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Treatment Adherence and Engagement in a Transdiagnostic Behavioral Treatment for  
Pediatric Anxiety and Depression

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

in

Clinical Psychology

by

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2017



The Dissertation of Megan Christina Jeffreys is approved, and is acceptable in quality and form for publication on microfilm and electronically:

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Chair

University of California, San Diego

San Diego State University

2017

## TABLE OF CONTENTS

Signature Page.....	iii
Table of Contents.....	iv
List of Tables.....	v
List of Figures.....	vi
Vita.....	vii
Abstract of the Dissertation.....	viii
Introduction.....	1
Aims and Hypotheses.....	11
Methods.....	14
Results.....	32
Discussion.....	56
Tables.....	67
Figures.....	72
Appendices.....	73
References.....	76

## LIST OF TABLES

Table 1: Colinearity Statistics for Predictors of Adherence.....	67
Table 2: Bivariate Correlations Between Predictors.....	68
Table 3: Demographic and Clinical Characteristics.....	69
Table 4: Exploratory Bivariate Predictor Analyses of Participant Engagement.....	71

## LIST OF FIGURES

Figure 1: CONSORT Chart.....	72
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Weersing, V. R., Brent, D. A., Rozenman, M. S., Gonzalez, A., Jeffreys, M., Dickerson, J., ... Iyengar, S. (2017). Brief behavioral therapy for pediatric anxiety and depression in primary care: A randomized clinical trial. *JAMA Psychiatry, 74*, 571-578.

Weersing, V. R., Jeffreys, M., Do, M. T., Schwartz, K. T. G., & Bolano, C. (2017). Evidence base update of psychosocial treatments for child and adolescent depression. *Journal of Clinical Child & Adolescent Psychology, 46*, 11-43.

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## ABSTRACT OF THE DISSERTATION

Treatment Adherence and Engagement in a Transdiagnostic Behavioral Treatment for Pediatric Anxiety and Depression

by

Megan Christina Jeffreys

Doctor of Philosophy in Clinical Psychology

University of California, San Diego, 2017

San Diego State University, 2017

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Anxious and depressive disorders share common etiology and respond to similar treatments (Garber & Weersing, 2010). Transdiagnostic protocols may aid in treatment efficiency and reduce the burden of dissemination. Little is known regarding whether therapists are able to implement these treatments equally well across the range of clinical profiles they are intended to target and whether participants are equally engaged.

Youth (ages 8-16) with diagnoses of an anxious or depressive disorder were randomized to either brief behavioral treatment (BBT;  $N = 95$ ) or usual care.

Therapists rated adherence and participant engagement. Audio recordings of treatment sessions were also coded for adherence. Aim 1: Youth psychopathology

severity, parental psychopathology, and family conflict were examined as predictors of adherence. Higher levels of psychopathology and conflict were hypothesized to predict lower levels of adherence. Aim 2: Psychopathology and conflict were examined as predictors of engagement. Higher levels of psychopathology and conflict were hypothesized to predict lower levels of engagement. Aim 3: Engagement was examined as a predictor of adherence. Higher levels of engagement were hypothesized to predict better adherence both within and across subsequent sessions.

Aim 1: As hypothesized, anxiety severity and comorbid depression predicted lower levels of therapist-reported adherence. In contrast with hypotheses, parental psychopathology and family conflict did not predict adherence. As hypothesized, in analyses of observer-reported adherence, higher levels of youth psychopathology, parental psychopathology, and family conflict predicted less coverage of core components of treatment and more time structuring session. Aim 2: As hypothesized, higher levels of youth psychopathology, parental psychopathology, and family conflict predicted lower levels of engagement. In-session engagement was predicted by youth psychopathology whereas homework completion and parental involvement were predicted by parental psychopathology and family conflict. Aim 3: As hypothesized, higher levels of engagement were associated with higher levels of adherence within session, but not between phase of treatment.

Results supported youth symptom severity and comorbidity as predictors of in-session processes (e.g., adherence) and parental psychopathology and family conflict as predictors of between-session processes (e.g., homework completion). Results

from the current study are relevant in identifying families who may be at risk of receiving suboptimal treatment.

## INTRODUCTION

Anxiety and depression in youth are common with 15% to 20% of youth experiencing an anxiety disorder and up to in one in five youth experiencing a depressive disorder before reaching the age of 18 (Beesdo, Knappe, & Pine, 2009; Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Both disorders are consequential with youth onset of internalizing disorders associated with lower educational attainment, deficits in interpersonal relationships, and higher risk of suicide (Gould et al., 1998; Rohde, Lewinsohn, & Seeley, 1994; Weissman, Wolk, & Wickramaratne, 1999). Moreover, both pediatric anxiety and depression carry risk into adulthood. Anxiety disorders in youth are linked with increased risk of a range of psychiatric disorders in adulthood, including depression and substance abuse (Lewinsohn, Zinbarg, Seeley, Lewinsohn, & Sack, 1997). Youth who have experienced a depressive disorder have increased risk of experiencing both anxious and depressive disorders later in life (Copeland, Shanahan, Costello, & Angold, 2009).

Furthermore, anxiety and depression are highly comorbid, both concurrently and sequentially. The co-occurrence of anxiety in depressed youth is considerably higher than the co-occurrence of depression in anxious youth, with 10-15% of anxious youth meeting criteria for a depressive disorder and 25-50% of depressed youth meeting criteria for an anxiety disorder (Angold et al., 1999; Axelson & Birmaher, 2001; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Anxiety disorders in childhood also frequently predict development of depressive disorders in adolescence and adulthood (Chorpita & Daleiden, 2002). Moreover, youth with internalizing comorbidity have higher risk of recurrence and poorer response to treatment

(Birmaher et al., 1996; Ezpeleta, Domenech, & Angold 2006). Comorbidity may stem from a common etiology of biological sensitivity to stress (Biederman et al., 1993), experience of high rates of stressful life events (Chorpita, & Barlow, 1998), and maladaptive responses to stress (namely avoidance and withdrawal; Dadds, Barrett, Rapee, & Ryan, 1996). Evidence from the treatment literature supports this hypothesis, with both anxiety and depression responding to interventions based on cognitive and behavioral learning principles (Garber & Weersing, 2010), and meta-analyses suggesting that treatments ostensibly targeting either anxiety or depression may have positive spillover effects on the other condition (Garber et al., 2016). In this context, interest has grown in developing transdiagnostic treatments that efficiently target anxiety and depression simultaneously. To date, promising trials have been published in adult samples (e.g., Farchione et al., 2012) and a recent randomized trial in youth suggests positive acute effects (Weersing et al., 2017).

In addition to this theoretical rationale, transdiagnostic approaches may also aid in dissemination of evidence-based interventions. To date, few youth with anxiety and depression receive adequate treatment (Merikangas, et al., 2011) with evidence-based strategies often delivered at sub-therapeutic doses in community settings (Garland et al., 2010; Higa-McMillan, Powell, Daleiden, & Muller, 2011). Taking a transdiagnostic approach that uses one manual to target multiple problem areas and focuses on common active mechanisms across treatments may help to reduce the number of new strategies therapists need to learn. Additionally, the ability of transdiagnostic treatments to concurrently target anxious and depressive symptoms

may aid in treatment efficiency, which is particularly important with constraints on treatment imposed by managed care.

However, despite the potential promise of transdiagnostic approaches for treatment efficiency and delivery in community settings, they may pose unique challenges for implementation. Even among trials targeting a single disorder, implementing evidence-based interventions with high levels of adherence and engagement in community settings is difficult, with these trials often plagued by poor fidelity and high rates of treatment dropout (e.g., Kerfoot, Harrington, Harrington, Rogers, & Verduyn, 2004; Vostanis, Feehan, Grattan, & Bickerton, 1996). Transdiagnostic approaches may be particularly difficult to implement as therapists are required to simultaneously address multiple problem areas. Moreover, youth with internalizing comorbidity may be less likely to respond to intervention (Weersing, Jeffreys, Do, Schwartz, & Bolano, 2016). A key step in the development and examination of transdiagnostic protocols is understanding variability in effective implementation and factors that predict variability. The goal of the current study was to examine level and predictors of adherence and engagement in a sample of internalizing youth seen in pediatric primary care within the context of a randomized controlled trial of a transdiagnostic intervention.

### **Why Examine Adherence?**

Adherence is a critical element in effective implementation of evidence-based protocols. Here adherence is considered the extent to which a therapist delivers treatment content as specified in the manual. Both therapists' own perception of their adherence as well as adherence rated by trained observers can be considered a measure

of this construct. Adherence is considered a distinct construct falling under the umbrella of treatment integrity, which also includes clinical competence and treatment differentiation (see McLeod, Southam-Gerow, & Tully, 2013). While all three aspects of treatment integrity play important roles, examining whether therapists are able to even deliver the manual content may be an important *initial step* in understanding whether transdiagnostic treatments can be implemented as designed across the range of clinical profiles they are intended to target.

Clinically complex youth, in both severity and comorbidity of symptoms, may pose a challenge for therapists to remain adherent to any protocol, let alone a protocol attempting to concurrently address two problem areas in roughly the same number of sessions. For example, among more clinically severe youth who present with suicidality, therapists may need to spend time typically devoted to the treatment manual on safety assessment and planning. In the context of a transdiagnostic protocol, therapists may struggle with balancing strategies more unique to anxiety treatment (e.g., progressive muscle relaxation) and strategies more unique to depression (e.g., pleasant activity scheduling) among youth experiencing problems in both areas. Historically, a common perceived barrier to implementing manual-based treatments is the severity and complexity of youth presenting for services in routine care compared with youth enrolled in clinical trials (Addis, Wade, & Hatgis, 1999). Similarly, we may also expect to see a relationship between treatment adherence and the presence of psychosocial stressors. These sets of psychosocial stressors may lead to “crises of the week,” such as a fight with a parent, that compete for time in treatment (Chorpita, Korathu-Larson, Knowles, & Gaun, 2014).

Adherence may be particularly valuable to examine in community settings (e.g., primary care). While the efficacy of treatments for anxious and depressive disorders has been well established (Compton et al., 2004; Weersing et al., 2016), trials examining the *effectiveness* of treatment for internalizing psychopathology have produced concerning results. Poor fidelity to evidence-based treatments may help to explain the difference in treatment outcomes between controlled experimental settings and community care environments. Indeed, evidence-based interventions implemented in community settings have demonstrated infrequent use of core treatment mechanisms (Garland et al., 2010; Higa-McMillan et al., 2011) and low use of supervision in the treatment model (Kerfoot et al., 2004; Vostanis et al., 1996).

