audible therapy sessions; and (b) received treatment from a single therapist (vs. multiple therapists). The first section will detail

information for each of the studies, including participant demographic information, treatment conditions, diagnostic and symptom measures, assessment procedures, treatment adherence measures, and the coding and sampling procedures employed. The final section will provide an overview of the analytic plan.

Participants and Recording Data

Child STEPs (CS) study. The Child STEPs (CS) study was a multisite project conducted over a two-year period in Massachusetts and Hawaii to examine the long-term impact of treatment (EBT) program design on the effectiveness of youth evidence-based treatment outcomes and procedures. In brief, the CS parent study consisted of 174 youth participants (ages 7 to 13 years) who were primarily diagnosed with anxiety, depression, and conduct problems. Three treatment conditions were implemented to target the three problem areas, including (a) usual care treatment, (b) a modular approach, and (c) a standard manualized treatment approach. The sample for the current study only included youth diagnosed with a primary anxiety disorder and treated with the modular and standard approaches; the treatment approaches were anxiety-focused interventions. The next sections will detail the CS sample used for the present study.

***Youth and family participants*.** The current study sample drew from the 38 youth participants (ages 7 to 13 years; *M* = 9.84, SD = 1.65) assigned to receive any one of the two anxiety-focused EBTs (described in later sections) and that were also primarily diagnosed with an anxiety disorder (31.6% of the parent study). Youth participants consisted of 52.6% male youth and were an ethnically/racially diverse sample, including 55.3% Caucasian, 26.3% Multiracial, 5.3% African American, 2.6%

Latino, 2.6% Asian American/Pacific Islander, and 2.6% other. Annual family income was less than $60,000 for 44.7% of the families. Youth were included in the parent study if they met the following two criteria (a) diagnosis of anxiety according to *Diagnostic and Statistical Manual of Mental Disorders,* 4th ed.; American Psychiatric Association, 2000) determined using the Children's Interview for Psychiatric Syndromes (Weller, Weller, Rooney, & Fristad, 1999a; 1999b); or (b) showed clinical elevations (T>65) on anxiety according to Child Behavior Checklist or Youth Self-Report (Achenbach & Rescorla, 2001). Youth were excluded if they presented evidence of mental retardation, pervasive developmental disorder or psychotic symptoms, bipolar disorder, or if their primary problem was inattention or hyperactivity. See Table 2 for youth and family descriptive information for the CS subsample used for this study.

Therapist participants. The parent study included 84 therapists from school-based and outpatient community settings in Massachusetts and Hawaii who delivered one of three treatment approaches in their respective settings. Consistent with criteria used for youth and parent participants, only therapists delivering an anxiety-focused EBT and treating youth with a primary anxiety disorder were included in the present sample, yielding a total of 26 therapists (31% of the parent study). The majority of therapists were female (80.8%) and over half were Caucasian (53.8%), while 23.1% identified as Asian American/Pacific Islander, 7.7% African American, 3.8% Multiracial, and 3.8% Latino. Therapist's age ranged from 25 to 59 (M = 40.34, SD = 9.66). Therapists ranged in years of clinical experience, 1.5 to 30, with an average of 6.79 years (SD = 8.09). See Table 2 for detailed therapist descriptive information.

Table 2.

Client and Therapist Descriptive Data by Study

Variable	*M (SD)* or %	
	CS Study	Kendall Study
Youth Level		
Age	9.84 *(1.65)*	10.27 (*1.81)*
Male	52.6	62.5
Race/ethnicity		
Caucasian	55.3	87.5
African-American	5.3	8.3
Latino	2.6	2.1
Asian-American/Pacific Islander	2.6	--
Multiracial	26.3	--
Other	2.6	2.1
Total no. diagnoses	2.5 (*2.11*)	3.04 (*1.47*)
CBCL		
Total	64.58 (*8.73*)	63.19 (*8.40*)
Internalizing	69.82 (*7.81*)	67.74 (*8.40*)
Externalizing	57.34 (*11.44*)	52.77 (*9.77*)
BIS		NC
Total	16.18 (*7.08*)	
Interpersonal	4.84 (*3.57*)	
School/Work	6.11 (*3.13*)	
Self-fulfillment	5.76 (*2.91*)	
Family Level		
Age	40.03 (*9.53*)	NC
Male	26.3	NC
Annual family income ($0 to 60K)	44.7	33.3
Therapist Level		
Age	40.34 (*9.66*)	NC
Male	19.2	6.7
Ethnicity/race		
Caucasian	53.8	80.0
African-American	7.7	--
Latino/Hispanic	--	6.7
Asian-American/Pacific Islander	23.1	6.7
Multiracial	3.8	--
Other	3.8	--
Degree type		NC
MA/MSW	38.1	
PhD	4.8	
PsyD	4.8	
MD	--	
EdD	--	
LCSW	19.0	
MFCC/MFT	--	
Other	33.3	
Years of experience	6.79 (*8.09*)	NC
Total hours of child therapy training	36.20 (*24.38*)	NC
Weekly hours of supervision	2.57 (*6.33*)	NC

Primary theoretical orientation		NC
CB/C/B	30.8	
Eclectic	23.1	
Family systems	3.8	
Psychodynamic	19.2	
Other	3.8	
Burn-out	3.71 (2.53)	NC
EBPAS		NC
Total	2.93 (*0.45*)	
Requirements	2.25 (*1.19*)	
Appeal	3.42 (*0.53*)	
Openness	3.11 (*0.62*)	
Divergence	2.95 (*0.64*)	

Note. Chars = characteristics; NC = not collected; CS = modular and standard individual cognitive behavioral therapy (ICBT) conditions of Child STEPs study (Weisz et al., 2012); Kendall Study = ICBT of Kendall et al. (2008) study. CBCL = Child Behavior Checklist; CB = Cognitive Behavioral; C = Cognitive; B = Behavioral.

***Treatment conditions*.** Therapists from the parent study were randomized into one of three treatment conditions using a cluster randomization design (Campbell, Elbourne, Altman, & the CONSORT Group, 2004) in which therapists were assigned to condition using blocked randomization according to therapist education level (doctoral vs. master's degree). Youths and their parents knew that a randomization process would be used for treatment allocation, however, were blind to treatment condition. The three conditions included (a) usual care condition (i.e., therapists engaged in treatment practices as usual without receiving training); (b) standard manualized treatment (SMT) condition, or separate EBTs; and (c) modular manualized treatment (MMT) condition, or integrated arrangements of EBTs. Details for the two latter treatment conditions are detailed next, as only youth and therapists participating in those conditions were included in the present study.

Standard manualized treatment (SMT) condition. Clinicians randomized to the standard manualized treatment (SMT; 57.7%) condition were trained on three different EBTs, each with a manualized treatment protocol and prescription of treatment session

order; however, therapists in this condition only targeted anxiety- focused treatments (Coping Cat; Kendall, 1994; Kendall, Kane, Howard, & Siqueland, 1990). There were 21 children in the SMT condition. *Coping Cat* is a CBT protocol prescribed for 16-20 individual sessions to address anxiety symptoms in youth. This protocol targets anxiety through skill-building (e.g., relaxation, cognitive restructuring), graduated exposure to feared stimuli, and the use of regular homework and in-session practice of skills (Kendall et al., 1990; Kendall, 1994).

Modular manualized treatment (MMT) condition. Therapists in the modular manualized treatment (MMT; 42.3%) condition were trained in and used the *Modular Approach to Therapy for Children with Anxiety, Depression, and Conduct Problems* (MATCH; Chorpita & Weisz, 2005). MATCH consists of modules designed to address three problem areas: anxiety, depression, and conduct problems, and correspond to treatment procedures delivered in Coping Cat (Kendall, 1994; Kendall et al., 1990), Primary and Secondary Control Enhancement Training (PASCET; Weisz, Thurber, Sweeney, Proffitt, & LeGagnoux, 1997), and Defiant Children (Barkley, 1997) protocols. Therapists in this condition were trained and instructed to focus on the primary problem area, based on standardized measures and the Top Problem Assessment (i.e., an evaluation of the severity ratings on the problems that the youths and parents had identified as most important; Weisz et al., 2011). In the emergence of interference; that is, if a crisis or new problem area impeded the use of the current sequence, therapists altered the sequence with the systematic use of other modules to address the interference, hence the “modular” nature of the intervention approach. For example, if anxiety was the primary focus but conduct issues arose (e.g., school refusal), the

therapist would use appropriate conduct modules to address the interference (e.g., reward chart), returning to anxiety after resolving the interference. Only those youth with a primary anxiety disorder and that received anxiety-focused EBTs were included in the current sample, yielding a total of 17 youth and families in the MMT condition.

Therapist training. Clinicians randomized into the SMT or MMT conditions were trained together over the course of six days, including two days designated for training in each problem area. Both groups received weekly consultation on study participant cases from study supervisors throughout the course of the study (Chorpita et al., 2013; Weisz et al., 2012).

Kendall Coping Cat Study. The Kendall Coping Cat Study (hereafter, Kendall Study) was a randomized clinical trial that took place in Pennsylvania and compared the relative efficacy of individual CBT (ICBT), family-CBT, and an active control condition (i.e., usual care) for youth diagnosed with anxiety disorders. The present study focuses on the ICBT condition from the Kendall Study, yielding a sample size of 55 youth (34.2% of parent sample). This section will present demographic information, treatment condition, and therapist training for the ICBT condition from the Kendall Study.

Youth and family participants. Participants in the ICBT condition of the Kendall Study consisted of youth between ages 7 and 14 years. Of the 55 participants from the parent study, only 48 were included in the final sample. Youth were excluded from the current sample if they received treatment from multiple therapists and/or if they had CBAY-A data from fewer than two sessions; at least two time points are necessary to assess for treatment adherence over time. Therefore 48 youth remained in the final sample, of which 37.5% were female, 87.5% Caucasian, with a mean age of 10.3 (*SD* =

1.81). Annual family income was less than $60,000 for 33.3% of the families. Youth were included in the present study if they met diagnostic criteria for a primary anxiety disorder (through the Anxiety Disorders Interview Schedule for Children; ADIS-C/P; Silverman & Albano, 1996) and were excluded if they presented with psychotic symptoms, mental retardation, a disabling medical condition, or youth taking of antianxiety or antidepressant medications. See Table 2 for a summary of youth and family participant information.

Therapist participant. There were 15 therapist participants (89.6% female), of which 66.7% Caucasian, 18.8% Latino, and 10.4% Asian/Pacific Islander (4.2% were missing data). See Table 2 for descriptive information on therapist participants.

Treatment condition. The ICBT treatment followed the same manual used in the CS Study, the Coping Cat (Kendall et al., 1990; Kendall, 1994), and included 16 to 20 individual weekly 60-minute sessions with youth participants (including two parent sessions). Treatment was divided into two phases; eight weeks of anxiety-focused skill building and education (e.g., relaxation, problem-solving) and eight weeks of graduated exposure to feared stimuli. Homework tasks were assigned to the child throughout the course of treatment to help solidify learned skills. Parent sessions (two of the 16 sessions) provided the therapist with an opportunity to inform the parents about treatment and the child's progress, collect information, and answer questions.

Therapist training. Therapists in the ICBT treatment condition studied written materials (manuals) and participated in training (six hours of workshops) before initiating supervised pilot experience. Workshops included didactic, role-plays, trainee demonstration, and videotape playback. Following training, and continuing throughout

the duration of the study, all therapists participated in weekly two-hour supervision groups.

Measures

The measures described in this section are organized according to type of pretreatment characteristic, and thus include a combination of instruments used in the CS and Kendall studies. The pretreatment characteristics include (a) youth and family variables; demographics, youth symptom severity, and youth symptom comorbidity; (b) therapist variables; demographics and professional preparedness and attitudes. Due to the limited overlap in variables available in both studies (e.g., "therapist age" was only collected for the CS parent study) only some variables were included in analyses with the two study samples, while other variables were analyzed for one study sample only (described in detail in later sections). Given the exploratory nature of this study, the initial pool of variables is described in this section (later winnowed down by preliminary analyses), and those final variables are then examined with the full and partial samples. Table 3, and the next few sections, provides a summary of all variables and method(s) of measurement used for each study.