Despite these concerns, relatively little is known regarding the relationship between clinical complexity and psychosocial stress at the initiation of treatment with level of adherence. There is some evidence to suggest that baseline severity predicts lower levels of adherence with anxious youth (Morgan et al., 2013). Slightly more attention has been given to the relationship between youth psychosocial stressors and adherence. For example, in one study of treatment in a community setting, high levels of emergent life events derailed planned treatment activities (Chorpita et al., 2014). Further obfuscating this literature has been limited examination of the relationship between adherence and treatment outcomes, without which, determining adequate level of adherence to promote youth outcomes is difficult. In a recent review of measurement of adherence in treatment of youth and adults, 341 studies were identified (Schoenwald & Garland, 2013). Despite this considerable literature, a mere 10% of studies reported on the relationship between adherence and outcome. Without



further examination of the relationship between adherence and outcomes, it is difficult to determine whether flexibility in manual implementation promotes response to treatment or detracts from delivery of core treatment components. Several investigators have suggested need for flexibility in protocol implementation, and subsequent measure of adherence, when delivering treatment in community settings (e.g., Regan, Daleiden, & Chorpita, 2013). However, models allowing greater flexibility in implementation of core treatment components have, at times, demonstrated poor outcomes compared with traditional protocols (e.g., Treatment for Adolescents with Depression Study Team, 2004).

### **Why Examine Engagement?**

Participant engagement is another critical element of treatment implementation that may be particularly challenging in the context of a transdiagnostic intervention. Most evidence-based treatments for internalizing psychopathology assume active mechanisms of learning skills in session and applying these skills between sessions. The behavioral components of treatment for anxious and depressed youth are particularly challenging, requiring youth replace learned avoidance behavior with approach behavior in the presence of negative affect. Based on the broader literature, it stands to reason that youth with greater severity of baseline symptoms may have more difficulty engaging in in-session and between-session practice of approach behaviors. For example, among untreated youth, severity of trait anxiety predicts avoidance in novel situations (Field & Field, 2013). While severity of youth symptoms predicts higher rates of appearing to session (e.g., Brookman-Frazee, Haine, Gabayan, & Garland, 2008), youth with higher levels of baseline internalizing

psychopathology may have greater difficulty engaging in behavioral practice. In one trial of exposure-based treatment for pediatric obsessive compulsive disorder, baseline severity of youth symptoms predicted poorer in-session engagement and reduced willingness to complete exposures (Morgan et al., 2013).

In addition to internalizing comorbidity, family conflict and parental psychopathology, may also predict poor participant engagement. Presence of parental psychopathology may impair parents' ability to be involved in treatment and support youth. Families of depressed parents may experience higher levels of stress that impact their ability to appear to treatment and complete between-session practice (Hammen, 2002). There is also evidence to suggest that presence of parental depression may impair youth acquisition of skills related to symptom outcomes (Dietz et al., 2014). Both the stress related to parental psychopathology and family conflict may impact families' abilities to present to and engage in treatment. In recent review, multiple studies supported lower levels of engagement among families with high parental distress (Gopalan et al., 2010) and higher rates of dropout among families with greater levels of family conflict (Attride-Stirling, Davis, Farrell, Groark, & Day, 2004). These factors may be particularly salient among youth receiving treatment in community settings. Families presenting to community settings often experience higher levels of stressful life events (Chorpita et al., 2014) and have high levels of parental psychopathology (Swartz et al., 2005).

### **Predictors of Adherence and Engagement**

The goal of the current study was to examine clinical characteristics of youth that predict these two key treatment processes: therapist adherence and participant

engagement in treatment. To guide the selection of predictors, we turned to existing work on prediction of treatment process in internalizing youth as well as to the literature of prediction of treatment outcome within this population. Greater symptoms of internalizing psychopathology predict youth engagement in session (Morgan et al., 2013). Severity of the target disorder at baseline is also consistently associated with treatment outcome in this population. Among anxious youth, higher levels of anxiety prior to beginning treatment predict poorer response to treatment (Berman, Weems, Silverman, & Kurtines, 2000, Compton et al., 2014), and baseline depression severity is consistently found to predict poor response to treatment. This includes severity of symptoms of depression (Asarnow et al., 2009; Brent et al., 1998; Clarke et al., 1992), greater cognitive distortions (Brent et al., 1998, Clarke et al., 1992, Jacobs et al., 2009), presence of suicidality (Asarnow et al., 2009; Barbe, Bridge, Birmaher, Kolko, & Brent, 2004; Jacobs et al., 2009) and hopelessness (Asarnow et al., 2009; Brent et al., 1998; Jacobs et al., 2009).

In contrast, the relationship between comorbidity, particularly comorbidity of anxious and depressive disorders, with treatment implementation and outcomes, has been less clear. Presence of comorbid anxiety or depression has been shown to predict poorer treatment outcomes across treatment arms (Berman et al., 2000; Brent et al., 1998; Clarke et al., 1992; Curry et al., 2006). Cognitive behavioral therapy has also been shown to produce stronger effects on hypothesized mechanisms of change (e.g., increased approach behavior, decreased distorted cognitions) in anxious samples compared with samples of depressed youth (Chu & Harrison, 2007). However, the effect of treatment *relative to control* (moderating effects) may be stronger among

youth with internalizing comorbidity, despite lower response rates *across treatments* among youth with internalizing comorbidity (Weersing et al., 2016). One explanation for the mixed effect of comorbidity on treatment outcomes is that comorbidity may be confounded with severity more broadly.

In addition to the literature on the relationship between severity and comorbidity with adherence, engagement, and treatment outcomes, several studies have examined the relationship between parental psychopathology and family conflict with adherence, engagement, and treatment outcomes. Higher levels of family stress are associated with lower levels of treatment adherence (Chorpita et al., 2014) and engagement (Dietz et al., 2014; Gopalan et al., 2010; Attride-Stirling et al., 2004). Psychosocial stress also predicts poorer response to treatment. Among studies on treatment for depression, stressful life events (Gau, Stice, Rohde, & Seeley, 2012; Gunlicks-Stoessel, Mufson, Jekal, & Turner, 2010), history of trauma (Lewis et al., 2010; Shamseddeen et al., 2011), and family conflict (Asarnow et al., 2009; Feeny et al., 2009; Gunlicks-Stoessel et al., 2010) have been shown to predict poor treatment outcomes or diminish the effects of psychosocial intervention. Similarly, presence of parental depression has been shown to diminish the efficacy of CBT among depressed youth (Brent et al., 1998) and predict poor treatment response for anxious youth (Berman et al., 2000; Southam-Gerow, Kendall, & Weersing, 2001).

Finally, family engagement and therapist adherence may interact. Specifically, low levels of youth or family engagement may adversely impact therapists' ability to remain adherent to the protocol. For example, youth with comorbid behavior problems may be poorly engaged in in-session behavioral practice. In order to keep

youth engaged, therapists may need to spend additional time outside the protocol, reducing adherence to manual content, setting up reward systems to promote engagement in session and coaching parents to reward and facilitate at home practice.

## AIMS AND HYPOTHESES

The current study sought to expand the evidence base by examining predictors of adherence and engagement in a transdiagnostic intervention trial for pediatric anxiety and depression delivered in primary care. To best examine this question, adherence was measured in two ways. First, therapists rated their perception of their adherence following each session of the transdiagnostic manual. Second, trained coders rated coverage of manual content and quality of implementation. Observer rating of each treatment component allowed for examination of predictors of treatment coverage broadly and coverage of specific treatment elements (e.g., in-session practice of exposure/behavioral activation). Engagement was measured by therapist-ratings of youth engagement in session, homework completion, and parent involvement. Two sets of predictors of adherence and engagement were examined: a) youth clinical severity and comorbidity, and b) factors associated with higher levels of family stress including family conflict and parental psychopathology. Additionally, youth and parent engagement was examined as a predictor of therapist adherence.

### **Aim 1**

Examine potential predictors of therapist- and observer-rated adherence to the treatment manual. In examining Aim 1.1, anxiety severity, depression severity, global severity of internalizing symptoms, and presence of clinically significant depression were tested as potential predictors. Higher levels of severity were hypothesized to predict lower levels of therapist adherence. Both global severity and presence of comorbidity were hypothesized to predict adherence in bivariate analyses; however, when tested together, the variance accounted for by clinically elevated depression was

hypothesized to be better accounted for by global severity. In examining Aim 1.2, measures of family conflict and parental psychopathology were tested as potential predictors of adherence. Higher levels of conflict and parental psychopathology were hypothesized to predict lower levels of therapist adherence.

### **Aim 2**

Examine predictors of therapist-rated parent and youth engagement.

Therapist-rated youth engagement in session, homework completion, and parental involvement were examined. In testing Aim 2.1, measures of anxiety severity, depression severity, global severity of internalizing symptoms, and comorbidity were tested as potential predictors. Higher levels of severity were hypothesized to predict lower levels of engagement. Youth severity and clinical complexity were hypothesized to predict both youth engagement *in-session* and homework completion, with severity and complexity more strongly predicting homework completion. While both severity and clinical complexity were hypothesized to predict engagement in bivariate analyses, overall severity was hypothesized to account for the variance explained by presence of comorbidity in multivariate analyses. In testing Aim 2.2, measures of family conflict and parental psychopathology were tested as potential predictors of engagement. Higher levels of conflict and parental psychopathology were hypothesized to predict lower levels of parental involvement in treatment. Conflict and parental psychopathology were also hypothesized to predict lower levels of homework completion.

### **Aim 3**

Examine the relationship between engagement and adherence over time.

Using latent growth curve modeling, the relationship between therapist adherence and participant engagement was examined at each stage of treatment. Cross-lagged analyses were used to examine engagement as a predictor of adherence at subsequent time points. Participant engagement was hypothesized to be a significant time-varying predictor of adherence, with higher levels of engagement predicting higher levels of adherence. In cross-lagged analyses engagement was hypothesized to predict therapist adherence in subsequent stages of treatment, with higher levels of engagement predicting higher levels of adherence.



## METHODS

### **Participants and Procedures**

Data for the current study was collected as part of a multisite randomized clinical trial conducted in San Diego and Pittsburgh (Weersing et al., 2017).

Participants were recruited from June 2010 through December 2014. All study procedures were approved by the Institutional Review Boards at San Diego State University (SDSU), University of California at San Diego (UCSD), University of Pittsburgh Medical Center (UPMC), and Kaiser Permanente.

Participant identification and study procedures took place in pediatric primary care. Across both sites, youth were recruited from eight primary care practices and one behavioral pediatric clinic. Internalizing youth were identified by primary care providers through clinical referral or use of screening measures administered by the practice [the five-item version of the Screen for Childhood Anxiety and Related Emotional Disorders (SCARED-5; Birmaher et al., 1997) and the Short Mood and Feelings Questionnaire (SMFQ; Angold, Costello, Messer, & Pickles, 1995; Messer, Angold, Costello, & Loeber, 1995)]. Providers obtained verbal consent from interested families and referred potential participants to the study via secure fax. Additionally, families with health care coverage at participating primary care clinics were able to self-refer from flyers posted in waiting rooms and doctors' offices. Throughout the course of the study a total of 682 participants were referred. Referred families were contacted by phone to provide further description of the study and complete eligibility screen verifying the presence of significant symptoms of anxiety or depression. Families that appeared to still be eligible upon completion of a phone

screen were scheduled to meet with study staff to complete a baseline interview ( $N = 397$ , see Figure 1 for full consort chart).

The baseline interview was conducted by study staff in the primary care offices of the referred youth. The interview included written informed consent, completion of youth- and parent-report questionnaires, and completion of an evaluator-rated interview that included diagnostic assessment and administration of dimensional measures of youth symptoms of anxiety and depression. If more than one parent presented to the baseline interview, a primary parent was designated to complete questionnaires and follow-up assessments. Inclusion criteria for study eligibility required that the youth: a) met probable or full criteria for separation anxiety, social phobia, generalized anxiety, major depressive disorder, dysthymia, or minor depression, b) scored a 3 (Mildly Ill) or higher on the Clinical Global Impression-Severity scale, c) were between the ages of 8 and 16, inclusive, d) lived with their legal guardian for six months or more, and e) had a guardian that was sufficiently fluent to complete the informed consent and assessments in English. In order to promote generalizability of study findings, the investigators attempted to minimize study exclusion criteria. Youth were excluded if they: a) required treatment for another problem area, such as bipolar disorder, psychosis, primary post-traumatic stress disorder (PTSD), or substance dependence, b) suffered from serious or unstable physical illness (e.g., uncontrolled diabetes), or c) received current, active alternative treatments for anxiety or depression (e.g., therapeutic dose of an antidepressant medication). Following baseline assessment, 187 youth were eligible. Two eligible

youth were not randomized due to discontinued interest in the study leading to a total of 185 randomized youth (see Consort Chart in Figure 1).

Eligible youth were randomized to either brief behavioral therapy (BBT;  $N = 95$ ) or assisted referral to specialty mental health care (ARC;  $N = 90$ ). Randomization occurred through use of a computerized system algorithm and was balanced within site by gender, minority status, and presence of elevated depressive symptoms. Presence of elevated depressive symptoms was decided during clinical triage based on several factors, including a depressive disorder diagnosis, as well as elevated symptoms on youth-, parent-, or clinician-report measures of depression. Following randomization, families were contacted by the project coordinator. Prior to reveal of randomization status, all families were engaged in a conversation designed to enhance engagement in receipt of services. This conversation included psychoeducation, identification of possible barriers to service utilization, and problem solving to increase service use. Analyses of adherence and engagement were restricted to the subset of the sample ( $N = 95$ ) that was randomized to BBT.

### **Intervention**

Brief Behavioral Therapy (BBT) was implemented in the pediatric primary care offices from which families were recruited. Therapists were instructed to record all treatment sessions. Treatment was implemented by master's level clinicians. Therapists were trained in the model by the overall principal investigator (V. Robin Weersing, Ph.D.). Training was conducted through didactic instruction and supervision. Therapists were initially trained in the model during a two-day workshop in the intervention conducted in Pittsburgh. During this workshop, the manual was

reviewed and therapists were given the opportunity to role play sample tasks (e.g., problem solving). Dr. Weersing then reviewed every session of the first three cases for each therapist. Therapists received continuing, weekly supervision with Dr. Weersing listening to the initial treatment session for each youth and additional sessions as needed.

BBT was an 8 to 12 session treatment manual designed to concurrently target symptoms of anxious and depressive disorders. Length of treatment within the 8 to 12 session window varied depending on youth progress in treatment. The initial four sessions were developed to provide psychoeducation and initial skill building. In the following three to seven sessions, youth were engaged in exposure and/or behavioral activation in a framework of graded engagement. In the final session therapists terminated treatment involvement and helped prevent relapse. Treatment was designed to be implemented individually in 50 minute sessions that occurred approximately weekly. The manual was written for flexibility regarding the role of parents. Parents were broadly conceptualized as coaches to help support youth use of skills outside of session. Typically, parents were brought into treatment at the very beginning and very end of each session in order to review the concepts discussed and homework assigned. However, parental involvement was left free to vary in response to youth developmental level and needs of the child and family.

In the initial session, youth and their families were provided with psychoeducation regarding internalizing psychopathology and behavioral patterns of avoidance when faced with threat. Therapists helped youth map these general principles onto their own experience of anxiety and depression. An important goal of

this session was to help normalize stress, anxiety, and low mood and distinguish everyday experience of these symptoms from anxious and depressive disorders. During this session, youth were assigned homework to begin monitoring their mood. In a second session, the physiology associated with anxiety and depression was discussed. Youth were introduced to several strategies for addressing these symptoms, including diaphragmatic breathing, progressive muscle relaxation, guided imagery, and pleasant activity scheduling. During this session, therapists were given flexibility to tailor the time allotted to each skill and specifics of homework assignment to appropriately map onto the youth's symptom presentation (e.g., more time is spent on pleasant activity scheduling for youth with depressive disorders). In session three, youth were introduced to problem solving and began applying this technique to a personal problem, which they finished in session four. In session four, youth were given time, as needed, to finish problem solving. The remainder of session four was dedicated to setting youth up for learning approach responses to stress through graded engagement. Youth were engaged in a discussion of the negative effect of avoidance. Youth (and their parents, as appropriate) were guided to develop plans to increase engagement. Among youth with primarily anxious presentations, such plans were likely to look like traditional exposure hierarchies. Among primarily depressed youth, these plans were graded steps towards increasing level of activity. Youth with combined anxious/depressed presentations could have developed plans that included both exposure to anxiety provoking stimuli as well as increasing levels of activity. From session five until the final session (8-12 depending on the course of treatment for the individual youth) treatment, focused on implementing these action plans. The

majority of time in session was spent discussing progress in homework, problem solving barriers to engagement, practicing activities in session, and planning for graded engagement homework. In a final session, therapist and youth reviewed the child's progress toward goals, completed an overview of the skills learned to date, and anticipated future stressors and how to apply skills learned for these situations.

### **Measures**

Included in the analyses are a) demographic and clinical predictors of adherence and b) measures of adherence and engagement. All measures used to predict treatment adherence/engagement were collected at the baseline assessment. Measures of adherence and engagement were completed either by the therapist following each session or by independent raters at a later date based on a random sampling of audio recordings of sessions.

**Adherence and Engagement.** Adherence was rated using two methods in the present study, therapist-report of adherence and observer-rated adherence. Therapists completed ratings of adherence following each session. Observers completed adherence ratings of sessions based on audio recordings. Participant engagement in treatment was captured on therapist-report forms.

The Therapy Process Form (TPF; Appendix A) was a therapist-report measure completed at the conclusion of each session. Therapists rated their perception of their adherence to the protocol on one item "Therapist's adherence to the therapy model" on a 5-point scale from *poor adherence* (0) to *excellent adherence* (4). Therapists also rated child engagement in session (from *youth not engaged* [0] to *youth actively engaged* [4]), therapeutic alliance (from *poor therapeutic alliance* [0] to *excellent*

*therapeutic alliance* [4]), homework completion (from *did not complete homework* [0] to *all homework completed* [4]), homework quality (from *poor* [0] to *excellent* [4]), youth engagement between session (from *youth not engaged* [0] to *youth actively engaged* [4]), and parent involvement (from *parent not involved in youths treatment* [0] to *parent involved, completes all tasks assigned* [4]).

The Observer-rated Adherence Form (OAF; Appendix B) was developed in collaboration with the authors of the manual. Development occurred in three steps. First, critical components of each session in the manual were identified. Second, session specific forms were created with a global rating section and a time-sampling section. For the global section, raters were instructed to indicate whether session-specific critical elements were delivered at any point during the session and the quality with which the session content was delivered (*unsatisfactory, satisfactory, exceptional*). The time-sampling section of the OAF instructed raters to indicate for each five-minute interval which elements of the protocol therapists implemented, including review of prior sessions and homework, in-session practice (e.g., exposure or behavioral activation), homework planning, and use of other treatment strategies (e.g., communication, parent management training; see Appendix B for additional details). For the third and final stage of OAF development, a pilot sample of 24 sessions was randomly selected and raters completed the forms. From this pilot test of the adherence forms, minor modifications were made to increase usability of the OAF and to fine-tune session content (e.g., noting in the forms where flexibility is indicated in implementation in the manual). Interrater reliability in the pilot sample was excellent (99% agreement).

In the current analyses, adherence was coded by a team of graduate and undergraduate level coders. Two sessions were randomly selected for each youth from sessions 5-12. Within these sessions, observers rated broad coverage of manual content, quality of manual content implementation, and frequency of use of the following techniques: review of prior sessions and homework, in-session practice (e.g., exposure or behavioral activation), homework planning, and use of other treatment strategies (e.g., communication, parent management training). Interrater reliability was examined using 10% of the total number of tapes coded in the current study. Interrater reliability was moderately high for manual coverage (83% agreement), quality of manual coverage (83% agreement), and percent of time covering treatment components (93% agreement).

**Demographic Variables.** At the baseline assessment, parents completed a general information sheet that queried about demographic information, including youth age, youth gender, youth race and ethnicity, family composition, and family income.

**Clinician-rated Measures of Youth Psychopathology.** Parents and youth completed a semi-structured clinical interview that included diagnostic assessment and clinician-rated dimensional measurement of anxious and depressive symptoms. The Schedule for Affective Disorders and Schizophrenia for School-Age Children (KSADS; Chambers, 1985) is a semi-structured interview designed to assess for DSM-IV diagnoses. The KSADS is comprised of screens that assess the core symptoms of each disorder (e.g., depressed mood, irritability, and anhedonia for major depressive disorder) and supplemental sections to assess additional symptoms of each



disorder. In the current study, assessors completed both screen and supplemental sections for all inclusion diagnoses (separation anxiety, social phobia, generalized anxiety disorder, and depressive disorders). All youth were screened for panic disorder and trauma; supplemental sections for both panic disorder and PTSD were only completed upon positive screen. Other diagnoses were assessed as indicated to either fully characterize the youth's symptom profile (as in the case of comorbid attention deficit/hyperactivity disorder) or rule out exclusion criteria (as in the case of youth with primary PTSD). Moderate levels of interrater reliability, test-retest reliability, convergent validity, and discriminant validity have been established (Kaufman, Birmaher, Brent, Rao, & Ryan, 1997). Diagnoses derived from the KSADS determined participant eligibility. Further, the KSADS was used in combination with scores on the Children's Depression Rating Scale-Revised to classify youths as suffering from clinically significant symptoms of depression. Randomization was blocked to balance arms on the presence of clinically significant depression, and this variable was also included our apriori prediction models as the primary index of depressive comorbidity.