Youth and family pretreatment characteristics. In both studies, youth and family participants were asked to partake in a number of questionnaires and interviews at the initial assessment phase of both studies, including demographic and symptom-based information. Youth were assessed for symptoms through specific and broadband measures. Parents were asked about common demographic and socio-demographic variables such as family income, self-identified ethnicity/race, family constellation information, and parental education. As Table 3 indicates, the youth and family-level

pretreatment characteristic variables fall under the following categories: (a) demographics, (b) youth symptom severity, (c) youth symptom comorbidity, and (d) youth functioning.

Youth/Family demographics. Both studies included information on youth age, sex, race/ethnic background, and annual family income (i.e., below or above 60K).

Youth symptom severity. Both studies gathered information at intake on youth symptom severity through similar (though not identical) methods – broadband instruments and structured interviews (total number of diagnoses).

Diagnostic data were drawn from interviews (semi/structured) in both studies. In the CS Study, data were derived from the Children's Interview for Psychiatric Syndromes, Parent Version (P-ChIPs; Weller et al.,1999a; 1999b). The P-ChIPs is a structured interview designed for assessing child psychopathology (based on the DSM-IV) in youth. The Kendall Study derived this information from the Anxiety Disorders Interview Schedule for Children (ADIS-C/P; Silverman & Albano, 1996), a semi-structured interview for parents and children aged 7 to 17 designed to establish diagnostic information. Separate diagnostic profiles are derived from child and parent interviews, which are then combined to form a consensus diagnosis. Good to excellent Interrater reliability has been demonstrated for the ADIS and P-ChIPs interview instruments (Silverman, Saavedra, & Pina, 2001; Weller, Weller, Fristad, Rooney, & Schecter, 2000, respectively). The diagnostic information from these instruments was used to generate a "total number of diagnoses" variable to represent symptom severity.

Both the CS and Kendall studies used the Child Behavior Checklist for Ages 6-18 (CBCL; Achenbach & Rescorla, 2001) Internalizing Problem and Total Problem scales

to examine youth symptom severity. The CBCL is a widely used 113-item caregiver-report measure of youth emotional and behavioral symptoms. Items are rated from a range of "0" not true to "2" very/often true. Validity and reliability of this instrument is well documented (Achenbach, Dumenci, & Rescorla, 2003; Achenbach & Rescorla, 2001). *T* scores of 65 or higher on either scale score were considered clinically significant. Overall, three variables were included in the initial pool of youth symptom severity variables.

Youth symptom comorbidity. Similarly to youth symptom severity, both studies gathered symptom comorbidity information through the broadband Externalizing Problem scale of the CBCL as an indicator of clinical impairment for comorbid symptoms. Thus, one variable was included in the initial pool to represent youth symptom comorbidity.

Youth functioning. In the CS Study, youth functioning was collected at intake through the Brief Impairment Scale (BIS; Bird, Canino, Davies, Ramírez, Chávez, Duarte, & Shen, 2005), a 23-item self-report instrument that evaluates youth impairment through three domains of functioning – interpersonal relations (parents, siblings, peers, teachers, and other adults), school/work functioning (attendance, performance, responsibility), and self-care/self-fulfillment (sports participation, hobbies, self-care, enjoyment) – and a global measure (total BIS). Scores range from 0 (no problem) to 3 (a serious problem). The instrument demonstrates strong psychometric properties (Bird et al., 2005). Overall, four variables were included in the initial pool for youth functioning.

Therapist pretreatment characteristics. In both studies, therapists were asked to complete information prior to the start of the treatment study. Specifically, therapists from both studies were asked to provide information on his/her sex and ethnic or racial background. In the CS Study only, therapists were asked to complete more comprehensive information about prior clinical training and beliefs/attitudes about the implementation and use of evidence-based practices. Table 3 provides a summary of the therapist-level pretreatment characteristic variables which fall under the following categories: (a) therapist demographics and (b) therapist professional preparedness and attitudes.

Therapist demographics. Information on therapist age, sex, and ethnicity/racial background was collected at the initial phase of both studies; however, therapist age was not collected in the Kendall Study. Overall, therapist age, sex, and ethnic/racial minority status were used in the initial pool of therapist demographic variables.

Therapist professional preparedness and attitudes. In the CS Study, therapists were asked to complete comprehensive questionnaires to gather information on educational and training background (e.g., years of clinical experience) and beliefs about the use of EBPs. Specifically, therapists were asked about professional preparedness, including years of clinical experience, primary theoretical orientation (categorical), and therapist perception of professional burnout (0 to 8 Likert-type scale, higher ratings indicating greater burnout).

In addition to professional training-focused information, therapist participants were also asked to complete the Evidence-Based Practice Attitudes Scale (EBPAS; Aarons, 2004), a 15-item self-report instrument used to examine attitudes about

adopting new or different styles of EBPs. The EBPAS consists of four theoretically derived subscales of attitudes toward adoption of EBP, including (a) appeal – extent to which the provider would adopt an EBP if it were intuitively appealing, could be used correctly, or was being used by colleagues who were happy with it; (b) requirements scale – extent to which the provider would adopt an EBP if it were required by an agency, supervisor, or state; (c) openness scale – extent to which the provider is generally open to trying new interventions and would be willing to try or use EBPs; and (d) divergence scale – extent to which the provider perceives EBPs as not clinically useful and less important than clinical experience; and (e) EBPAS total scale score – one's global attitude toward adoption of EBP. The overall Cronbach's alpha reliability for the EBPAS is good (alpha = 0.77), and subscale alphas range from 0.90 to 0.59 (Aarons, 2004). A mean score for each subscale was computed, resulting in five scale scores. Overall, six variables were included in the initial pool of variables to represent therapist professional preparedness and attitudes.

Table 3.

Summary of Pretreatment Characteristics with Method(s) of Measurement by Study

	Method of Measurement	
Pretreatment Chars	CS Study	Kendall Study
Youth Level		
Age	Demographic form [a]	Demographic form [a]
Sex	Demographic form [c]	Demographic form [c]
Ethnicity/race	Demographic form [b]	Demographic form [b]
Ethnic minority status	Demographic form [c]	Demographic form [c]
Symptom severity	P-ChIPs [a], CBCL-T, CBCL-I [a]	ADIS [a], CBCL-T [a], CBCL-I [a]
Symptom comorbidity	CBCL-E [a]	CBCL-E [a]
Functioning	BIS [a]	NC
Family Level		
Family income	Demographic form [c]	Demographic form [c]
Therapist Level		
Age	Demographic form [a]	Demographic form [a]
Sex	Demographic form [c]	Demographic form [c]
Ethnicity/race	Demographic form [b]	Demographic form [b]
Therapist degree type	Demographic form [b]	NC
Therapist years of experience	Demographic form [a]	NC
Hours of child therapy training	Demographic form [a]	NC
Hours of supervision	Demographic form [a]	NC
Primary theoretical orientation	Demographic form [b]	NC
Burn-out	Demographic form [a]	NC
Treatment attitudes	EBPAS [a]	NC

Note. Chars = characteristics; PChIPs = Children's Interview for Psychiatric Syndromes – Parent Version; Anxiety Disorders Interview Schedule for Children (ADIS); CBCL = Child Behavior Checklist (T=Total, I=Internalizing, E=Externalizing); BIS = Brief Impairment Scale; EBPAS = Evidence-Based Practice Attitudes Scale; NC = not collected. [a] = continuous variable; [b] = categorical variable; [c] = dichotomous variable

Treatment adherence. The present study assessed the extent to which pretreatment characteristics influenced therapist adherence to cognitive-behavioral practices for child anxiety by treatment setting (i.e., Kendall Study and CS Study). The Cognitive-Behavioral Therapy Adherence Scale for Youth Anxiety (CBAY-A) was used to comprehensively and systematically examine treatment therapist adherence to anxiety-based interventions. The CBAY-A is a 22-item scale used to measure the extent

to which therapists deliver cognitive-behavioral interventions to children with anxiety problems. Coders watched or listened to therapy tapes and rated the extensiveness of each therapeutic intervention item that considers two qualities: frequency and thoroughness. The frequency refers to the number of instances in which a therapist uses a specific cognitive behavioral intervention for child anxiety. In contrast, thoroughness, considers how intensively a therapist pursues a specific intervention. Together, these two components are considered when coding an overall extensiveness rating for each scale item. Specifically, coders rated each item on a seven-point Likert-type scale with the following anchors: 1 = *not at all,* 3 = *somewhat*, 5 = *considerably,* and 7 = *extensively.* For example, if an intervention was delivered at a low frequency, but in great depth, then the coder might consider that intervention item to be at an extensiveness rating of 4 or 5.

CBAY-A measure development. The procedures used for developing the CBAY-A included close modeling after the development of other observer-rated treatment integrity measures, including the Therapist Behavioral Rating Scale (TBRS; Hogue, Rowe, Liddle, & Turner, 1996), Rater's Manual for the Collaborative Study Psychotherapy Rating Scale-Form 6 (CSPRS-6; Hollon et al., 1988), and the Rater's Manual for Yale Adherence and Competence Rating Scale (YACS; Carroll et al., 2000). A study on the CBAY-A (22-items) has produced initial psychometric data on a treatment adherence measure for CBT for youth anxiety (Southam-Gerow et al., 2016).

The CBAY-A includes Standard Items, Model Items, and Delivery Method Items. The Standard Items are four individual items that are anticipated to occur in most or all meetings of a CBT session for child anxiety and are not specific to a single session and

thus are considered “standard” across most sessions. An example is the extent to which a therapist covers reviewing or assigning model-relevant homework from a past meeting (e.g., Standard Items: Homework Review/Assigned). The Model Items include 12-items that are individualized to CBT for anxiety. Generally speaking, though it is possible to only see a single item in one session, it is anticipated that more than one Model Item can be coded in each meeting (e.g., Model Item: Relaxation). The Delivery Method Items consist of six-items that are specific to how the therapist delivers a particular Model Item (e.g., Delivery Method: Didactic). See Appendix for the CBAY-A code sheet with all Standard, Model, and Delivery Method items.

Computing treatment adherence scores. The work by Southam-Gerow et al. (2016) on the psychometric properties of the CBAY-A demonstrated good reliability and validity for three conceptual scales: Skills Phase, Exposure Phase, and Total Model. For the purposes of this study, treatment adherence was computed based on this same conceptualization, which resulted in three treatment adherence scale scores (Skills Phase, Exposure Phase, and Total Model), with a total of 11-Model Items. Similarly to Southam-Gerow et al., the highest extensiveness score was used for each recording across the three subscales of Skills Phase, Exposure Phase, and Total Model for each session. For example, if a session consisted of an extensiveness score of six for Relaxation and a score of three for Emotion Education (both Model Items for skills-based intervention), the six extensiveness score was used for Skills Phase scale. After identifying the highest extensiveness score for both coders (as two coders observed and scored the same recordings), the two scores were summed and averaged for a final Skills Phase adherence score for that particular recording. This approach was used to

best capture the changes of treatment adherence across time. Because many CBT approaches for anxiety typically include one (or a few) foci Model item/s for each session, retaining the highest score for each recording is fitting.

Coding and session sampling procedures. Three female doctoral students in clinical psychology, one Asian-American and two Caucasian, comprised the coding team for the current study and at the start of the coding process averaged 26.0 years of age (*SD* = 2.0). Coders rated the extensiveness of therapeutic interventions were delivered during the session using the CBAY-A (Southam-Gerow et al., 2016). The coders were blind to treatment condition and coded sessions in a randomly assigned order. Two principal investigators (PIs) also coded sessions for the certification phase of the process (detailed next). Both PIs were Caucasian and male, with joint expertise in CBT for anxiety, EBTs, and therapy-process research.

***Coder training*.** Coders were trained in a group format by the PIs over the course of three months to reach adequate pre-study reliability at the item level (ICC(2,2) > .60; Cicchetti, 1994). Training progressed through three phases (a) first, coders received didactics through comprehensive read and discussion with the PIs of relevant articles, coding manual, and review of sessions with the PIs; (b) next, coders engaged in independent coding of recordings. In weekly meetings, results of the practice coding were discussed and specific illustrative segments reviewed; and (c) lastly, coders entered a certification phase. This phase required coders to reach adequate reliability for each item (ICC(2,2) of at least 0.60; Cicchetti, 1994) on a set of 32-criterion recordings consensus coded by the study PIs. After completing the certification phase,

coders began the official coding phase, which entailed coding randomly assigned sessions.