In addition to diagnostic assessment, dimensional measures of anxious and depressive symptoms were completed by clinical raters during this interview. The Pediatric Anxiety Rating Scale (PARS; Research Units on Pediatric Psychopharmacology Anxiety Study Group, 2002) is a dimensional measure of youth anxiety severity. The PARS contains a 50-item symptom checklist and seven severity items. Parents and youth first complete the 50-item severity checklist in which the interviewer assesses a range of symptoms of anxiety over the past week, including,

social concerns, separation concerns, generalized worry, specific fears, somatic symptoms, and other common symptoms of anxiety. Parents and youth are then asked seven severity questions to ascertain the frequency, severity, and impairment associated with all symptoms of anxiety. The total score on the PARS is a summation of six of the seven severity items, which ranges from 0 to 30. Tests of criterion validity suggest an optimal cut off score of 17.5 to identify youth meeting criteria for an anxiety disorder (Ginsburg, Keeton, Drazdowski, & Riddle, 2011, ICC = .95). The PARS served as the primary anxiety outcome measure in the overall clinical trial (Weersing et al., 2017). In the current analyses, baseline PARS score was selected as the primary measure of anxiety severity for our apriori adherence and engagement prediction models (ICC = .95). Additionally, interviewers completed the Children's Depression Rating Scale (CDRS-R; Poznanski & Mokros, 1996) to derive a dimensional measure of youth symptoms. The CDRS-R is a 17-item measure assessing a range of youth depressive symptoms mapping onto DSM-IV diagnoses of depression. Most (15) items are a clinician summary rating based on youth- and parent-report; however, three items are scored based on interviewer observation of the youth. Scores on the CDRS-R range from 17 to 113. A raw score of 30 maps onto a T-score of 55. The CDRS-R served as the primary depression outcome measure in the overall clinical trial (Weersing et al., 2017). In the current analyses, baseline CDRS-R total score was selected as the primary measure of depression severity for our apriori adherence and engagement prediction models (ICC = .90).

Finally, on the basis of this interview, assessors completed a measure of total youth internalizing symptom severity and related impairment. The Clinical Global

Impression-Severity Scale (CGI-S; Guy, 1976) is a measure of youth symptom severity ranging from 1 (normal, not at all ill) to 7 (among the most extremely ill). In the current analyses, baseline CGI-S score was selected as the primary measure of global severity of internalizing psychopathology (ICC = .71).

**Parent- and Youth-report Measures of Youth Psychopathology.** In addition to clinician-rated measures, parents and youth completed dimensional rating scales of their view of youth anxiety and depressive symptoms. As described in the analytic plan, these variables were tested in secondary analyses as alternate operationalizations of youth internalizing psychopathology. Parents and youth completed the Screen for Childhood and Related Emotional Disorders (SCARED; Birmaher et al., 1999). The SCARED is a 41-item measure of youth anxiety with parallel self- and parent-report forms. The measure assesses symptoms of anxiety in several domains, including somatic symptoms, generalized worry, separation concerns, social concerns, and school-related fears. Reporters endorse whether an item has been *Not True or Hardly Ever True* (0), *Somewhat True or Sometimes True* (1), or *Very True or Often True* (2) over the course of the past two weeks for a total possible score of 82. The SCARED has been shown to have good internal consistency ( $\alpha = .90$ ) and test-retest reliability (ICC = .70 to .90; Birmaher et al., 1997, 1999). Tests of criterion validity suggest 25 as an optimal cutoff score for this measure (Birmaher et al., 1997). Internal consistency in the current sample was high ( $\alpha = .90$  and .92 on self- and parent-report forms, respectively).

Youth and parents also completed a measure of depressive symptoms, the Mood and Feelings Questionnaire (MFQ; Angold, Costello, Pickles, Winder, & Silver, 1987). The MFQ is a measure with nearly parallel (the parent-report form has one additional item) youth- and parent-report forms containing 33- and 34-items, respectively. The MFQ assesses four content areas, including affective symptoms, vegetative symptoms, cognitive symptoms, and suicidality. Youth and parents rate whether items were *Not True* (0), *Somewhat True* (1), or *True* (2) over the past two weeks for a total possible score of 66 and 68 on the youth- and parent-report forms, respectively. The MFQ has demonstrated good internal consistency ( $\alpha$  ranged from .91 to .96; Daviss et al., 2006; Sund, Larrson, & Wichstrom, 2001; Wood, Kroll, Moore, & Harrington, 1995) and test-retest reliability (ICC ranged from .78 to .80; Wood et al., 1995). Tests of criterion validity suggest a cut off score of 25 for optimal prediction of a depressive disorder diagnosis (Kent, Vostanis, & Feehan, 1997). In the current sample, internal consistency at baseline was high ( $\alpha = .92$  for self- and parent-report forms).

**Measures of Parent Psychopathology and Family Functioning.** Parents completed self-report measures of their own anxious and depressive symptoms. The participating parent completed a self-report measure assessing their own depressive symptoms, the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item measure in which parents rate the frequency of their depressive symptoms over the past week. Items are rated on a four-point scale from (0) *Rarely or None of the Time (less than 1 day)* to (3) *Most or all of the Time (5-7*

*days*). Scores range from 0-60, with a recommended clinical cut off of 16. Given the deleterious effect of parental depression on youth treatment outcomes within the treatment literature for both anxiety and depression (see Compton et al., 2014; Weersing et al., 2016) the CES-D was used as a primary measure of parental psychopathology for a priori adherence and engagement prediction models. In the current sample, internal consistency was high ( $\alpha = .84$ ).

Parents also completed the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) at baseline. As described in the analytic plan below, this variable was included in secondary analyses as an alternate operationalization of parental psychopathology. The STAI consists of 20 questions assessing current (state) symptoms of anxiety and 20 items assessing general (trait) symptoms of anxiety. Parents rate frequency of anxiety symptoms on a 4-point scale from “Almost Never” to “Almost Always.” Though no clear cut off score has been established for the STAI, the average score in anxious patients is 50. The STAI has demonstrated good internal consistency and test-retest reliability (Spielberger et al., 1983). In the current sample, internal consistency was high ( $\alpha = .84$  and  $.82$  for the STAI state and trait, respectively).

Both parents and youth completed a baseline measure of family functioning, the Conflict Behavior Questionnaire (CBQ; Robin & Weiss, 1980). The CBQ is a 20-item questionnaire in which parents and youth rate whether statements regarding the family dynamic are true or false. The CBQ has good internal consistency ( $\alpha = .90$ ) and test-retest reliability (Robin & Foster, 1989). In the current sample, internal

consistency was high ( $\alpha = .87$  and  $.91$  for the youth- and parent-report, respectively). In order to better compare outcomes in the present study to the extant literature (e.g., Asarnow et al., 2009; Gunlicks-Stoessel et al., 2010) youth-report on family conflict was identified as a primary measure of conflict for apriori analyses. As described in the analytic plan, secondary analyses were conducted using parent-report of family conflict as an alternative measure of family conflict.

### **Analytic Plan**

In preliminary analyses, we examined patterns of missing data and correlations between demographic, predictor, and outcome data. Through conducting bivariate correlations, we examined whether level of missing data was associated with key demographic variables, including youth age, gender, and minority status.

Additionally, we examined whether level of missing data was associated with clinically elevated symptoms of anxiety, as measured by the PARS, or depression, as measured by the CDRS-R.

As noted in the measures section, multiple measures were collected to assess each hypothesized predictor (e.g., clinician-report, parent-report, youth-report). In order to preserve power and reduce multicollinearity, in analyses we included one measure of each six broad constructs (anxiety severity, depression severity, global severity and impairment, comorbidity, conflict, and parent psychopathology). Among measures of youth psychopathology, the clinician-rated instruments were examined as primary predictors as the clinician-rated measures combine both parent and youth perspective. This includes the PARS as a measure of anxiety severity, the CDRS-R as

a measure of depression severity, the CGI-S as a measure of global severity and impairment, and randomization with elevated depression as a measure of internalizing comorbidity. The two other broad predictors of adherence and engagement (conflict and parental psychopathology) were measured by parent-report of their symptoms of depression (CES-D) and youth-report of family conflict. Possible patterns of multicollinearity were examined among these six primary predictors of adherence and engagement. Parent and youth-report measures of youth psychopathology and parent-report of their own anxiety and family conflict were examined in secondary analyses.

In the current study, we had a (level 2) sample size of 95 participants randomized to BBT. Each participant attended 1 to 12 sessions, for a total of 909 (level 1) data points. While power in multilevel models is complicated and no universal guidelines exist (Bell, Ferron, & Kromrey, 2008), the present analyses are consistent with one suggested guideline of 5 to 50 level 1 units nested within 30 to 100 level 2 units (Maas & Hox, 2005).

**Aim 1: Prediction of Adherence.** In order to examine Aim 1, we developed two prediction models for both therapist- and observer-rated adherence with Model 1 testing predictors of severity of youth psychopathology and comorbidity and Model 2 testing predictors of parental psychopathology and family conflict. Because session data were nested within participant, multilevel modeling was used (Muthen & Satorra, 1995) to create a two-level model in which adherence data (Level 1) was nested within participant (Level 2). For Model 1, an initial model including anxiety severity (PARS), depression severity (CDRS-R), global severity (CGAS), and presence of clinically significant depression were included. Predictors were treated as fixed

variables in order to better understand the relationship between adherence and youth psychopathology across youths and preserve power (Maas & Hox, 2005). The same approach was taken to test Model 2, using the identified predictors of parental psychopathology (CES-D) and family conflict (CBQ-C). A third model was tested including all predictors significant at the  $p \leq .10$  level across Models 1 and 2. In this final model, predictors were considered significant at the  $p \leq .05$  level.

Following these planned tests, additional analyses were run probing alternate operationalizations of key constructs, namely, youth- and parent-report of youth anxiety and depression, parent-report of their own anxiety severity, and parent report of family conflict. When the primary predictors included in these models were not found to significantly predict adherence ( $p > .05$  in Model 3), secondary bivariate analyses were conducted to probe the relationship between adherence and alternate operationalizations of youth anxiety (SCARED-C, SCARED-P) youth depression (MFQ-C, MFQ-P), parental psychopathology (STAI-S, STAI-T), and family conflict (CBQ-P). When these bivariate tests revealed potential predictors ( $p \leq .10$  for inclusion), the multivariate models were re-examined using the alternate self-report measures in lieu of the original candidate predictors for each construct (e.g., replacing the PARS with the SCARED-P).

Model 1 and Model 2 were tested using seven dependent variables 1) therapist-rating of their own adherence on a scale from 0 (*poor adherence*) to 4 (*excellent adherence*), 2) observer-rating of global manual coverage, 3) observer-rating of quality of manual implementation, 4) observer-rated percent of session reviewing prior material, 5) observer-rated percent of session practicing exposure or behavioral



activation, 6) observer-rated percent of session planning homework, and 7) observer-rated percent of session using strategies outside the treatment manual (e.g., parent management training).

**Prediction of Engagement (Aim 2).** Three therapist-reported indices of participant engagement were examined as dependent variables 1) participant engagement in session, 2) homework completion, and 3) parent involvement. As in the previous analysis, two apriori models of youth psychopathology (Model 1) and family factors (Model 2) were tested. A third model was tested including all predictors significant at the  $p \leq .10$  level across Models 1 and 2. In this final model, predictors were considered significant at the  $p \leq .05$  level. Following these planned tests, additional analyses were run probing alternate operationalizations of key constructs, namely, youth- and parent-report of youth anxiety and depression, parent-report of their own anxiety severity, and parent report of family conflict.