Quality assurance. Coders met regularly with the PIs for the duration of coding to prevent coder drift (Margolin et al., 1998). To assess for coder drift, reliability coefficients using newly scored recordings were recalculated and examined approximately every two weeks. Reinforcement training was provided to coders if an item fell below an acceptable reliability threshold (ICC < .60) or if an item declined in reliability over three assessment periods (approximately six weeks). Reinforcement training included additional group coding of challenging coding items and/or group discussion about coder discrepancies and issues with the coding manual.

Sampling of therapy sessions. All available recordings, except for the first and last sessions of each client (intake and termination sessions), were selected from each case for coding and randomly assigned to coders. The final sample of CBAY-A scores consisted of 697 sessions coded (358 session in SMT, 243 session in MMT, 96 ICBT from Kendall Study).

Data Analytic Strategy Overview

Analyses involved four main steps. First, preliminary analyses were conducted to (a) identify appropriate strategies for handling missing data and (b) examine sample comparability (i.e., parent study vs. select sample). Related to missing data for demographic and self-report measures, Little's Missing Completely at Random (MCAR) test was conducted in SPSS for all pretreatment characteristic variables of interest to examine the extent to which data were missing. With regards to comparability, sample bias preliminary analysis was conducted to determine whether significant differences

exist between (a) participants included in this sample from those in the parent study according to demographic variables and (b) treatment conditions (SMT MMT, ICBT from Kendall Study).

Second, interrater reliability was computed with intra-class correlation coefficients for each CBAY-A item. The model ICC(2,2) was used based on a two-way random effects model as this approach provides an estimate of the ratio of the true score variance to total variance. The recommendations provided by Cicchetti (1994) were used; ICCs below .40 reflect “poor” agreement, ICCs from .40 to .59 reflect “fair” agreement, ICCs from .60 to .74 reflect “good” agreement, and ICCs .75 and higher reflect “excellent” agreement.

Third, as a preliminary step to the primary analyses, data reduction procedures were implemented to reduce the pool of predictors for the primary analyses. Correlational analyses were used to examine relationships among predictor variables and between CBAY-A subscales.

Finally, hierarchical linear model analyses were conducted, using HLM 7.01 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011), to estimate changes in treatment adherence over time, based on the final pool of pretreatment characteristic predictors. Data analyses using growth curve modeling with HLM has several advantages over other approaches to examine longitudinal data. First, these techniques allow for the retention of the entire sample, despite missing data across repeated measures (in this case, therapist adherence data). Second, similar to repeated measures ANOVA, HLM provides information as to whether there is significantly change over time, on average, and the direction of that change. In addition to this, HLM allows

for the examining of the individual changes over time and between-subject differences in these changes. Third, HLM accounts for variation in time between data points across subjects, which results in a more precise estimation of change. Overall, this approach was deemed a good fit for addressing the questions raised in the current project.

Specifically, a two-level mixed models approach to analyzing hierarchical linear models was used (Raudenbush & Bryk, 2002). Theoretically, the data were nested at three levels: sessions (Level 1), youth/family (Level 2), and therapist (Level 3). Although the total therapist sample size was adequate for a three level model (e.g., Hox, 2002; Maas & Hox, 2004), recent simulation studies on multilevel models demonstrate that using a large proportion of singletons (e.g., therapist with only one client vs. multiple) results in positive bias in the intercept and slope variance estimates (Clarke & Wheaton, 2007). The present study sample consisted of 41 therapists; 34.1% of the therapists carried one youth case, 41.5% of therapists carried two youth cases, and only 24.4% of therapists carried more than two youth cases. As such, a two-level approach was deemed most appropriate for the primary analyses.

The two-level models included the three continuous treatment adherence variables obtained from the CBAY-A – Total Model, Skills Phase, and Exposure Phase subscale scores. Each dependent variable was entered separately for each model. Models were estimated using the following unconditional equations, with Skills Phase as an example:

Level-1 Model: $\text{Skills Phase}_{ij} = \beta_{0j} + r_{ij}$

Level-2 Model: $\beta_{0j} = \gamma_{00} + u_{0j}$

Mixed Model: $\text{Skills Phase}_{ij} = \gamma_{00} + u_{0j} + r_{ij}$

where Skills Phase$_{ij}$ is the adherence rating for the *i*th session of the *j*th youth at level 1; β_{0j} is the level 1 intercept and r_{ij} is the residual or unexplained variance. At level 2, the level 1 intercept, β_{0j}, is set as the outcome in a new regression equation with two components: the level 2 intercept,γ_{00}, and a random parameter, u_{0j}, which is the level 2 residual variance. The continuous predictor variables were grand-mean centered and time/session and categorical predictor variables were uncentered. Overall, three unconditional mixed models were built (Total Model, Skills Phase, and Exposure Phase), representing variance at two levels.

Results

Preliminary Analyses

The preliminary steps included assessment of the patterns of missingness in the data, evaluation of the extent to which the sample represented the parent sample (chi-square and unpaired *t*-tests), treatment condition comparisons (one-way ANOVA and chi-square tests), and the psychometric properties of the CBAY-A. Finally, correlational analyses were conducted to reduce the initial pool of pretreatment variables and enhance statistical power.

Missing data handling. For this study, there were two types of missing data; recordings and demographic and self-report measures. For both types of missing data, the patterns of missingness were examined and presented to determine whether the data were missing for systematic reasons (or not). The rationale and steps taken to address missing data are described next.

Recording data. A total of 1428 sessions were held (excluding the first and last sessions). For this study, sessions were not coded if the recording (a) was missing or

damaged; (b) was shorter than 15 minutes; (c) contained fewer than 15 minutes of audible conversation; or (d) contained less than 75% English language dialogue. In total, 892 (63% of full sample) met these criteria and were coded. They were broken down by group as follows: 359 SMT, 244 MMT, 193 UC, and 96 Kendall.

The sample was further reduced by participating youth for two additional reasons. First, because data were nested and the nesting was included in the analysis, only cases with two or more sessions with CBAY-A ratings were included. Second, only anxiety-focused sessions were retained for analyses; that is, session were retained only where anxiety interventions were delivered. These two additional inclusion criteria resulted in a final total sample of 86 youth participants and 697 sessions.

In the final sample of 86 youth, about 25% of all session recordings were missing per participant on average (SD=13.1%). The percentage of missing recordings resulted in a median of 23.3% and mode of 25%. There were two outliers that were more than three standard deviations away from the mean (Van Selst & Jolicoeur, 1993), with above 64% of sessions missing. Due to the descriptive and exploratory nature of the study, all youth participants were included in analyses if they had two or more sessions; thus, the two participants with missing above 64% of recorded sessions were retained in the sample.

Demographic and self-report measure data. Table 4 details the rates of missing data for each demographic and self-report measure variable.

Missing data ranged from a low of 2.1% for CBCL to a high of 21.1% for therapist child-focused training hours. Data for variables that were not collected for the Kendall Study were not considered “missing” and are flagged as “Not Collected (NC)” in tables.

As evident from Table 4, most youth/family and therapist pretreatment characteristic variables resulted in complete data for variables in the CS study, with the exception of youth ethnicity/race (2.5%), EBPAS (3.8%), family annual income (5.3%), therapist years of clinical experience (10.5%), and therapists' years of clinical training (21.1%). The Kendall study resulted in missing data for CBCL (2.1%), therapist ethnicity/race (4.2%), and family income (8.3%). It is suggested that variables with high rates of missing data (i.e., >15%, Rubin, 1976) warrant systematic steps for addressing the missing data.

Table 4.

Percent of Missing Data for Pretreatment Chars by Study

	Percent of Missing Data	
Pretreatment Chars	CS Study	Kendall Study
Youth Level		
Age	--	--
Sex	--	--
Ethnicity/race	2.6	--
CBCL-T	--	2.1
CBCL-I	--	2.1
CBCL-E	--	2.1
Total Dx	--	--
BIS	--	NC
Family Level		
Family income	5.3	8.3
Sex	--	NC
Therapist Level		
Age	--	NC
Sex	--	--
Ethnicity/race	--	4.2
Therapist years of experience	10.5 [a]	NC
Hours of child therapy training	21.1 [a]	NC
Hours of supervision	--	NC
Primary theoretical orientation	--	NC
Burn-out	--	NC
EBPAS	3.8	NC

Note. Chars = characteristics; CBCL = Child Behavior Checklist (T=Total, I=Internalizing, E=Externalizing); BIS = Brief Impairment Scale; EBPAS = Evidence-Based Practice Attitudes

Scale; NC = not collected; CS (n_{youth} = 38, $n_{therapist}$ = 26) and Kendall (n_{youth} = 48, $n_{therapist}$ = 15); [a] = ≥10% missing data

In addition to examining rates of missing data, it is important to assess the pattern of missing data. Little's Missing Completely at Random (MCAR) test was used to test whether the data were missing at random (Rubin, 1976). Little's MCAR test results in a chi-square to determine whether significant patterns of missingness exist among the variables of interest (i.e., the data set as a whole, not the individual variables), and a non-significant *p*-value indicates the data are MAR. Tests were computed separately for each treatment study (Kendall, CS). In all cases, results indicated that the data were MAR (CS: X^2 = 51.92, *df* = 50, *p* = 0.40; Kendall: X^2 = 1.41, *df* = 2, *p* = 0.49).

Although Little's MCAR test can be a useful tool, it is recommended that the test be used as supplementary to the examination of the rates of missing data for each variable (Schlomer, Bauman, & Card, 2010). That is, high rates are of missing data are still critical to address before manipulating the data for analyses, as findings may be biased (Schlomer et al., 2010). The only variable with >15% missing data was therapists' child therapy training. Given the high correlation between child therapy training and therapist years of experience, *r* (34) = .67, *p*<.01, child therapy training was omitted from further analyses and years of experience was retained.

Finally, patterns of missingness were examined with relation to demographic characteristics, as certain client or clinical characteristics might account for missing session data, suggesting that the data would not fully represent the sample it was designed to represent and could account for the findings (i.e., CBAY-A scores). As such, linear regression (for continuous predictors) and one-way ANOVAs (for

categorical predictors) were conducted to test if demographic characteristics predicted percent of sessions missing in the full sample for each study separately (Kendall Study and CS). For the Kendall Study, client's age, sex, ethnicity, family income, total number of disorders, CBCL Total T scores did not significantly predict missingness. Similarly, for the CS Study, youth age, CBCL Total T scores, total number of diagnoses, family income, and therapist characteristics (hours of training, supervision, burnout, and EBPAS) did not significantly predict missingness. Thus, using Rubin's (1976) taxonomy of missingness, we can at least conclude that the data are missing at random (MAR); the probability of missing data for a client is not a function of any of the aforementioned characteristics. Taken together, client and clinical factors were not associated with missing session data, so it is likely that missingness did not influence the pattern in CBAY-A findings.

Sample and group comparisons. Two sets of analyses were conducted for each study (CS and Kendall) to determine sample and group differences for (a) sample representation compared to the complete parent sample (CS-parent vs. CS and Kendall-parent vs. Kendall); and (b) treatment condition comparisons (SMT, MMT, Kendall). The analyses included chi-square and independent *t*-tests for sample comparisons and chi-square tests for treatment condition comparisons.

***Sample representation*.** Analyses were conducted to determine if the samples drawn for the current study were not significantly different from the parent studies with regards to demographic, clinical, youth, and therapist characteristics. Independent sample *t*- and chi-square tests were conducted for continuous and categorical variables, respectively, for CS and Kendall. As reported in Table 5 and 6, cases drawn for the

current study were representative of the parent and subsample for both the Kendall and CS studies across all client, family, and therapist variables. Overall, even with the removal of 17 participants from the CS parent study (out of 93) and the removal of seven participants from the Kendall parent study (out of 55), the current samples still were adequately representative of the parent samples and thus could be generalized to those samples.

Table 5.

Kendall Client and Therapist Descriptive Data and Comparisons across Groups

Variable	*M (SD)* or %		*T* or Chi Square
	Parent sample	Subsample	
Youth Level			
Age	10.38 (1.89)	10.27 (1.81)	0.28
Male	58.2	60.4	0.053
Race/ethnicity			0.53
Caucasian	83.6	87.5	-
Multiracial	0	0	-
African-American	12.7	8.3	-
Latino	1.8	2.1	-
Asian-American/Pacific Islander	1.8	2.1	-
Other	0	0	-
Total diagnoses	3.07 (1.54)	3.04 (1.47)	0.1
CBCL			
Total	63.48 (8.54)	63.19 (8.40)	0.17
Internalizing	67.46 (8.13)	67.74 (8.40)	-0.17
Externalizing	53.46 (10.44)	52.76 (9.77)	0.35
Family Level			
0 to $60K annual family income	36.4	33.3	0.08
Therapist Level			
Male	12.7	14.6	1.89

Note. Kendall = individual Coping Cat Study (Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008); For continuous variables, independent *t*-test analyses were conducted. For categorical variables, chi square analyses were conducted. CBCL = Child Behavior Checklist.

Table 6.

Child STEPs Client and Therapist Descriptive Data and Comparisons across Groups

Variable	*M (SD)* or %		*T* or Chi Square
	CS parent	CS subsample	
Youth Level			
Age	9.89 (*1.71)*	9.84 *(1.65)*	-0.14
Male	54.5	52.6	0.18
Race/ethnicity			0.58
Caucasian	50.9	55.3	-
Multiracial	30.9	26.3	-
African-American	5.5	5.3	-
Latino	3.6	2.6	-
Asian-American/Pacific Islander	1.8	2.6	-
Other	3.6	2.6	-
Total diagnoses	2.95 (*2.01*)	2.92 (*2.11*)	-0.06
CBCL			
Total	65.13 (7.81)	64.58 (8.73)	-0.38
Internalizing	69.51 (7.18)	69.82 (7.81)	0.20
Externalizing	58.22 (10.67)	57.34 (11.44)	-0.38
BIS			
Total	16.02 (8.21)	16.18 (7.08)	-0.06
Interpersonal	5.16 (3.95)	4.84 (3.57)	-0.40
School/Work	5.96 (3.57)	6.11 (3.13)	0.20
Self-fulfillment	5.47 (2.85)	5.76 (2.92)	0.48
Family Level			
Sex	27.3	26.3	0.01
0 to $60K annual family income	54.7	47.2	0.48
Therapist Level			
Age	40.91 (9.62)	40.89 (9.84)	-0.01
Male	20.0	15.8	1.73
Ethnicity/race			2.76
Caucasian	50.9	50	-
Black	5.3	3.6	-
Asian	23.7	21.8	-
Latino/Hispanic	--	--	-
Multiracial	5.3	3.6	-
Other	5.3	3.6	-
Years of experience	5.71 (7.10)	6.63 (8.11)	0.54
Hours of supervision	2.13 (4.98)	2.27 (5.70)	0.10
Primary theoretical orientation			6.23
CB/C/B	36.4	31.6	-
Eclectic	21.8	23.7	-
Family systems	3.6	2.6	-
Psychodynamic	12.7	15.8	-
Other	5.5	2.6	-
Burn-out	3.14 (2.44)	3.35 (2.50)	0.32
EBPAS			
Total	2.96 (.43)	2.89 (.45)	-0.76

Requirements	2.35 (1.13)	2.23 (1.20)	-0.48
Appeal	3.38 (.51)	3.36 (.56)	-0.13
Openness	3.12 (.58)	3.09 (.61)	-0.29
Divergence	1.01 (.60)	1.13 (.63)	-0.87

Note. CS = modular and standard individual cognitive behavioral therapy conditions of Child STEPs study (Weisz et al., 2012); CB = Cognitive Behavioral; C = Cognitive; B = Behavioral. For continuous variables, *t*-test analyses were conducted. For categorical variables, chi square analyses were conducted. CBCL = Child Behavior Checklist.
*p< .05, **p < .01, ***p < .001

Treatment condition comparisons. Omnibus tests were conducted to examine if changes in CBAY-A scores differed across treatment conditions (SMT and MMT) for the CS study; these comparison analyses were not necessary for the Kendall study because only one treatment condition was utilized. Specifically, *t*-test and chi-square analyses were conducted to test whether conditions differed in regards to demographic, clinical, youth, and therapist characteristics. A Bonferroni correction was used, which entails dividing the comparison alpha (.05) by the number of outcome variables (in this case, three). As evident from Table 7, SMT and MMT conditions differed only differed on therapist age and EBPAS-Appeal; therapists were significantly older and self-reported greater levels of appeal towards EBPs in the SMT condition. SMT and MMT did not significantly differ in any other youth/family or therapist-level characteristics. In general, the two conditions were comparable across a range of demographic and clinical factors, but it is important to consider the two differences when interpreting the findings.

The SMT and MMT conditions were analyzed as an aggregated variable and conceptualized as a single treatment condition in further analyses due, in part, to the largely similar demographic, clinical, youth, and therapist characteristics. Additionally, although the two conditions are arguably different based on the theoretical underpinnings of the two treatment approaches (modular versus standard), the actual

elements that a therapist uses and level of adherence with the CBAY-A should theoretically be very similar. Similarly, the MATCH approach (or MMT) defaults to an arrangement of practice elements that is similar to the order outlined in the standard condition (SMT or Coping Cat) but the only difference is that it allows for real-time adaptation to address any interference (see Chorpita, Bernstein, & Research Network on Youth Mental Health, 2008). Since the current study is not focused on examining sequence of delivery in the context of treatment adherence, there is minimal justification in examining the two conditions separately in the models. The benefit of combining the two conditions is further justified by the natural increase in sample size and therefore increase in statistical power.

Table 7.

Client and Therapist Descriptive Data and Comparisons across SMT and MMT.

Variable	*M (SD)* or %		*T* or Chi Square
	SMT	MMT	
Youth Level			
Age	9.77 *(1.51)*	9.94 (*1.89*)	-.30
Male	50.	56.3	.15
Race/ethnicity	68.2	43.8	8.58
Caucasian	18.2	37.5	
Multiracial	0	0	
African-American	4.5	0	
Latino	4.5	0	
Asian-American/Pacific Islander	0	6.3	
Other	68.2	43.8	
Total diagnoses	3.14 (2.17)	2.63 (2.06)	.73
CBCL			
Total	65.28 (7.49)	63.63 (10.39)	.57
Internalizing	70.00 (6.72)	69.56 (9.33)	.17
Externalizing	59.00 (11.28)	55.06 (11.64)	1.05
BIS			
Total	16.09 (6.56)	16.31 (7.96)	-.09
Interpersonal	4.59 (3.76)	5.19 (3.37)	-.5
School/Work	6.55 (3.14)	5.50 (3.12)	1.02
Self-fulfillment	5.50 (2.54)	6.13 (3.42)	-.65
Family Level			
Male	27.3	25.0	.03

0 to $60K annual family income	54.5	31.3	1.22
Therapist Level			
Age	43.56 (9.96)[a]	35.20 (6.81)	2.33*
Male	18.8	20.0	.01
Ethnicity/race			5.29
Caucasian	56.3	50.0	
Black	12.5	0	
Asian	12.5	40.0	
Latino/Hispanic	0	0	
Multiracial	6.3	0	
Other	0	10.0	
Years of experience	8.67 (9.80)	3.67 (1.68)	1.51
Hours of child therapy training	46.44 (28.61)	24.63 (11.62)	2.01
Hours of supervision	1.14 (.78)	4.15 (9.11)	-1.1
Primary theoretical orientation			6.85
CB/C/B	25.0	40	
Eclectic	12.5	40	
Family systems	6.3	0	
Psychodynamic	18.8	20	
Other	6.3	0	
Burn-out	3.55 (2.88)	3.90 (2.23)	-.31
EBPAS			
Total	3.06 (.46)	2.74 (.39)	1.80
Requirements	2.24 (1.25)	2.27 (1.15)	-.05
Appeal	3.65 (.35)[a]	3.08 (.58)	3.11**
Openness	3.30 (.68)	2.83 (.39)	1.98
Divergence	.95 (.71)	1.20 (.51)	-.95

Note. SMT = standard manual treatment; MMT = modular manualized treatment; CB = Cognitive Behavioral; C = Cognitive; B = Behavioral; CBCL = Child Behavior Checklist. *T*-test analyses were conducted for continuous variables. Chi-square analyses were conducted for categorical variables; [a] =*SMT > MMT,* [b] = *MMT > SMT; *p*< .05, ***p* < .01, ****p* < .001.

CBAY-A psychometric properties. The interrater reliability of the CBAY-A model item and scale scores were evaluated. Inter-rater reliability was calculated for each CBAY-A model item and scale scores based on a two-way random effects model for the average of the two coders, ICC(2,2); two coders observed and coded each session and the average of their ratings represent the unit of analysis (Shrout & Fleiss, 1979). Following the guidelines recommended by Cicchetti (1994), ICCs below 0.40 reflect “poor” agreement, 0.40 to 0.59 reflect “fair” agreement, and 0.60 to 0.74 reflect “good” agreement, and ICCs higher or equal to 0.75 reflect “excellent” agreement.

Model item interrater reliability. As reflected in Table 8, the range of each model item was close to the full possible range of the measure (1 to 7). These descriptive findings are congruent with findings from the CBAY-A psychometric study (Southam-Gerow et al., 2016). Interrater reliability for the CBAY-A model item scores were positively skewed and those with the highest skew were the items with the lowest mean scores, smallest ranges, the lowest reliability coefficients; these findings are generally consistent with those found in the initial psychometric study (Southam-Gerow et al., 2016). As evident from Table 8, interrater reliability ICCs ranged from 0.77 to 0.93 (*M* = 1.55, *SD* =1.15) for individual items under analysis (N = 697). The ICCs generally suggested strong reliability for the items.

Table 8.

Cognitive-Behavioral Therapy Adherence Scale for Youth Anxiety (CBAY-A): Descriptive data and reliability results for model items.

Item	Brief Description	Range	M	SD	ICC
Psychoeducation [a]	Therapist presents information about anxiety and its treatment	6.00	2.05	1.42	0.77
Emotion Education [a]	Therapist teaches about feelings, with an emphasis on anxiety, and/or encourages client to identify physical cues of feelings.	6.00	1.65	1.38	0.86
Fear Ladder [a]	Therapist works with client to create an ordered list of feared stimuli.	6.00	1.74	1.34	0.82
Relaxation [a]	Therapist teaches about how relaxation can be used to manage anxiety and/or encourages rehearsal.	6.00	1.43	1.16	0.80
Cognitive [a]	Therapist teaches about and/or encourages rehearsal of the role of thoughts in creating, maintaining, and reducing anxiety.	6.00	1.62	1.32	0.86
Problem Solving [a]	Therapist teaches about and/or encourages rehearsal of a multi-step problem-solving	5.00	1.12	.60	0.78

	model for coping with anxiety.				
Self-Reward [a]	Therapist teaches about and/or encourages rehearsal of evaluating and rewarding oneself for efforts to cope with anxiety.	6.00	1.14	0.74	0.93
Coping Plan [a, b]	Therapist describes a multi-step coping plan that involves the combination of more than one distinct anxiety management skill.	6.00	1.60	1.27	0.84
Exposure Preparation [b]	Therapist prepares client for an exposure task.	6.00	1.68	1.22	0.81
Exposure [b]	Therapist encourages client participation in one or more exposure tasks.	6.00	1.85	1.50	0.90
Exposure Debrief [b]	Therapist debriefs with client after exposure task(s).	5.00	1.47	1.02	0.81

Note. CBT = cognitive-behavioral therapy; [a] Items comprise the Skills Phase scale; [b] Items comprise the Exposure Phase Scale.

Scale interrater reliability. As evident from Table 9, descriptive information for CBAY-A scales, interrater reliability ICCs ranged from 0.72 to 0.84 (*M* = 4.15, *SD* =2.43) for scales under analysis (N = 697). The three CBAY-A scale scores were not skewed and appeared normally distributed.

Table 9.