**Link between Adherence and Engagement (Aim 3).** The relationship between adherence and engagement over time was examined using both latent growth curve modeling and cross-lagged analyses. All models were examined in Mplus (V. 7; Muthen & Muthen, 2008). Model fit was evaluated using: (a) the chi-square statistic, (b) the comparative fit index, and (c) the root mean square error of approximation. CFI values of .90 or greater suggest an acceptable model fit (Bentler, 1990) with values of .95 or greater suggesting good model fit (Hu & Bentler, 1999). RMSEA values less than .08 suggest plausible model fit, with values less than .05 suggesting good model fit (Hu & Bentler, 1999; Steiger, 1990). In conducting latent growth curve and cross-lagged analyses a total of three models were examined across three

indicators of engagement (youth in-session engagement, homework completion, and parental involvement). In latent growth curve modeling, engagement was examined as a time-varying predictor of adherence. In cross-lagged analyses, both engagement and adherence variables were averaged across stage in treatment to create three treatment time points: initial didactic sessions (sessions 1-3), beginning graded engagement (sessions 4-7), and continuation of graded engagement (sessions 8-12). Participant engagement during the first stage of treatment was examined as a predictor of adherence at the first and second stages of treatment. Participant engagement at the second stage of treatment was examined as a predictor of adherence at the second and third stages of treatment. Engagement at the third stage of treatment was examined as a predictor of adherence at this stage.

## RESULTS

### Data screening

Among youth randomized to BBT ( $N = 95$ ), overall level of baseline missing data was limited. All families completed the parent-report demographic questionnaire. All families completed baseline assessment allowing for no missing data on clinician rated measures (e.g., PARS, CDRS-R, depression status, diagnoses, CGI-S, and CGAS). With regard to parent- and self-report measures, a valid total score (i.e., missing no more than 20% of items) was available for all youth randomized to BBT.

Overall level of missing data for therapist report of adherence and engagement was low (missing 6 forms across 3 youth, 0.006%). Level of missing data was not associated with youth age ( $r = .12, p = .25$ ), gender ( $\chi^2 = .12, p = .73$ ), or racial or ethnic minority status ( $\chi^2 = 1.63, p = .20$ ). Additionally, level of missing data was not associated with severity of anxiety, as measured by the PARS ( $r = .16, p = .12$ ), or depression severity, as measured by the CDRS-R ( $r = .06, p = .57$ ).

Observer coded data was rated based on all available audio-recordings for therapy sessions. For each youth two therapy sessions across the second two phases of treatment (sessions 5-8 and 9-12) were selected using a random number generator. Youth for whom a missing session was selected were randomized a second time. Level of missing data did not vary by youth age ( $r = .04, p = .69$ ), gender ( $\chi^2 = 1.08, p = .30$ ), or racial or ethnic minority status ( $\chi^2 = .33, p = .57$ ). Additionally, level of missing data did not vary by anxiety severity as measured by the PARS ( $r = .06, p = .57$ ) or depression severity as measured by the CDRS-R ( $r = -.035, p = .74$ ).

Possible patterns of multicollinearity were examined between the primary predictors for Aims 1 and 2. Primary analyses included clinician ratings of severity of psychopathology, including measurement of anxiety (PARS), depression (CDRS-R), global severity (CGI-S), and comorbidity (randomization with elevated depression). Parents' report of their own depressive symptoms as well as youth-report of family conflict were also included. Across predictors, no variance inflation factor value was greater than 10 and no tolerance value was less than .10 (see Table 1). Bivariate correlations between predictors ranged from .46 (between depression severity and overall severity) and -.12 (between overall severity and parental depression severity; see Table 2). Given values not exceeding moderate correlations and acceptable values for multicollinearity statistics, these predictors were considered adequately independent to be examined together in the following models.

### **Participant characteristics**

Participants randomized to BBT ( $N = 95$ ) ranged in age from 8 to 16 ( $M = 11.3$ ,  $SD = 2.4$ ). Within this sample 56.8% of youth were female and 32.6% identified as a racial or ethnic minority. Approximately one third of youth (37.9%,  $n = 36$ ) were randomized with elevated symptoms of depression (see Table 3 for full demographic and clinical characteristics).

### **Level of adherence**

On average, therapist-report of their adherence to the intervention protocol was at an acceptable level ( $M = 2.34$ ,  $SD = .66$ ; adequate adherence = 2.0) with the majority (92.6%) of sessions rated as having adherence that was at or exceeded the acceptable level. The average level of adherence across sessions for each youth

similarly exceeded the adequate level ( $M = 2.32$ ,  $SE = .05$ ) with similar levels of variation within ( $SE = .20$ ) and between youth ( $SE = .26$ ). Observer-coded adherence was high with 86.87% of elements of the protocol covered and 85.35% covered in a satisfactory or exceptional way. On average, therapists spent 24.86% of session engaging in review of between-session homework and the prior session. Therapists spent slightly over half (59.09%) of session completing in-session practice. Therapists spent an average of 23.60% of session planning between-session practice. Overall, a small proportion of session was dedicated to using techniques outside the manual (16.09%).

### **Prediction of Adherence (Aim 1)**

**Therapist-Rated Adherence.** Planned analyses were then conducted in SPSS (V. 23) using two-level hierarchical modeling with session (level 1) data nested within participants (level 2). Participant level predictors were centered around the grand mean (Enders & Tofighi, 2007). Analyses used maximum likelihood estimation and treated variables as fixed. As stated in the analytic plan, three models were tested: Model 1 containing clinician-rated anxiety severity (PARS), clinician-rated depression severity (CDRS-R), global severity of internalizing psychopathology (CGI-S), and presence of clinically significant depression; Model 2 including parental depression symptoms (CES-D) and youth-report of family conflict (CBQ-C); and Model 3 including promising candidate predictors from Model 1 and Model 2 ( $p \leq .10$  for inclusion). When the primary predictors included in these apriori models were not found to significantly predict adherence, secondary bivariate analyses were conducted to probe the relationship between adherence and alternate operationalizations of youth

anxiety (SCARED-C, SCARED-P) youth depression (MFQ-C, MFQ-P), parental psychopathology (STAI-S, STAI-T), and family conflict (CBQ-P). When these bivariate tests revealed potential predictors ( $p \leq .10$  for inclusion), the multivariate models were re-examined using the alternate self-report measures in lieu of the original candidate predictors for each construct (e.g., replacing the PARS with the SCARED-P).

In the youth psychopathology model (Model 1), anxiety severity (PARS), depression severity (CDRS-R), and elevated depression status were significantly associated with adherence. For every one point increase in the PARS, fidelity decreased by .03 ( $p = .03$ ). Similarly, presence of clinically significant depression was associated with a decrease of .42 in adherence ( $p = .04$ ). However, for every one point increase in the CDRS-R, fidelity increased by .020 ( $p = .01$ ) when holding anxiety severity, global severity, and comorbid depression constant. Global severity was not significantly associated with fidelity ( $B = -.03, p = .73$ ). Model 2 was examined including parental depression (CES-D) and youth-report of family conflict (CBQ-C). In multivariate analyses, neither factor was significantly associated with adherence (CES-D  $B < -.01, p = .60$ ; CBQ-C  $B = -.01, p = .45$ ). Given the lack of a significant predictor emerging from Model 2, a third combined model was not tested.

Secondary, bivariate analyses of the relationship between adherence and youth- and parent-report of psychopathology and conflict were then conducted. Self-report measures of youth psychopathology were not examined in bivariate analyses as both clinician-report of anxiety and depression emerged as significant predictors of adherence in planned, multivariate analyses. Parental anxiety and parent-report of

family conflict were examined as alternative operationalizations of parental psychopathology and family conflict; in these analyses, neither parental anxiety (STAI-S  $B = -.01$ ,  $p = .18$ ; STAI-T  $B < -.01$ ,  $p = .60$ ) nor parent-report of family conflict (CBQ-P  $B = -.01$   $p = .25$ ) were found to significantly predict therapist fidelity. Due to the lack of a significant predictor of adherence among these indices of parental psychopathology and family conflict, Models 1 and 2 were not re-examined.

**Observer-Coded Adherence: Manual Coverage.** Analyses were next repeated using observer-rated session adherence as the outcome. As before, three models were tested including Model 1 examining indices of youth psychopathology severity and comorbidity (PARS, CDRS-R, CGI-S, and clinically significant symptoms of depression), Model 2 examining other psychosocial stressors for youth (parent CES-D and CBQ-C), and a third model containing significant predictors from Model 1 and Model 2 with ( $p \leq .10$  for inclusion). Secondary, bivariate analyses were then conducted when the primary predictors included in these apriori models were not found to significantly predict adherence. When bivariate tests revealed potential predictors ( $p \leq .10$  for inclusion), the multivariate models were re-run using these alternate self-report measures.

In Model 1, overall severity of youth psychopathology significantly predicted observer-coded adherence when holding anxiety severity, depression severity, and comorbidity constant. Every one point increase on the CGI-S significantly predicted an increase in manual coverage of 4.86% ( $p = .019$ ). Anxiety severity ( $B < -.01$ ,  $p = .20$ ), depression severity ( $B < .01$ ,  $p = .54$ ), and comorbidity ( $B = -.04$ ,  $p = .57$ ) did not significantly predict manual coverage when holding other variables in the model

constant. In Model 2, neither parental depression (CES-D  $B < -.01$ ,  $p = .42$ ) nor youth-report of family conflict (CBQ-C  $B < -.01$ ,  $p = .45$ ) significantly predicted manual coverage when holding the other variable constant. Given the lack of a significant predictor emerging from Model 2, a third combined model was redundant to Model 1.

Additional, bivariate analyses were conducted to examine the relationship between self-report measures and OAF adherence. As was the case with the clinician-report measures, no youth- or parent-report questionnaire of youth anxiety severity (SCARED-C  $B < .01$ ,  $p = .32$ ; SCARED-P  $B < .01$ ,  $p = .67$ ) or youth depression severity (MFQ-C  $B < .01$ ,  $p = .22$ ; MFQ-P  $B < .01$ ,  $p = .82$ ) significantly predicted OAF adherence. Parental anxiety also did not significantly predict coverage of manual content (STAI-S  $B = -.01$ ,  $p = .69$ ; STAI-T  $B < -.01$ ,  $p = .31$ ). However, unlike youth-report of family conflict, parent-report of family conflict significantly predicted adherence (CBQ-P  $B = -.01$ ,  $p = .04$ ) with higher levels of conflict predictive of lower levels of adherence. As a result, Model 2 was re-examined including parent-report of family conflict and parental depression. When holding symptoms of parental depression constant, parent-report of family conflict did not significantly predict adherence (CBQ-P  $B = -.01$ ,  $p = .05$ ). Parental symptoms of depression also did not significantly predict of adherence (CES-D  $B < -.01$ ,  $p = .60$ ). Both CGI-S from planned Model 1 and CBQ-P from revised Model 2 met criteria for inclusion criteria ( $p \leq .10$ ) for a third combined model. When holding parent-report of family conflict constant, global severity significantly predicted greater levels of manual coverage



(CGI-S  $B = .04$ ,  $p = .03$ ). When holding global severity constant, parent-report of family conflict predicted lower levels of manual coverage (CBQ-P  $B = -.01$ ,  $p = .05$ ).