Cognitive-Behavioral Therapy Adherence Scale for Youth Anxiety (CBAY-A): Descriptive data and reliability results for scales

Scale	M	SD	ICC
Skills Phase	4.06	1.75	0.84
Exposure Phase	3.78	1.61	0.72
Total Model	4.60	1.49	0.82

Data reduction. Procedures to reduce the pool of predictors were conducted to enhance power for the primary analyses. These preliminary analyses were conducted separately for continuous first and then categorical predictor groups. Inter-correlation

analyses were conducted between continuous variables to omit highly correlated variables using a threshold correlation of 0.70, above which would were omitted from further analyses. Similarly, for categorical predictor variables, point biserial correlation analyses were first conducted to identify statistically significant differences to omit highly correlated variables using a threshold of 0.70. Because multiple comparison tests were conducted, the alpha level was adjusted to minimize Type I error using the Bonferroni correction (e.g., Jaccard & Guilamo-Ramos, 2002), which entails dividing the comparison alpha (.05) by the number of outcome variables (in this case, three) and then using this as the critical alpha level for each univariate analysis (in this case, .017).

After these initial steps, appropriate (i.e., correlational) analyses were conducted between the variables retained and the three CBAY-A subscales (Total Model, Skills Phase, and Exposure Phase) to further identify variables for model building. The criterion used to retain predictors following these analyses was that the predictor needed to be significantly related to at least one of the scale scores at the $p \geq .05$ level.

Relationship among continuous predictors. The first step involved reducing the set of predictors by eliminating redundant variables. Pearson correlations were conducted to examine the relationship among continuous predictors. As suggested by Tabachnick and Fidell (2001), a threshold of 0.70 was used as a cut-off threshold to omit one of the two variables from further analyses; variables were retained if the Pearson correlation coefficient was $-0.70 < r < 0.70$ and omitted if the Pearson correlation coefficient was $-0.70 \geq r \geq 0.70$. Table 10 shows the results of these analyses. The following variables resulted in correlations higher than 0.70: (a) CBCL Total and CBCL Internalizing, $r\,(85) = .81$, $p < .001$; (b) CBCL Total and CBCL Externalizing, $r\,(85) = .80$,

p <.001; (c) BIS Total and BIS Interpersonal, *r* (38) = .75, *p* <.001; (d) BIS Total and BIS School/Work, *r* (38) = .76, *p* <.001; and (e) EBPAS Total and EBPAS Requirements, *r* (37) = .70, *p* <.001. The correlational findings, coupled with theoretical justification, resulted in the 13 retained (out of the initial pool of 19) variables for further analyses; these variables included child age, total diagnoses, CBCL Internalizing, CBCL Externalizing, BIS Total, caregiver age, therapist age, therapist years of experience, therapist supervision, therapist burnout, EBPAS Total, EBPAS Openness, and EBPAS Divergence. The justifications for those decisions are detailed next.

The CBCL Internalizing and Externalizing variables were retained for further analyses, while the CBCL Total variable was omitted for the following reasons (a) given the primary anxiety focus of the study, it was considered more conceptually relevant to include an anxiety-based measure for this sample rather than a broad total score and (b) given the importance of understanding the impact of child symptom comorbidity on treatment adherence, the CBCL Externalizing variable was retained.

The BIS Total variable was retained, while BIS subscales were omitted. The correlation between BIS Total and the BIS subscales was high; Interpersonal *r* (38) = .75, *p* <.001, School/Work *r* (38) = .76, *p* <.001, and Self *r* (38) = .67, *p* <.001. The original psychometric study for the BIS resulted in low inter-correlations among the three subscales (0.27-0.49), suggesting that each is correlated but a separate sub-construct of global impairment (Bird et al., 2005). Since the correlations among subscales for the current sample differed from the original studies, the subscales were highly correlated (0.67-.0.76), it can be argued that an overall total score would suffice

to measure impairment. As such, the BIS Total variable was retained, while the three subscale variables were omitted.

The EBPAS Total and the Openness and Divergence subscales were retained, while Requirements and Appeal were omitted given their high inter-correlations with the total score; Requirements r (37) = .70, p <.001, Appeal r (37) = .69, p <.001, Openness r (37) = .54, p <.001, and Divergence r (37) = -.41, p <.05. Overall, 13 continuous variables were included for further analyses.

Table 10.

Correlations among Continuous Variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	**Child age**																		
2	**Total dx**	-.19																	
3	CBCL Total	-.11	.56**																
4	**Internalizing**	-.09	.49**	.81**															
5	**Externalizing**	-.12	.45**	.80**	.45**														
6	**BIS Total**	.08	.47**	.61**	.46**	.52**													
7	Interpersonal	-.07	.53**	.58**	.40*	.52**	.75**												
8	School/Work	.12	.24	.41**	.17	.47**	.76**	.34*											
9	Self	.18	.27	.31**	.44	.12	.67**	.25	.33*										
10	**Caregiver age**	.07	-.22	.09	.09	.02	-.14	-.26	-.05	-.03									
11	**Therapist age**	.20	.01	.08	.04	-.01	-.03	-.03	.13	-.18	.12								
12	**Years of experience**	.09	.08	-.06	.03	-.01	-.22	-.18	-.10	-.23	.20	.40*							
13	**Supervision**	-.09	-.17	-.54**	-.50**	-.39	-.41*	-.26	-.33	-.40*	-.26	-.12	-.05						
14	**Burnout**	.05	.24	-.04	-.02	-.12	-.15	.06	-.42*	-.04	.02	-.29	.05	.29					
15	**EBPAS Total**	-.21	.05	.00	-.05	.18	.00	.14	.04	-.11	-.40*	.15	-.22	-.03	-.18				
16	Requirements	-.37*	.16	.20	.09	.32	.24	.29	.11	.19	-.41*	-.22	-.57**	-.20	-.14	.70**			
17	Appeal	-.09	-.09	-.24	-.23	.00	-.13	.01	-.01	-.26	-.29	.18	.22	.03	-.11	.69**	.27		
18	**Openness**	.06	-.24	-.25	-.24	-.12	-.30	-.24	-.06	-.34	-.05	.25	.17	.20	-.37	.54**	-.09	.54**	
19	**Divergence**	-.14	-.14	-.08	-.11	-.03	.06	-.08	.04	.13	.06	-.45**	-.17	-.08	-.19	-.41*	.07	-.05	-.27

Note. **Bolded** predictors retained for further analyses based on correlational results and/or conceptual relevance; dx= diagnoses
*p< .05, **p < .01

Relationship between continuous predictors and CBAY-A subscales.

Further analyses were then conducted with the 13 retained variables to identify variables that would be used for the primary analyses. First, correlational analyses were conducted to examine the relationship between continuous predictors and therapist adherence (i.e., CBAY-A scales) and highly correlated variables were retained. Specifically, using the suggestion by Tabachnick and Fidell (2001), a Pearson correlation coefficient of 0.20 was set as the threshold for retention of continuous predictors, such that variables were retained if the Pearson correlation coefficient was $0.20 \geq r \geq 0.20$ and omitted if the Pearson correlation coefficient was $-0.20 < r < 0.20$. Table 11 shows the results of Pearson correlational analyses. Second, in conjunction with correlational results, literature support was used to determine the final list of continuous variables in situations where correlational significance and/or threshold were not met. The following five variables met the correlational threshold: child age, total diagnoses, therapist age, therapist burnout, and EBPAS Openness. When applying the theoretical justification criterion to these five, only four continuous variables were retained for the primarily analyses: total diagnoses, therapist age, therapist burnout, and EBPAS Openness. Therapist age was the only variable evident for holding to the set criterion (threshold correlational value, literature support), and thus was retained for primary analyses, while the other three variables met only a select criterion, therefore justifications for decisions to retain are detailed next.

The total diagnoses variable was retained as it was significantly related to the exposure therapist adherence subscale. Research is consistent with this finding such that more “extreme” levels of symptomatology (e.g., problems with peers, psychotic

symptoms, criminal/substance abuse experiences) interfere with therapist adherence; whereas, the less overtly challenging behaviors (e.g., internalizing symptoms) or less complexity of the case, may not significantly disrupt the flow of MST or family-based therapies (Ryan et al., 2013; Schoenwald et al., 2005; Schoenwald et al., 2003). As such, this variable was used in the primary analyses, while the CBCL Internalizing and Externalizing variables were omitted.

Therapist burnout was retained, while other therapist professional/training-type variables (i.e., related to professional/training) were omitted, as therapist burnout was the only variable of this type that resulted in a significant correlation with therapist adherence. Furthermore, therapist burnout is empirically and theoretically believed to relate to treatment integrity (e.g., Morse et al., 2012; Schoenwald et al., 2003, 2009). As such, therapist burnout was retained, while therapist years of experience and hours of supervision were omitted.

The EBPAS Openness subscale was retained as the correlational value neared the correlational threshold and the significance level met the criteria. The EBPAS Total scale was omitted, however, despite having a similar correlational value and significance level. Both scales were highly correlated, therefore, it was evident that one subscale alone would represent the concept of therapist attitudes about EBPs sufficiently. The Openness subscale is arguably a more focused and objective representation of therapist openness to EBPs rather than a convoluted total score of other aspects of therapist attitudes (e.g., appeal, divergence). As such, EBPAS Openness was retained for the primary analyses.

Child age was omitted from further analyses. There was one significant correlation between child age and therapist adherence (CBAY-A Total Phase), however, the correlational value was considerably low. Additionally, research focused on child age and therapist adherence consistently shows a null relationship between the two variables (e.g., Ellis et al., 2010; Schoenwald et al., 2003). As such, child age was not retained for primary analyses.

Overall, four correlated continuous variables were used to develop and evaluate models for treatment adherence with the use of hierarchical level modeling; the retained continuous variables are bolded in Table 11.

Table 11.

Correlations among Continuous Predictor Variables and Total Model, Skills Phase, and Exposure Phase Subscales of the Cognitive-Behavioral Therapy for Youth Anxiety-Adherence Scale (CBAY-A).

	CBAY-A subscale					
	Total Model		Skills Phase		Exposure Phase	
Predictor	*r*	*p*	*r*	*p*	*r*	*p*
Child age	-.105 *	0.01	-0.02	0.62	-0.058	0.155
Total dx	-0.054	0.18	0.011	0.79	-.129***	0.001
CBCL Internalizing	-0.034	0.41	0.019	0.64	-0.06	0.14
CBCL Externalizing	0.023	0.57	0.069	0.092	-0.057	0.16
BIS Total	-0.081*	0.047	-0.02	0.621	-.092*	0.024
Caregiver age	-0.015	0.722	0.003	0.947	0.07	0.102
Therapist age	.100*	0.014	**.217*** **	.00	-0.066	0.105
Years of experience	0.005	0.899	0.023	0.597	-0.039	0.358
Supervision	0.028	0.488	0.015	0.719	0.006	0.877
Burnout	-0.061	0.135	-.185***	.00	0.063	0.119
EBPAS Total	0.162***	.00	.120**	0.003	0.042	0.299
Openness	.147***	.00	.172***	.00	0.022	0.589
Divergence	-0.016	0.696	-0.007	0.858	-0.02	0.626

Note. **Bolded** retained for further analyses, *p< .05, **p < .01, ***p < .001

Relationship between categorical predictors and CBAY-A subscales. From the pool of seven categorical variables, point-biserial correlational analyses were conducted to identify highly correlated variables with the outcome variables. Categorical variables were dummy coded. Consistent with the previously stated criteria, two standards were applied to retain variables. To be retained, a variable needed to meet either standard. First, a correlation coefficient exceeded an absolute value of 0.20 ($-0.20 \geq r \geq 0.20$). Table 12 presents correlational results. Second, past research or theoretical rationale suggested strong support for a relationship. Only the youth ethnicity/race variable met the correlational threshold. The correlational findings, coupled with theoretical justification, ultimately resulted in two retained (out of the pool of seven) categorical variables for the primarily analyses; these variables included youth ethnicity/race and therapist orientation. Theoretical orientation was retained based on theoretical justification, detailed next.

Related to child characteristics, only one variation of the youth ethnicity/race variable met both standards for retention (Caucasian vs. Non-Caucasian youth); other forms of youth ethnicity/race variables did not meet this criterion. Because youth ethnicity met both standards, the variable was retained as dichotomous youth Caucasian variable; all other child ethnicity/race variables were excluded.

Related to therapist characteristics, only the group of therapists self-identified as eclectic (versus non-eclectic) were significantly correlated with therapist adherence and neared the correlational threshold. Moreover, therapist treatment orientation is theoretically believed to influence therapist adherence (e.g., Aarons, 2005). The literature is sparse in this specific area of research. Given the significant correlation with

eclectic, this variable was retained for primary analyses. Furthermore, given that the adherence measure used for the present study is developed with CBT in mind, it was only prudent to explore the influence of CBT treatment orientation on therapist adherence. As such, both CBT (versus non-CBT) and eclectic (versus non-eclectic) variables were retained for primary analyses.

Table 12.

Point-Biserial Correlations among Categorical Predictor Variables and Total Model, Skills Phase, and Exposure Phase Subscales of the Cognitive-Behavioral Therapy for Youth Anxiety-Adherence Scale (CBAY-A)

	CBAY-A subscale					
	Total Model		Skills Phase		Exposure Phase	
Predictor	r_{pb}	*p*	r_{pb}	*p*	r_{pb}	*p*
Child sex	.01	.74	-.003**	.00	-.05	.16
Child eth/race						
Caucasian vs. Non	.18**	.00	.22**	.00	.02	.57
Black vs. Non	-.09*	.01	-.10*	.012	-.05	.21
Latino vs. Non	-.004	.92	.02	.54	-.04	.34
Asian vs. Non	.002	.95	-.07	.06	.11*	.003
Multi-cultural vs. Non	-.14**	.00	-.15**	.00	-.04	.31
Other vs. Non	-.02	.58	-.06	.11	.03	.48
Caregiver sex	-.19	.64	-.08	.07	.03	.42
Family income	-.008	.85	-.01	.79	.004	.93
Therapist sex	.09*	.015	.14**	.000	-.03	.47
Therapist eth/race						
Caucasian vs. Non	.02	.57	.05	.60	-.03	.38
Black vs. Non	-.01	.88	-.07	.07	.09*	.016
Latino vs. Non	.13**	.00	.09	.02	.11*	.006
Asian vs. Non	-.11*	.01	-.17**	.00	.005	.89
Multi-cultural vs. Non	.05	.18	.13**	.001	-.006	.87
Other vs. Non	-.09	.01	-.11*	.005	-.01	.83
Theoretical orientation						
C/B/CB vs. Non	-.02	.59	-.07	.08	.03	.43
Eclectic vs. Non	-.16**	.00	-.11*	.003	-.11*	.003
Family Systems vs. Non	-.03	.44	.01	.79	-.06	.11
Psychodynamic vs. Non	-.06	.13	-.06	.11	.03	.49

Note. **Bolded** predictors were retained for further analyses based on results and/or conceptual relevance; C = Cognitive, B = Behavioral, CB = Cognitive-Behavioral; *p < .016, **p < .001.

In sum, both statistical and rational criteria were used to reduce the set of predictors and establish the final set used for the primary analyses. In total, six core variables were tested in in model building; these included four continuous and two categorical variables: youth ethnicity/race, total diagnoses, therapist age, therapist burnout, EBPAS Openness, and theoretical orientation.

Primary Analyses

Hierarchical linear modeling (HLM 7.01; Raudenbush et al., 2011) was used to predict changes in treatment adherence (CBAY-A Total Model, Skills Phase, Exposure Phase) over time (i.e., weeks in treatment) with pretreatment characteristics. Multilevel modeling is a method of data analysis that permits analysis of nested data structures. Specifically, two levels were used in which repeated sessions (level 1) are nested within client/therapist dyads (level 2). The model-building process entailed two steps for the three CBAY-A subscales for both studies separately (Kendall and CS) including (1) identifying the best fit growth curve model without predictors, compared to the unconditional model (i.e., no time examined); and (2) examining the main effects of pretreatment characteristic predictors on each model. Recommendations provided by Enders and Tofighi (2007) were used to inform centering strategy; time was uncentered, categorical variables were uncentered, and continuous variables were grand-mean centered. Cohen's *d* effect sizes were calculated for predictor variables and *Pseudo* R^2 was calculated to determine the effect size between unrestricted and conditional models.

Model-building progressed in a sequential order with HLM. First, an intercept-only model (i.e., unconditional model) was developed and used comparatively to

sequential models with time terms (i.e., unconditional and linear). Second, the growth curve models were compared based on the difference between -2Restricted Log Likelihood Deviance (Singer & Willet, 2003). If the deviance difference was significant (using a chi-square table at p <.05), the extended model indicated incremental improvement from the previous model and the model extension was considered for optimal fit. These two steps were completed for each CBAY-A subscale (Total Model, Skills Phase, and Exposure Phase) before adding any predictor variables to each model.

The significance value for each y-intercept predictor coefficient was examined as a preliminary step. Additionally, two types of indicators were used to examine the magnitude of effects (a) Cohen's *d* to assess the magnitude of effects for pretreatment characteristic predictors; and (b) *Pseudo* R^2 for model comparisons. Cohen's *d* effect sizes were used to assess the magnitude effects for each predictor in accordance with the established guidelines (Cohen, 1988), in which 0.2 is considered a small effect, 0.5 medium, and 0.8 a large effect. The effect sizes for individual predictors were computed following Feingold's (2009) recommendation to divide the parameter or predictor coefficient (β_{0j}) by the raw data standard deviation for that particular predictor (SD_{raw}), or $d = \beta_{0j} / SD_{raw}$. *Pseudo* R^2 was used to examine the magnitude effects for models, as this is an estimate of the amount of variance accounted for by comparing models (e.g., unconditional model vs. conditional model). The *Pseudo* R^2 was calculated using the following equation (Kwok, Underhill, Berry, Luo, Elliot, & Yoon, 2008) and because the *Pseudo* R^2 is the equivalent of $R^2 \Delta$ in OLS regression, Cohen's (1988) guidelines for R^2

Δ were followed: .02 represented a small effect size, .13 represented a medium effect size, and .26 represented a large effect size.

$$Pseudo\ R^2 = \frac{u_{unconditional} + u_{conditional}}{u_{unconditional}}$$

The predictors identified in preliminary analyses were examined separately for each CBAY-A subscale by study group, but presented by predictor-level (client/family, therapist). Important to note that for the Kendall study, predictors included youth total diagnoses and youth ethnicity/race; whereas for the CS study, predictors included youth total diagnoses, youth ethnicity/race, therapist age, therapist burnout, therapist EBPAS, and theoretical orientation.

Kendall Study. The process for building each model resulted in two sequential steps. The first step entailed identifying the best fit growth curve model and comparing it to the unconditional model (i.e., no time examined). The second step entailed adding predictors into the model and comparing it to the best fit growth curve model (i.e., examining the main effects of pretreatment characteristic predictors). Each section is organized by therapist adherence subscale (Total Model, Skills Phase, and Exposure Phase) to examine the changes in therapist adherence over time, followed by results for pretreatment characteristic predictors including youth ethnicity/race and youth total diagnoses. Table 13 details model-building results for the Kendall Study.

Table 13.

Kendall Study: Multilevel Models of CBAY-A Subscale Scores with Pretreatment Predictors

CBAY-A Subscale	Coefficient	S.E.	ES	Deviance	*n* Parameters in Model
Total Model Subscale					
Base Linear Model				261.24	2
Intercept (first session value), γ_{00}	6.19***	0.30	N/A		
Slope (change over time in weeks), γ_{10}	-0.04	0.06	N/A		
Model including predictors				250.85	4
Intercept (first session value), γ_{00}	6.36***	0.40	N/A		
Slope (change over time in weeks), γ_{10}	-0.04	0.07	N/A		
Child total diagnoses	0.06	0.07	0.04		
Child ethnicity/race					
Caucasian (1) vs. Non-Caucasian (0)	-0.21	0.32	-0.26		
Skills Phase Subscale					
Base Linear Model				380.11	2
Intercept (first session value), γ_{00}	6.03***	0.78	N/A		
Slope (change over time in weeks), γ_{10}	-1.08***	0.30	N/A		
Model including predictors				312.85	4
Intercept (first session value), γ_{00}	6.18***	0.82	N/A		
Slope (change over time in weeks), γ_{10}	-1.11***	0.30	N/A		
Child total diagnoses	-0.05	0.06	-0.04		
Child ethnicity/race					
Caucasian (1) vs. Non-Caucasian (0)	-0.32	0.30	-0.40		
Exposure Phase Subscale					
Base Linear Model				393.85	2
Intercept (first session value), γ_{00}	0.95	0.91	N/A		
Slope (change over time in weeks), γ_{10}	1.49***	0.30	N/A		
Model including predictors				314.25	4
Intercept (first session value), γ_{00}	0.82	0.92	N/A		
Slope (change over time in weeks), γ_{10}	1.48***	0.30	N/A		
Child total diagnoses	-0.01	0.07	-0.008		
Child ethnicity/race					
Caucasian (1) vs. Non-Caucasian (0)	0.22	0.32	0.27		

Note. S.E. = Standard Error; ES = effect size (Cohen's *d*);* $p < .05$; ** $p < .01$; *** $p < .001$

Kendall Study: Total Model subscale analyses. For the Total Model scale, adding a linear term improved model fit relative to the intercept-only model (i.e., unconditional model, resulting in a Total Linear Model Deviance Difference X^2 = 10.39, *df* = 2, $p < .05$). The data for the Total Model subscale appeared to fit a linear model best.

Pretreatment characteristics from the Kendall Study – youth total diagnoses and youth ethnicity/race – were added simultaneously to the Total Model linear model. Neither youth total diagnoses (β = 0.06, p = .43, d = .04) nor youth ethnicity/race (Caucasian vs. Non β = -0.21, p = .53, d = -.26) emerged as significant main effects for Total Model, although the effect size of the youth ethnicity/race result was in the small range, with Caucasian youth experiencing slightly higher rates of therapist adherence than the non-Caucasian youth.

The pretreatment predictors added to the linear model for the Total Model resulted in *Pseudo* ΔR^2 = .0004, suggesting a negligible effect or .04% increase variance accounted for in Total Model CBAY-A by youth ethnicity and total diagnoses.

Kendall Study: Skills Phase subscale analyses. For the Skills Phase subscale, adding linear term improved model fit, resulting in Skills Phase Linear Deviance Difference X^2 = 67.26, *df* = 2, $p < .05$. Thus, a linear model was used.

Pretreatment characteristics were next added to the Skills Phase linear model. Similarly to the Total Phase subscale model, neither youth total diagnoses (β = -0.05, p = .61, d = -.03) nor youth ethnicity/race (Caucasian vs. Non β = -0.32, p = .43, d = -.40) emerged as main effects for Skills Phase, although youth ethnicity evidenced a small to

medium effect, with Caucasian youth experiencing somewhat higher rates of therapist adherence than non-Caucasian youth.

The pretreatment predictors added to the linear model for the Skills Phase resulted in *Pseudo* ΔR^2 = -.007, suggesting a negligible effect or .07% increase variance accounted for in Skills Phase CBAY-A by adding the total diagnoses and youth ethnicity.

***Kendall Study: Exposure Phase subscale analyses*.** For the Exposure Phase subscale, adding linear term improved model fit, resulting in Exposure Phase Linear Deviance Differences X^2 = 79.6, *df* = 2, $p < .05$ relative to the intercept-only model. Thus, a linear model was used for the Exposure Phase subscale.

Pretreatment predictors were added simultaneously. Similarly to the two previous subscale models, neither youth total diagnoses (β = -0.01, p = .88, d = -.0007) nor youth ethnicity/race (Caucasian vs. Non β = -0.22, p = .51, d = .27) emerged as main effects with Exposure Phase, though once again youth ethnicity evidenced a small effect, with Caucasian youth having higher rates of therapist adherence than the non-Caucasian youth.

The pretreatment added to the linear model for the Exposure Phase resulted in *Pseudo* ΔR^2 = .042, suggesting a small (4.2%) increase variance accounted for in Exposure Phase CBAY-A by total diagnoses and youth ethnicity/race.

Overall, for the Kendall Study analyses, pretreatment characteristics– youth total diagnoses and youth ethnicity/race – had weak associations with the three CBAY-A subscales, with youth ethnicity/race appearing to have somewhat stronger, yet still

rather small relationship such that Caucasian youth were more likely to experience somewhat higher levels of adherence than non-Caucasian youth.