**Observer-Coded Adherence: Quality of Manual Coverage.** In addition to coverage of manual content, quality of manual content delivery was also examined. Model 1 was examined including clinician rated anxiety (PARS), depression (CDRS-R), global severity (CGI-S), and randomization with elevated depression. Similar to manual coverage, quality of manual coverage was significantly predicted by global severity in Model 1. A one point increase in global severity was associated with an increase of 4.88% of satisfactory or exceptional manual coverage ( $B = .05$ ,  $p = .02$ ). No other variables in this model significantly predicted quality of manual coverage. Similar to the analyses of Model 2 predicting coverage of manual content, neither parental depression ( $B < -.01$ ,  $p = .35$ ) nor youth-report of family conflict ( $B < -.01$ ,  $p = .44$ ) significantly predicted quality of manual coverage.

As described previously, bivariate analyses were then conducted to probe for effects on alternate measures. No measure of youth anxiety severity (SCARED-C  $B < .01$ ,  $p = .34$ ; SCARED-P  $B < .01$ ,  $p = .63$ ) or depression severity (MFQ-C  $B < .01$ ,  $p = .39$ ; MFQ-P  $B < .01$ ,  $p = .99$ ) significantly predicted quality of manual coverage. Parental anxiety did not significantly predict quality of coverage of manual content (STAI-S  $B < -.01$ ,  $p = .70$ ; STAI-T  $B < -.01$ ,  $p = .25$ ). Parent-report of family conflict significantly predicted adherence (CBQ-P  $B = -.01$ ,  $p = .02$ ) with higher levels of conflict predictive of lower levels of adherence. Given the significance of parent-report of family conflict, Model 2 was re-examined including parent-report of family conflict and parental depression. When holding parental depression constant, parent-

report of family conflict significantly predicted adherence (CBQ-P  $B = -.01, p = .02$ ) with higher levels of family conflict predicting lower levels of adherence. Parental depression did not significantly predict adherence (CES-D  $B < -.01, p = .54$ ). In a combined model with global severity and parent-report of family conflict, both global severity and family conflict predicted quality of manual coverage. Higher levels of global severity predicted higher levels quality of manual coverage (CGI-S  $B = .04, p = .04$ ). In contrast, higher levels of family conflict predicted lower quality of manual coverage (CBQ-P  $B = -.01, p = .02$ ).

#### **Observer-Coded Adherence: Manual Coverage by Treatment**

**Component.** In addition to global ratings of manual coverage, observers rated which techniques therapists used within each five-minute interval. As discussed above, observers rated review of prior sessions and homework, in-session practice (e.g., exposure or behavioral activation), homework planning, and use of other treatment strategies (e.g., communication, parent management training). In analyses, we examined the relationship between clinical characteristics and proportion of time in session spent on each of these techniques.

**Prior Session Review.** In planned analyses, Model 1, including anxiety severity (PARS), depression severity (CDRS-R), global severity (CGI-S), and clinically significant depression, were examined as a predictors of percent of time reviewing prior session content. In this model, no index of youth psychopathology significantly predicted percent of time therapist spent reviewing prior session content (PARS  $B = .01, p = .09$ ; CDRS-R  $B < .01, p = .44$ ; CGI-S  $B = -.02, p = .31$ ; elevated depression status  $B = -.02, p = .70$ ). In Model 2, including both parental depression

and youth-report of family conflict was then examined. Parental depression significantly predicted percent of time reviewing prior session content with higher levels of parental depression predictive of greater review of prior session content ( $B < .01, p = .01$ ). Youth report of family conflict did not significantly predict review of session content ( $B < .01, p = .21$ ). A third, combined model including variables in the prior two Models with  $p$ -values  $\leq .10$  (PARS and CES-D) was then examined. Parental depression continued to significantly predict percent of session reviewing prior session content ( $B < .01, p = .01$ ) with higher levels of parental depression predicting greater proportion of session spent on review. Anxiety severity was not a statistically significant predictor of percent of time spent on review in this model ( $B < .01, p = .11$ ).

As described above, additional bivariate analyses were then conducted to examine whether alternate measures of psychopathology and family conflict predicted adherence when measures of the same constructs included in the planned models did not. Parent- and youth- report of youth anxiety severity was not examined in bivariate analyses as clinician-report of youth-anxiety severity met inclusion criteria for the combined model. Neither youth self-report of depression symptoms (MFQ-C  $B < .01, p = .11$ ) nor parent-report of youth symptoms of depression (MFQ-P  $B < .01, p = .46$ ) significantly predicted percent of time reviewing the prior session. Parental anxiety was not examined as an alternate measure of parental psychopathology as parental depression had emerged as a significant predictor of adherence in planned, multivariate models. Parent-report of family conflict (CBQ-P  $B < .01, p = .53$ ) did not significantly predict review of prior session content. Given that no alternate measure

of youth psychopathology or family conflict emerged as significant in bivariate analyses, the multivariate models were not further examined.

***Practice of Exposure and Behavioral Activation.*** Proportion of session spent on in-session practice (e.g., exposure, behavioral activation) was then examined. In Model 1, clinician-report of youth anxiety severity (PARS), depression severity (CDRS-R), global internalizing severity (CGI-S), and clinically significant depression were first examined as predictors of percent of session engaged in exposure and behavioral activation. Clinician-report of youth symptoms of depression significantly predicted completion of in-session practice (CDRS-R  $B = -.01$ ,  $p = .01$ ), where higher levels of youth depression predicted a lower percent of the session spent on in-session practice. No other index of youth psychopathology in this model significantly predicted completion of in-session practice (PARS  $B = -.01$ ,  $p = .14$ ; CGI-S  $B = .02$ ,  $p = .67$ ; elevated depression status  $B = .12$ ,  $p = .19$ ). Model 2, including parental depression and youth-report of family conflict, was then examined. Neither parental depression (CES-D  $B = -.01$ ,  $p = .09$ ) nor family conflict significantly predicted completion of in-session practice (CBQ-C  $B = -.01$ ,  $p = .18$ ). A third, combined model including all variables from Models 1 and 2 with p-values  $\leq .10$  was then examined. This model included clinician-report of youth symptoms of depression (CDRS-R) and parental depression (CES-D). Youth depression severity was a statistically significant predictor of percent of session engaged in exposure or behavioral activation (CDRS-R  $B = -.01$ ,  $p = .01$ ) with higher levels of depression predictive of less time spent on in-session practice. Parental depression symptoms did

not significantly predict percent of time spent on in-session practice when holding youth depression symptoms constant (CES-D  $B = -.01, p = .07$ ).

As described above, additional measures of psychopathology and family conflict were then examined in bivariate analyses. When variables included in Models 1 and 2 were not significant, alternate indices of these constructs were then examined in bivariate analyses. When these variables in bivariate analyses had p-values  $\leq .10$ , Models 1 and 2 were re-examined with these alternate indices of psychopathology and family conflict. No index of youth anxiety severity significantly predicted percent of time spent on exposure/behavioral activation (SCARED-C  $B < .01, p = .50$ ; SCARED-P  $B < -.01, p = .67$ ). Youth depression and parental psychopathology were not examined in bivariate analyses as these constructs has p-values  $\leq .10$  in planned, multivariate analyses. Parent-report of family conflict (CBQ-P  $B = -.01, p = .18$ ) did not significantly predict completion of in-session practice. Models 1 and 2 were not then re-examined with any variables from bivariate analyses as no variable had a p-value  $\leq .10$ .

***Planning Between-Session Practice.*** Percent of time spent identifying and planning between-session homework was examined next. In planned analyses, Model 1 examined the relationship between severity and comorbidity of youth psychopathology and percent of time spent planning between-session homework. In Model 1, no index of youth psychopathology severity or comorbidity significantly predicted percent of session planning between-session homework (PARS  $B < -.01, p = .57$ ; CDRS-R  $B < .01, p = .18$ ; CGI-S  $B = .04, p = .07$ ; clinically significant depression  $B = -.04, p = .45$ ). Parental depression and youth-report of family conflict were then

examined in Model 2. When parental depression was held constant, youth-report of family conflict significantly predicted percent of session planning between-session practice (CBQ-C  $B = .01, p < .01$ ) where higher rates of family conflict predicted more time planning between-session practice. Parental depression was not significantly associated with homework planning (CES-D  $B < .01, p = .54$ ). Variables with a  $p$ -value  $\leq .10$  in Models 1 and 2 were included in a combined third model, which included both global severity of internalizing psychopathology and youth-report of family conflict. Family conflict significantly predicted percent of time spent planning homework with higher levels of conflict associated with more time planning homework (CBQ-C  $B = .01, p = .01$ ). The relationship between global severity of internalizing psychopathology and time spent planning between-session practice was not significant (CGI-S  $B = .03, p = .08$ ).

Following planned multivariate analyses, bivariate analyses examining alternate measures of psychopathology and family conflict as predictors of percent of session planning homework were then conducted. Similar to clinician-rated anxiety in multivariate analyses, self-reported anxiety (SCARED-C  $B < .01, p = .96$ ), and parent-report (SCARED-P  $B < -.01, p = .51$ ), anxiety did not predict percent of session planning homework. In contrast, parent-report of youth depression symptoms (MFQ-P  $B < .01, p = .06$ ) significantly predicted percent of session planning between-session practice with higher levels of depressive symptoms predicting more time spent planning between-session practice. Youth self-reported symptoms of depression (MFQ-C  $B = .01, p = .16$ ) did not significantly predict percent of session spent planning homework. Measures of parental anxiety did not significantly predict

homework planning (STAI-S  $B < .01$ ,  $p = .17$ ; STAI-T  $B < .01$ ,  $p = .75$ ). Given the results in bivariate analyses, Model 1 was re-examined including both parent-report of youth depression and global severity of internalizing psychopathology. Neither parent-report of youth depression severity (MFQ-P  $B < .01$ ,  $p = .22$ ) nor global severity of internalizing psychopathology (CGI-S  $B = .03$ ,  $p = .09$ ) significantly predicted percent of time spent. A third combined model was not indicated as such a model would overlap with the combined model examined in planned analyses.

*Additional Strategy Use.* Finally, the relationship between percent of session using techniques outside the treatment manual (e.g., effective communication, parent management training) with clinical characteristics was examined. In planned analyses, Model 1 included several indices of youth psychopathology severity, including anxiety severity (PARS), depression severity (CDRS-R), global internalizing severity (CGI-S), and clinically significant depression. In this model, clinician rating of anxiety severity significantly predicted use of strategies outside the treatment manual when holding the other variables in the model constant, with higher anxiety severity predicting greater use of outside strategies (PARS  $B = .01$ ,  $p = .05$ ). Other indices of severity and comorbidity were not significantly associated with therapist use of additional strategies in treatment (CDRS-R  $B < .01$ ,  $p = .12$ ; CGI-S  $B = -.02$ ,  $p = .39$ ; elevated depression status  $B = -.01$ ,  $p = .87$ ). In Model 2, neither family conflict (CBQ-C  $B = .01$ ,  $p = .16$ ) nor parental depression (CES-D  $B < -.01$ ,  $p = .15$ ) significantly predicted therapist use of additional strategies. A third combined model was not examined as it would have been redundant with Model 1.

As described above, additional bivariate analyses were then conducted to probe the relationship between alternate measures of psychopathology and family conflict and use of additional strategies by therapists. Neither parent- (MFQ-P  $B < .01$ ,  $p = .11$ ) nor youth-report (MFQ-C  $B < .01$ ,  $p = .92$ ) of depression severity significantly predicted percent of time using additional strategies in treatment. Parental anxiety did not significantly predict therapist use of additional strategies outside the manual (STAI-S  $B < -.01$ ,  $p = .19$ ; STAI-T  $B < -.01$ ,  $p = .27$ ). In contrast with youth-report of family conflict in multivariate analyses, parent-report of family conflict in bivariate analyses significantly predicted therapist use of additional strategies ( $B = .01$ ,  $p = .01$ ) with higher levels of family conflict associated with greater use of strategies outside the treatment manual. Given the significance of parent-report of family conflict, Model 2 was re-examined including this variable and parental depression. In this model, parent report of family conflict (CBQ-P  $B = .01$ ,  $p < .01$ ) significantly predicted therapist use of other strategies with higher levels of family conflict associated with greater percent of time implementing additional strategies. Parental depression did not significantly predict therapist use of additional strategies (CES-D  $B < -.01$ ,  $p = .09$ ). In a combined model, variables with a p-value  $\leq .10$  in Models 1 and 2 were included (PARS, CBQ-P, and CES-D). In this model parent-report of family conflict was significantly associated with therapist use of additional techniques (CBQ-P  $B = .01$ ,  $p = .01$ ) where higher levels of family conflict were associated with higher levels of therapist use of additional techniques. Neither youth anxiety severity (PARS  $B = .01$ ,  $p = .08$ ) nor parental depression (CES-D  $B < -.01$ ,  $p = .09$ ) significantly predicted therapist use of additional techniques.



## **Prediction of Participant Engagement (Aim 2)**

As described in the analytic plan, three aspects of engagement were examined: participant engagement in session, homework completion, and parent involvement. Analyses were conducted in SPSS (V. 23) using multilevel modeling with session (level 1) data nested within participant (level 2). Predictors were treated as fixed and centered around the grand mean. Analyses used maximum likelihood estimation. As before, three models were tested including Model 1 examining indices of youth psychopathology severity and internalizing comorbidity (PARS, CDRS-R, CGI-S, and clinically significant depression), Model 2 examining other psychosocial stressors for youth (parent CES-D and CBQ-C), and a third model containing significant predictors from Model 1 and Model 2 with ( $p \leq .10$  for inclusion). Bivariate analyses were then conducted. When bivariate tests revealed potential predictors ( $p \leq .10$  for inclusion) where measures included in the apriori models were not significant, the multivariate models were re-run using these alternate self-report measures.

**Participant Engagement in Session.** In Model 1, clinician-rated anxiety severity significantly predicted engagement in session (PARS  $B = -.04$ ,  $p < .01$ ) with higher levels of anxiety associated with lower levels of engagement in session. Holding the other variables constant, clinically significant depression ( $B = -.45$ ,  $p = .08$ ), depression severity (CDRS-R  $B = .02$ ,  $p = .13$ ), and global severity (CGI-S  $B = .13$ ,  $p = .18$ ) did not significantly predict youth engagement in session. Model 2, including parental depression and youth-report of family conflict, was then examined. Neither parental depression (CES-D  $B = -.01$ ,  $p = .11$ ) nor youth-report of family conflict (CBQ-C  $B = -.01$ ,  $p = .37$ ) significantly predicted youth engagement in

session. Due to the absence of significant variables in this model, a third model containing significant predictors across Models 1 and 2 was not examined.

Additional bivariate analyses were then examined to probe for alternate measures of psychopathology and family conflict as predictors of engagement in session. Self- and parent-report measures of anxiety severity were not examined as clinician-rated anxiety severity was significant in apriori Model 1. Parent-report of youth depression severity (MFQ-P  $B = -.01, p = .04$ ) was significant with higher levels of depression predicting lower levels of engagement. Youth-report of depression severity was not a significant predictor of engagement (MFQ-C  $B = -.01, p = .11$ ). Parental anxiety did not significantly predict youth engagement in session (STAI-S  $B = -.01, p = .12$ ; STAI-T  $B = -.01, p = .29$ ). In contrast with youth-report of family conflict in multivariate analyses, parent-report of family conflict significantly predicted engagement (CBQ-P  $B = -.03, p = .05$ ) with higher levels of conflict predicting lower levels of engagement. As described above, Model 1 was re-examined including parent-report of youth depression severity rather than clinician report of depression severity and all other measures included in apriori Model 1. In Model 1, anxiety severity continued to significantly predict engagement in session with higher levels of anxiety severity predicting lower levels of engagement (PARS  $B = -.03, p = .02$ ). No other index of youth psychopathology severity or comorbidity significantly predicted in-session engagement (MFQ-P  $B = -.01, p = .07$ ; CGI-S  $B = .19, p = .05$ ; clinically significant depression  $B = .02, p = .92$ ). Model 2 was re-examined including parent-report of family conflict and parental depression. Neither parental depression (CES-D  $B < -.01, p = .76$ ) nor parent-report of family conflict

(CBQ-P  $B = -.01$ ,  $p = .24$ ) were a significant predictor of in-session engagement when holding the other constant. Due to the lack of a significant predictor emerging in Model 2, a third combined model was not examined.

**Homework Completion.** As described above, Model 1 was first examined, including anxiety severity, depression severity, global severity, and clinically significant depression. No measure of youth psychopathology severity or internalizing comorbidity significantly predicted homework completion (PARS  $B = -.02$ ,  $p = .15$ ; CDRS-R  $B = -.02$ ,  $p = .12$ ; CGI-S  $B = .08$ ,  $p = .47$ ; clinically significant depression  $B = .30$ ,  $p = .31$ ). Model 2, including both parental depressive symptoms and youth-report of family conflict, was then examined. In this model, higher levels of parental depressive symptoms significantly predicted lower levels of homework completion (CES-D  $B = -.02$ ,  $p = .03$ ). Youth-report of family conflict was not a significant predictor of homework completion (CBQ-C  $B = -.03$ ,  $p = .15$ ).

Additional bivariate analyses were then conducted to further probe the relationship between homework completion and alternate measures of youth psychopathology and family conflict. Neither parent- nor youth-report of anxiety severity significantly predicted homework completion (SCARED-C  $B = -.01$ ,  $p = .08$ ; SCARED-P  $B < -.01$ ,  $p = .39$ ). Youth-report of depression significantly predicted homework completion (MFQ-C  $B = -.02$ ,  $p < .01$ ) where higher levels of depressive symptoms predicted less homework completion. In contrast, parent-report of youth depression did not significantly predict homework completion (MFQ-P  $B = -.01$ ,  $p = .19$ ). Alternate measures of parental psychopathology were not examined as parental depression emerged as significant in a priori models. In contrast with youth-report of

family conflict, parent-report of family conflict significantly predicted homework completion with higher levels of conflict predicting lower levels of homework completion (CBQ-P =  $-.031$ ,  $p < .05$ ). Model 1 was re-examined including variables with  $p$ -values  $\leq .10$  from bivariate analyses (SCARED-C, MFQ-C) and other indices of youth psychopathology from a priori Model 1 (CGI-S, clinically significant depression). In Model 1, youth report of depression symptoms was significantly associated with homework completion (MFQ-C =  $-.03$ ,  $p = .01$ ) with higher levels of depressive symptoms associated with poorer homework completion. Anxiety severity (SCARED-C  $B < .01$ ,  $p = .76$ ), overall severity (CGI-S  $B = .01$ ,  $p = .93$ ), and clinically significant depression ( $B = .18$ ,  $p = .34$ ) were not associated with homework completion. Model 2 was re-examined including parental depressive symptoms and parent-report of conflict. In this model, parental depression (CES-D  $B = -.02$ ,  $p = .06$ ) and parent report of family conflict (CBQ-P  $B = -.03$ ,  $p = .11$ ) did not predict homework completion. A combined third model included both youth-report of depression symptoms and parent-report of family conflict. In this model, youth-report of depression was significantly associated with homework completion (MFQ-C  $B = -.02$ ,  $p < .01$ ) with higher levels of depression predicting lower levels of homework completion. Parental depressive symptoms did not significantly predict homework completion (CES-D  $B = -.02$ ,  $p = .06$ ).

**Parent Involvement.** In Model 1, anxiety severity (PARS  $B = -.03$ ,  $p = .14$ ), depression severity (CDRS-R  $B = -.02$ ,  $p = .22$ ), global severity of youth psychopathology (CGI-S  $B = .12$ ,  $p = .41$ ), and presence of clinically significant depression ( $B = .08$ ,  $p = .83$ ) were not significantly associated with parent involvement

in treatment. In Model 2, parental depression was significantly associated with parental involvement in treatment (CES-D  $B = -.04$ ,  $p < .01$ ) with higher levels of parental depression predicting lower levels of parental involvement. Youth-report of family conflict was not significantly associated with parent involvement (CBQ-C  $B = -.03$ ,  $p = .14$ ). A combined third model was not examined as no variable in Model 1 significantly predicted parental involvement.

Additional bivariate analyses were then conducted to probe the relationship between parental involvement in treatment and alternate indices of psychopathology and conflict. Parent involvement was significantly associated with youth-report of anxiety and depression (SCARED-C  $B = -.02$ ,  $p = .02$ ; MFQ-C  $B = -.03$ ,  $p < .01$ ) with higher levels of psychopathology predicting lower levels of parental engagement. Parent-report of youth anxiety and depression did not significantly predict parent engagement (SCARED-P  $B = -.01$ ,  $p = .46$ ; MFQ-P  $B = -.02$ ,  $p = .09$ ). Parental anxiety was not examined as parental depression emerged as a significant predictor of engagement in multivariate analyses. In contrast with youth-report of family conflict, parent-report of family conflict significantly predicted parent involvement (CBQ-P  $B = -.04$ ,  $p = .04$ ). Model 1 was re-examined to include youth-report of anxiety (SCARED-C) and depression (MFQ-C) in addition to global severity (CGI-S) and clinically significant depression. In this model, youth depression severity was significantly associated with parent involvement (MFQ-C  $B = -.03$ ,  $p = .04$ ) with higher levels of youth depression associated with lower levels of parental involvement. No other factors were significantly associated with parental involvement in this model (SCARED-C  $B < -.01$ ,  $p = .71$ ; CGI-S  $B = .05$ ,  $p = .73$ ; clinically

significant depression  $B = -.03, p = .90$ ). Model 2 was examined to include parent-report of family conflict and parental depression. Parental depression significantly predicted parental involvement (CES-D  $B = -.04, p < .01$ ) where higher levels of parent depression predicted lower levels of parental involvement and parent-report of conflict and did not significantly predict parental engagement (CBQ-P  $B = -.03, p = .16$ ). A third combined model including MFQ-C and CES-D was then examined. In this model both depression severity (MFQ-C  $B = -.02, p < .01$ ) and parental depression (CES-D  $B = -.04, p < .01$ ) significantly predicted parental involvement with higher levels of depression predicting less involvement.