Child STEPs Study. The process for building each model for the CS Study resulted in two sequential steps. The first step entailed identifying the best-fit growth curve model and comparing it to the unconditional model (i.e., no time examined). The second step entailed adding predictors into the model and comparing it to the best-fit growth curve model (i.e., examining the main effects of pretreatment characteristic predictors). Each section is organized by therapist adherence subscale (Total Model, Skills Phase, and Exposure Phase) to examine the changes in therapist adherence over time, followed by results for pretreatment characteristic predictors including youth total diagnoses, youth ethnicity/race, therapist age, therapist burnout, therapist orientation (CBT and Eclectic), and EBPAS. Table 14 details model-building results for the CS Study.

Table 14.

Child STEPs Study: Multilevel Models of CBAY-A Subscale Scores with Pretreatment Predictors

CBAY-A Subscale	Coefficient	S.E.	ES	Deviance	*n* Parameters in Model
Total Model Subscale					
Base Linear Model				2116.89	2
Intercept (first session value), γ_{00}	5.16***	0.40	N/A		
Slope (change over time in weeks), γ_{10}	0.003	0.07	N/A		
Model including predictors				2068.39	4
Intercept (first session value), γ_{00}	4.93***	0.50	N/A		
Slope (change over time in weeks), γ_{10}	-0.02	0.06	N/A		
Child total diagnoses	0.057	0.06	0.03		
Child ethnicity/race					
Caucasian (1) vs. Non-Caucasian (0)	0.13	0.29	0.07		
Therapist age	0.02	0.01	0.002		
Theoretical orientation					
Eclectic (1) vs. Non-Eclectic (0)	-0.20	0.34	-0.15		
CBT (1) vs. Non-CBT (0)	0.06	0.36	0.05		
EBPAS Openness	0.28	0.23	0.45		
Therapist burnout	0.03	0.06	0.01		
Skills Phase Subscale					
Base Linear Model				2289.91	2
Intercept (first session value), γ_{00}	5.38***	0.44	N/A		
Slope (change over time in weeks), γ_{10}	-0.08	0.09	N/A		
Model including predictors				2199.55	4
Intercept (first session value), γ_{00}	5.18***	0.56	N/A		
Slope (change over time in weeks), γ_{10}	-0.08	0.07	N/A		
Child total diagnoses	0.08	0.06	0.04		
Child ethnicity/race					
Caucasian (1) vs. Non-Caucasian (0)	0.09	0.26	0.17		
Therapist age	0.03	0.014	0.003		
Theoretical orientation					
Eclectic (1) vs. Non-Eclectic (0)	-0.01	0.35	-0.009		
CBT (1) vs. Non-CBT (0)	-0.10	0.26	-0.07		
EBPAS Openness	0.56**	0.20	0.91		
Therapist burnout	0.002	0.06	0.0008		
Exposure Phase Subscale					
Base Linear Model				2281.44	2
Intercept (first session value), γ_{00}	-0.46	0.46	N/A		

Slope (change over time in weeks), γ_{10}	0.10	0.06	N/A		
Model including predictors				2269.82	4
Intercept (first session value), γ_{00}	-0.002	0.29	N/A		
Slope (change over time in weeks), γ_{10}	0.17	0.08	N/A		
Child total diagnoses	0.02	0.06	0.01		
Child ethnicity/race					
Caucasian (1) vs. Non-Caucasian (0)	0.26	0.26	0.53		
Therapist age	-0.002	0.012	-0.0002		
Theoretical orientation					
Eclectic (1) vs. Non-Eclectic (0)	-0.48	0.32	-0.36		
CBT (1) vs. Non-CBT (0)	0.19	0.31	0.15		
EBPAS Openness	-0.32	0.21	-.052		
Therapist burnout	-0.02	0.06	-0.007		

Note. S.E. = Standard Error; ES = effect size (Cohen's *d*); theoretical orientation variables (eclectic and CBT) were entered simultaneously;* $p <$ .05; ** $p <$ .01; *** $p <$ .001.

CS Study: Total Model subscale analyses. For the Total Model scale, adding a linear term improved model fit relative to the intercept-only model, resulting in Total Model Linear Deviance Difference X^2 = 48.5, *df* = 2, $p < .05$. Thus, a linear model was used for the Total Model subscale analysis.

Predictors were added simultaneously to the linear term model. The predictors resulted in non-significant findings for the Total Phase model: youth total diagnoses (β = 0.06, p = .39, d = .03), youth ethnicity/race (Caucasian vs. Non β =0.13, p = .67, d = .07), therapist age (β = 0.02, p = .13, d = .002), therapist burnout (β = 0.03, p = .65, d = .01), CBT therapist orientation (β = 0.06, p = .86, d =.05), Eclectic therapist orientation (β = -0.20, p = .57, d = -.15), and EBPAS (Openness β = 0.28, p = .24, d =.45).Although main effects did not emerge, EBPAS Openness did evidence a medium effect size relationship, suggesting that therapists with higher levels of openness to EBPs also had higher therapist adherence.

The pretreatment predictors added to the linear model for the Total Model resulted in *Pseudo* ΔR^2 = .030, suggesting a small effect or 3.0% increase variance accounted for in Total Model CBAY-A by all predictors included in the model.

CS Study: Skills Phase subscale analyses. For the Skills Phase subscale, adding linear term improved model fit (Skills Phase Linear Deviance Difference X^2 = 90.36, *df* = 2, $p < .05$). Thus, a linear model was used for the Skills Phase Subscale analysis.

Pretreatment characteristic variables were added simultaneously, resulting in one significant main effect for EBPAS (Openness β = 0.56, p = .02, d =.91) and one approaching significance for therapist age (β = 0.03, p = .052, d = .003). These two

effects suggest that therapists with higher levels of openness to EBPs had higher therapist adherence levels. Additionally, older therapists had higher adherence levels. The remaining variables resulted in non-statistically significant findings and small effect sizes; youth total diagnoses (β = 0.08, p = .22, d = .04), youth ethnicity/race (Caucasian vs. Non β =0.09, p = .77, d = .17), therapist burnout (β = 0.001, p = .98, d = .0008), CBT therapist orientation (β = -0.10, p = .80, d =-.07), and Eclectic therapist orientation (β = -0.01, p = .97, d = -.009).

The pretreatment predictors added to the linear model for the Skills Phase resulted in *Pseudo* ΔR^2 = .063, suggesting a small effect or 6.3% increase variance accounted for in Skills Phase CBAY-A by all predictors included in the model.

***CS Study: Exposure Phase subscale analyses*.** For the Exposure Phase subscale, adding linear term improved model fit (Exposure Phase Linear Deviance Differences X^2 = 11.62, df = 2, p < .05) relative to the intercept-only model. Thus, a linear model was used for the Exposure Phase subscale.

All pretreatment characteristic predictor variables were added simultaneously. The Exposure Phase model resulted in three non-significant main predictors, but with small to medium effects for youth ethnicity/race (Caucasian vs. Non β =0.26, p = .32, d = .53), Eclectic therapist orientation (β = -.48, p = .14, d = -.36), and EBPAS (Openness β = -.32, p = .13, d =-.52). These findings suggest that non-Caucasian youth, Eclectic therapists, and lower levels of EBPAS openness resulted in lower levels of therapist adherence. The remaining variables were both non-significant for main effects and had smaller effect sizes; therapist age (β = -.002 p = .85, d = -.0002), youth total diagnoses

(β = 0.02, p = .74, d = .01), therapist burnout (β = -0.02, p = .79, d = -.007), and CBT therapist orientation (β = 0.19, p = .54, d =.15).

The pretreatment predictors added to the linear model for the Exposure Phase resulted in *Pseudo* ΔR^2 = .065, suggesting a small effect or 6.5% increase variance accounted for in Exposure Phase CBAY-A by all predictors included in the model.

Overall, the analyses for the CS study suggested that for the Total Model Subscale only EBPAS openness resulted in a medium effect, whereas for the Skills Phase Subscale model EBPAS openness and therapist age resulted as significant (or nearing) predictors, and for the Exposure Subscale, EBPAS openness, therapist orientation, and youth ethnicity resulted in small-medium effects.

Discussion

The primary goal of this study was to understand the extent to which pretreatment characteristics across client/youth-, family-, and therapist-levels influence therapist treatment adherence (CBAY-A), and how these may differ across setting (research and practice). This research question was examined in the context of data from two randomized controlled trials, one an efficacy study (Kendall) and the other an effectiveness trial (CS). Hierarchical linear modeling (HLM 7.01; Raudenbush et al., 2011) was used to predict changes in treatment adherence (CBAY-A Total Model, Skills Phase, Exposure Phase) over time (i.e., weeks in treatment) with pretreatment characteristics. Four main findings emerged. First, study group (Kendall and CS) differences emerged in the types of pretreatment characteristic that were predictive of therapist adherence. Second, contrary to some past work, youth symptoms did not predict changes in adherence, with effect size estimates below .04 for the Kendall

sample and below .17 for the CS sample. Third, effect size of the youth ethnicity/race-adherence relationship was medium sized for both the CS study and Kendall study but in opposite directions (d = .53, d = -.40, respectively), suggesting that therapist treatment adherence was higher for Caucasian youth (versus non-Caucasian) for the CS study and the opposite for the Kendall study. Finally, several therapist variables evidence medium relationships with adherence, including therapist openness to evidence-based practices, therapist theoretical orientation, and therapist age. Each finding is discussed in turn.

A first notable finding was that study type (efficacy vs. effectiveness) influenced whether a pretreatment characteristics-adherence relationship emerged. In the Kendall efficacy study, no statistically significant relationships emerged whereas some did in the CS effectiveness trial. Specifically, youth ethnicity/race, openness to evidence-based practices, therapist theoretical orientation, and therapist age all predicted therapist adherence in some or all models tested. The finding that clinical context may influence the relationships among adherence and pretreatment characteristics is consistent with a body of past work that suggests the salience of contextual differences between practice and research settings (e.g., Schoenwald & Hoagwood, 2001; Southam-Gerow et al., 2006). This difference might be a result of validity differences – external versus internal – across research settings; that is, pretreatment characteristics may be more tightly controlled and thus vary less in efficacy trials, decreasing the chance of finding relationships. On the other hand, by the mere nature of effectiveness trials, pretreatment characteristics may vary and thus result in significant influence on therapist adherence. This notion is complemented by research suggesting that

contextual differences exist between research and practice clinics (e.g., Southam-Gerow et al., 2003; Southam-Gerow et al., 2006).

Past work has suggested that youth characteristics such as youth symptoms and youth age or ethnicity may influence adherence (e.g., Chapman et al., 2011; Halliday-Boykins et al., 2005; Schoenwald et al., 2003). The present study results were mixed. In terms of youth symptoms, the relationship with therapist adherence was non-significant across settings. Past child and adult work has found that high level of psychological symptoms and poor psychosocial functioning negatively influence therapist treatment adherence (e.g., Carlson et al., 2010; Imel et al., 2011; Ryan et al., 2013; Schoenwald et al., 2003). There are several possible reasons for the discrepancy. Much of the previous research has focused on family-based therapies for externalizing problems, not individual-based therapy for internalizing problems; that is, the past findings may not generalize to youth with anxiety disorders. The present sample was quite distressed as evidenced by the clinical variables collected and thus it may be that the past findings only apply to non-anxiety cases. However, future research should be conducted to confirm this finding.

In contrast, youth ethnicity/race did evidence a modest relationship with adherence. The relationship between youth ethnicity/race and therapist adherence showed a medium effect. For the CS study, self-identified Caucasian youth (versus non-Caucasian) experienced higher rates of adherence for the CBAY-A Exposure Phase, while Caucasian youth in the Kendall study experienced lower rates of adherence for the CBAY-A Skills Phase. Although non-significant with minimal effects, this finding shows that Caucasian youth consistently experienced more adherence to exposure-

based interventions compared to non-Caucasian youth across both study groups. To date, limited work has examined the extent to which ethnicity/race relates to therapist adherence, and efforts have primarily focused on ethnic match (youth and parent to therapist) and therapist adherence (e.g., Chapman et al., 2011; Halliday-Boykins et al., 2005). Although the current findings were non-significant, the effect sizes observed were in the minimal to medium range, noteworthy in light of the sparse research to date. Such results therefore point to the need for future research to examine the extent to which differences exist in therapist adherence by ethnic/racial group. Considering proxies for ethnicity/race might elucidate interpretation of these findings; that is, ethnicity/race might really be a proxy for other variables (inequality in income, education, housing, acculturative stress), which contribute to disparities in mental health (e.g., Elster et al., 2003; Sanders-Philips, Settles-Reaves, Walker, & Brownlow, 2009). As such, it might be that we see an "adherence disparity" due to ethnicity/race (and related proxies) and/or that different ethnic/racial groups warrant differing levels of treatment adherence or varying "dosages" of interventions. Future work would benefit from research focused on testing this hypothesis and fleshing out these findings further.

Past work suggests that therapist characteristics, such as therapist attitudes about EBPs, level of education, supervisory supports, emotional exhaustion, and job satisfaction may influence adherence (e.g., Campbell et al., 2013; Schoenwald et al., 2005; Schoenwald et al., 2009). There is some support for this notion from the present findings. Specifically, therapist openness to evidence-based practices indicated (a) a *positive* relationship with therapist adherence to *skills-based* interventions and (b) an *inverse* trend, with moderate effect, relationship with therapist adherence to *exposure-*

based interventions. Past findings show both an inverse relationship (Campbell et al., 2013) and no relation (Schoenwald et al., 2005) between adherence and therapists' attitudes. Highlighting important differences between past and current studies might explain the inconsistent results. Although at its core, there were basic differences among studies that make generalizability of findings challenging (e.g., differences in terms of problem area, age group, treatment approach), the operationalization of "therapist attitudes" in various studies warrants mention. Both Schoenwald et al. (2005) and Campbell et al. (2013) measured this construct according to therapists' appraisals of a specific treatment they were *already* trained to deliver (MST and 12-Step Facilitation, respectively), whereas the current study examined therapists' openness to *all* empirically-supported treatments. Perhaps the positive relationship between openness to a treatment approach and therapist adherence only holds when therapists are fully trained in the specific treatment (in this case, CBT).

Relatedly, it is important to note that therapist openness to using EBPs influenced adherence according to the type of intervention being delivered – skill versus exposure-based. Therapists with higher levels of openness to using EBPs tended to have lower levels of adherence to exposure-based treatment elements (e.g., Exposure) and lower levels of adherence to skills-based treatment elements (e.g., Relaxation). To date, no studies (to the author's knowledge) have examined the therapist attitude-adherence relationship by specific treatment skill. It is possible that skill- and exposure-based interventions are perceived differently by therapists, perhaps according to their complexity to implement. Skill-building practices may be viewed as less complex and simpler to implement, and thus the positive relationship between adherence-attitude. On

the contrary, exposure-based interventions may be viewed as more abstract and complex, and thus arguably more difficult for therapists to follow and implement. This notion is consistent with research showing that therapy complexity (i.e., number and specificity of treatment components) is inversely related to the level of treatment integrity (e.g., Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000; Perepletchikova et al., 2007). Relatedly, Black Becker and colleagues (2004) found that even among psychologists with strong interest and training in behavioral treatment for PTSD, exposure therapy is not completely accepted or widely used. More recent experimental research aimed at examining therapists' beliefs about exposure therapy and treatment delivery, found that more novice therapists with negative beliefs about utilizing exposure interventions created less ambitious exposure hierarchy, selected less anxiety-provoking exposure tasks, and attempted to minimize client anxiety during exposure (Farrell et al., 2013). Together, these findings suggest that there is an under-utilization of exposure in general clinical practice and that openness to using EBPs is not sufficient, as there are prevalent negative beliefs about exposure treatment.

Although not statistically significant, the relationships between therapist age and adherence also evidenced a small effect size for CBAY-A Skills Phase. Only one study to date has directly examined this relationship and found no relation between therapist age and therapist adherence (Schoenwald et al., 2005). That study was conducted with therapists treating substance abusing clients with a family-based intervention and thus the two studies are quite different. In the present study, a *negative trend* emerged for older therapists for exposure-based adherence, such that older therapists showed less adherence to exposure-based interventions (compared to younger therapists); while a

positive trend emerged for older therapists for skills-based adherence, such that older therapists showed more adherence to skills-based interventions (compared to younger therapists). It is possible that younger therapists might be more able and/or willing to learn the more complicated exposure-based practices (versus skills-based). Other studies do support the notion such that younger therapists (years of age, intern-level) are more flexible and open to implementing EBPs (e.g., Aarons, 2004; Aarons, 2005).

One final effect warrants brief discussion. Therapists endorsing an eclectic therapeutic orientation (versus non-eclectic) showed lower rates of adherence for exposure-interventions only. This suggests that as a group, eclectic oriented therapists had lower levels of adherence to CBT exposure-based approaches for youth anxiety. Given that an eclectic orientation indicates the endorsement of a broader orientation (as opposed to the absence of a traditional pure-form system; Norcross, Karpiak, & Lister, 2005), the finding is not surprising. Because eclectically oriented therapists tend to utilize a combination of orientations rather than a single approach, one would anticipate that adherence could be diluted for such therapists. This group of therapists apparently underutilizes exposure-based interventions, evident by lower adherence on the CBAY-A Exposure Phase. This notion is consistent with some research showing that therapists in practice settings tend to underutilize exposure-based interventions (Black Becker, Zayfert, & Anderson, 2004; Deacon, Farrell, Kemp, Dixon, Sy, Zhang, & McGrath, 2013; Farrell et al., 2013). Future work would need to clarify what drives the eclectic therapists to use less exposure. Could it be that their tendency to use many approaches dilute their approach overall? Or is it that some eclectic therapists as a group tend to have negative beliefs about utilizing exposure-based treatments (cf., Farrell et al., 2013).

Study Limitations and Future Directions

Despite notable methodological strengths (e.g., analytic approach, identifying contextual factors, data from two trials, observational data), the findings need to be considered in light of several limitations. First, the study was not designed with pretreatment characteristics in mind; therefore, some important factors may have been omitted and others included but not measured well. For instance, ethnicity/race data were collected, but findings need to be interpreted with caution as this variable in isolation fails to adequately represent the underlying causes of the disparities within the context of therapist adherence. Related factors such as cultural views of health, acculturation, positions of power or powerlessness, or inability to appropriately access health care are more meaningful proxies for understanding elements of culture/race that could be the driving force behind therapist adherence variability (Comstock, Castillo, & Lindsay, 2004). Certainly, pretreatment characteristics at higher levels should be examined, including organizational and system-level factors. Research indicates that higher-level factors significantly relate to therapist adherence; specifically, organizational climate predicts therapist treatment adherence for EBT for youth disruptive behavior disorders (e.g., Schoenwald et al., 2008). As such, future work would benefit from examining additional pretreatment characteristics.

Second, this is merely one study focused on CBT for youth anxiety, but clearly more replication is necessary to generalize to treating other target problem areas or using other treatments. This is also in light of the fact that much of the current research in this area is focused on externalizing problem areas and family-based therapies, and (to the author's knowledge) this is one of the first to explore the factors important for

internalizing problems (anxiety) and EBPs. Future work should replicate with other forms of individual therapy, other types of problem areas and levels of severity, and larger samples to improve upon the power of the current study findings. It is possible that some target areas or interventions result in different pretreatment characteristic-therapist adherence relationships. Therefore, replication, especially with youth individual-based interventions for internalizing problems (e.g., CBT for anxiety) is necessary.

Third, the HLM analyses were executed with two level models, rather than three, despite the theoretical importance of nesting youth and families into therapists. This means that predictor findings cannot be attributed independently to variability at the client/family or therapist levels since both predictor types were included at level two. The nesting decision was statistically warranted for the present study, due to limited therapist variability (therapist carried an average of two cases each). A three-level approach is, however, a more theoretically appropriate and true to the nature of the data. Future research should include more variability at the therapist-level to better understand the distribution and contributory nature of variability at each of the three levels independently.

Fourth, a strict focus on therapist adherence for examining variability according to pretreatment characteristics might be problematic. Therapist competence, the level of skill and judgment used in executing the treatment, may be related to pretreatment characteristics. One could argue that adherence may be more context-independent whereas competence may be more context-dependent. As a result, a therapist may receive a high score on adherence (e.g., reading the manual verbatim in session) and

score lower in terms of competence. This suggests that perhaps youth/family and therapist pretreatment characteristics influence therapist adherence and competence differently. For example, a therapist might adhere perfectly and deliver all elements of problem solving skills, but do so without gauging how a youth's symptom severity influence his/her ability to understand skills learned in therapy. More concretely, a youth with more severe anxiety might require a focus on client compliance to psychiatric medications with the use of a behavioral reward plan (i.e., lower adherence to CBT, but higher competence to behavioral interventions), not a focus on problem-solving; whereas, a youth with mild anxiety might benefit greatly from problem-solving. As evident from the Therapy Change Process Model (Doss, 2004; McLeod et al., 2013), "therapy inputs" or pretreatment characteristics might influence treatment integrity in varying ways, as the process of change is intricate and complex. Therefore, future work could examine the relationship of competence, possibly in conjunction with adherence, to pretreatment characteristics.

Finally, although hierarchical approaches are ideal for analyzing process data for a number of reasons (e.g., nesting of data; McLeod et al., 2013), a complementary analytic approach of mixed-method process research may help to increase our understanding of the role of responsiveness in treatment adherence with particular patients and families (e.g., when and why a therapist "goes off track" with a given patient), including the immediate and direct impact of patient characteristics on therapist behavior and decision-making. For example, recent qualitative research focused on veterans with post-traumatic stress disorder show that therapist's decision to use one EBP over another (Cognitive Processing Therapy and Prolonged Exposure) was driven

by patient-level pretreatment characteristics, including patient readiness/willingness to engage and diagnostic comorbidity (Osei-Bonsu, Bolton, Wiltsey-Stirman, Eisen, Herz, & Pellowe, 2016). Although this work was not specifically focused on therapist adherence, but instead on the decision process in choosing an appropriate EBP for a patient, it is relevant to examining factors that predict therapist behavior and decision-making processes. Future studies examining the influence of pretreatment characteristics on therapist adherence might consider complementing observational adherence data with qualitative and mixed methods to provide for a richer understanding of therapist decision-making in therapy process research.

Conclusion

Despite these limitations, this study provides evidence that some pretreatment characteristics, including youth ethnicity/race, therapist openness to evidence-based practices, therapist theoretical orientation, and therapist age, influence the *process* of therapy: in this case, therapist adherence. Therapist adherence has become an important focus of psychotherapy process and outcome research, and the relevance has become magnified as more attention is focused on dissemination, training, and sustainability of EBPs in routine practice settings (McHugh & Barlow, 2012). The current study provides essential if limited evidence about potentially important predictors of therapist adherence for CBT youth anxiety. As more evidence accumulates about these and other relevant pretreatment characteristics that influence therapist adherence, the data can be used to guide training efforts and have the potential to influence the sustainability of EBTs in practice settings.

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Appendix: CBAY-A

Instructions: Using the grid provided below, please indicate PRESENCE of any item observed for each **five-minute** time segment. Use a "+" to indicate *extensive presence*, "X" to indicate *moderate presence*, and "-" to indicate *slight presence*. After watching the ENTIRE recording, use the 1-7 scale to assign an Extensiveness rating (Ext) for all items that are present in at least ONE (1) time period. Also, record the number of time periods each item appeared in under Frequency (Freq).

	1 Not at all		2		3 Somewhat		4		5 Considerably		6		7 Extensively				
Item																**Freq**	**Ext**
MODEL																	
1. Psychoed-Anx																	
2. Emotion Ed																	
3. Fear Ladder																	
4. Relaxation																	
5. Cognitive-Anx																	
6. Problem Solving																	
7. Self-Reward																	
8. Coping Plan																	
9. Exposure: Prep																	
10. Exposure																	
11. Exposure: Debrief																	

Vita

Adriana Rodríguez was born on May 12, 1986 in Orange County, California and is an American citizen. She graduated from Santiago High School, Garden Grove, California in 2004. She received her Bachelor of Arts in Psychology and minor in Ethnic Studies from the University of California, Berkeley in 2008 and subsequently worked as a research assistant at the University of California, Los Angeles for two years. Adriana is currently in her sixth year in the Clinical Psychology Doctoral Program at Virginia Commonwealth University and is completing her internship at Boston Children's Hospital at Harvard Medical School.