### **Relationship between Adherence and Engagement (Aim 3)**

**Latent growth curve modeling.** Mean level of adherence was first examined. Average level of adherence ranged from 2.24 (Session 4) to 2.52 (Session 1). In ANOVA analysis, there was not a significant difference in average level of adherence by session ( $F = .95, p = .50$ ). A linear model was first tested to examine change in adherence over time. The model did not fit well statistically ( $\chi^2[73, N = 92] = 111.32, p < .01$ ), however, it fit well descriptively (CFI = .94, TLI = .95, RMSEA = .08). The intercept latent variable significantly differed from zero ( $M = 2.38, p < .01$ ). The slope latent variable did not significantly differ from zero ( $b = -0.01, p = .08$ ). Significant individual variability was found for both the intercept ( $\sigma^2 = .30, p < .01$ ) and slope ( $\sigma^2 < .01, p < .01$ ) latent variables. There was a statistically significant correlation between the intercept and slope latent variables ( $r = -.40, p < .01$ ), with those individuals with poorer adherence at time 1 having lower slope values.

Engagement was then examined as a time-varying predictor of therapist-report of adherence. The relationship between adherence and youth-engagement in-session varied over time. In early sessions, youth engagement in session was not a significant predictor of adherence. However, in sessions 3 ( $b = .06, p = .04$ ) and sessions 5-12 ( $b = .07, .08, .11, .15, .13, .18, .20, .21$ , respectively, all  $p$  less than or equal to  $.01$ ) higher levels of adherence were significantly associated with higher levels of in-session engagement.

The relationship between adherence and homework completion also varied over time. Notably, session one was not included in these analyses as homework completion could not be rated by therapists at this point in time. In early sessions, homework completion did not significantly predict therapist-report of adherence. However, in sessions 8, 10, 11, and 12 ( $b = .08, .09, .10, .10$ , respectively, all  $p \leq .01$ ) higher levels of homework completion significantly predicted higher levels of adherence.

Similarly, parental involvement significantly predicted adherence in later sessions, but not in earlier sessions. In early sessions, the relationship between adherence and engagement was not significantly associated. However, in sessions 7-12 ( $b = .06, .10, .07, .11, .12, .14$ , respectively, all  $p \leq .05$ ) higher levels of adherence were significantly associated with higher levels of parent involvement.

**Cross-lagged analyses.** In order to examine cross-lagged analyses between adherence and engagement, both adherence and engagement (in-session, homework completion, and parental involvement) were averaged across stage in treatment to create three treatment time points: initial didactic sessions (sessions 1-3), beginning

graded engagement (sessions 4-7), and continuation of graded engagement (sessions 8-12). Notably, homework completion for the initial stage of treatment included data from only sessions 2 and 3 as therapists were not able to report on homework completion in the initial session. Three models were tested with engagement in-session, homework completion, and parent involvement each examined separately as predictors of therapist-report of adherence. Each model included participant engagement during the first stage of treatment as a predictor of adherence at the first and second stages of treatment. Participant engagement at the second stage of treatment was tested as a predictor of adherence at the second and third stages of treatment. Engagement at the third stage of treatment was tested as a simultaneous “predictor” of adherence at this stage.

The relationship between adherence and in-session engagement was first examined. The model did not fit well statistically ( $\chi^2[4, N = 71] = 12.06, p = .02$ ) or descriptively (CFI = .96, TLI = .89, RMSEA = .17). The cross-sectional relationship between in-session engagement and adherence at each stage of treatment, including the first ( $b = .22, p < .01$ ), second ( $b = .30, p < .01$ ), and third ( $b = .18, p = .01$ ) phases of treatment were significant with higher levels of engagement associated with higher levels of adherence. However, the relationship between engagement in the first phase of treatment and adherence at the second phase of treatment ( $b = -.08, p = .21$ ) as well as engagement in the second phase of treatment with adherence in the third phase of treatment ( $b = .08, p = .16$ ) were not significant. The relationship between adherence at each stage of treatment, including the first and second phases of treatment ( $b = .17, p < .01$ ), second and third phase of treatment ( $b = .22, p < .01$ ), and first and third



stages of treatment ( $b = .21, p < .01$ ) was significant. Adjusting the model to only include significant paths modestly improved descriptive model fit (CFI = .96, TLI = .92, RMSEA = .14).

The relationship between adherence and homework completion was next examined. As planned, the model included pathways between homework completion at the first stage of treatment with adherence at the first and second stages of treatment, homework completion at the second stage of treatment with adherence at the second and third stages of treatment, and homework completion at the third stage of treatment with adherence at the third stage of treatment. Additionally, given the significant relationships in the prior model between adherence at each stage of treatment, these factors were allowed correlate with one another within the model. The model fit well statistically ( $\chi^2[4, N = 70] = 4.60, p = .33$ ) and descriptively (CFI = 1.00, TLI = .99, RMSEA = .05). The cross-sectional relationship between adherence and homework completion was significant during the first ( $b = .13, p < .01$ ) and third phase of treatment ( $b = .14, p = .01$ ). The cross-sectional relationship between adherence and homework completion was not significant in the middle phase of treatment ( $b = .12, p = .13$ ). Similar to the prior model, the relationship between homework completion in the prior phase of treatment was not a significant predictor of adherence in the second ( $b = .02, p = .75$ ) or third ( $b = .04, p = .40$ ) phases of treatment. No longer including these paths slightly worsened descriptive model fit (CFI = .99, TLI = .98, RMSEA = .07).

Finally, the relationship between adherence and parental involvement was examined. The model was specified with relationships between parent involvement at

the first stage of treatment with therapist-report of adherence at the first and second stages of treatment, parent involvement at the second stage of treatment with adherence at the second and third stages of treatment, and parent involvement at the third stage of treatment with adherence at the third stage of treatment. Additionally, adherence at each stage of treatment were allowed correlate within the model. The model fit well statistically ( $\chi^2[4, N = 71] = 2.44, p = .66$ ) and descriptively (CFI = 1.00, TLI = 1.02, RMSEA < .01). Similar to the model with in-session engagement, the cross-sectional relationship between parental involvement and adherence was significant at each stage of treatment, including the first ( $b = .11, p = .02$ ), second ( $b = .16, p = .05$ ), and third ( $b = .12, p = .02$ ) phases of treatment were significant with higher levels of parental involvement associated with higher levels of adherence. However, the relationship between parent involvement in the first phase of treatment did not significantly predict adherence at the second phase of treatment ( $b = -.04, p = .54$ ) and parent involvement in the second phase of treatment did not significantly predict adherence in the third phase of treatment ( $b = .02, p = .75$ ). Adjusting the model to only include significant pathways had limited effect on the fit descriptively (CFI = 1.00, TLI = 1.00, RMSEA < .01) or statistically [ $\chi^2[6, N = 71] = 2.81, p = .83$ ].

## DISCUSSION

The goal of the current investigation was to examine therapist adherence to and family engagement in a transdiagnostic behavioral intervention implemented in primary care. The study sought to examine clinical characteristics of anxious and depressed youth and their families that predict therapist adherence and family engagement. Results from the current study supported therapist ability to maintain high levels of fidelity and participant engagement within the context of a transdiagnostic intervention. However, variance in fidelity and engagement was predicted by several aspects of youth clinical presentation.

The first aim of the current study sought to examine severity of youth psychopathology, comorbidity of youth psychopathology, parental psychopathology, and family conflict as predictors of adherence. Both youth severity and comorbidity were hypothesized to predict therapist-reported adherence in bivariate analyses with higher levels of symptoms predicting poorer adherence. However, comorbidity was hypothesized to not remain a significant predictor when severity was included in multivariate analyses. Both anxiety severity and presence of clinically significant depression predicted therapist-report of adherence in multivariate analyses in the hypothesized direction. However, when holding anxiety and global severity constant, dimensional rating of depression severity significantly predicted adherence with higher levels of depressive symptoms predicting higher levels of adherence. Lower levels of adherence among youth with greater anxiety severity and clinically significant depression supports the hypothesis that therapists may struggle to implement a transdiagnostic protocol equally well with more clinically complex youth.

Aspects of manual implementation that were most affected were further explored in observer-rated coverage of manual content. Additionally, both parental psychopathology and family conflict were hypothesized to predict therapist-reported adherence. However, contrary to hypotheses, measures of parental psychopathology and family conflict were not associated with therapist-report of adherence in either bivariate or multivariate analyses. These results may suggest that therapists were able to implement the intervention equally well among youth with higher levels of family stress. This finding supports feasibility of implementation of transdiagnostic approaches even among families with high levels of stress, not uncommon among families presenting in community settings (Addis et al., 1999).

The first aim of the current study was further explored through examining predictors of observer-coded adherence. A similar pattern of results was expected where both severity and comorbidity were hypothesized to predict adherence, with severity emerging as a more robust predictor. When examining implementation of the protocol broadly, few indices of severity or comorbidity were associated with observer-rated adherence. These findings were further unpacked through examining the relationship between youth clinical characteristics and coverage of each core element of the protocol (e.g., session review, exposure/behavioral activation, homework planning) as well as use of techniques outside the manual (e.g., effective communication). In these analyses, the relationship between youth clinical characteristics and adherence varied by treatment component. Severity of youth psychopathology and comorbidity predicted poorer coverage of core behavioral treatment components (e.g., exposure and behavioral activation) and more time spent

in session structuring activities, including, review of homework, planning between-session practice, and use of additional strategies outside the manual. These findings corroborate results using therapist-reported adherence that with *core treatment elements* therapists were able implement the manual with better fidelity among youth with less severe psychopathology and absence of comorbidity. Among youth with either more severe symptoms or multiple problem areas therapists may need additional time to effectively structure between session assignments. For example, between-session practice may require less time to plan for a child with moderate separation anxiety alone compared with a child with severe generalized worries and behavioral withdrawal associated with depression. Therapists may also need to include strategies outside the manual for effective implementation of treatment. For example, among depressed youth working to increase engagement in social activities, training in effective communication may be needed to reach this goal. The current BBT manual referenced the need for skill building in order to allow youths to achieve the goals of their exposure and activation plans. Given these findings regarding use of non-core treatment techniques, additional guidance on appropriate (and inappropriate) use of supplemental materials would seem useful.

Additionally, parental psychopathology and family conflict were hypothesized to predict observer-coded adherence. In analyses of percent of the manual implemented, higher levels of family conflict significantly predicted lower levels of adherence. When examining adherence by component of treatment, higher levels of parental depression and family conflict also predicted greater time spent on session structuring activities, including reviewing the prior session, planning between-session

practice, and using additional therapeutic strategies. These results support the hypothesis that in working with youth with high levels of family stress, therapists may need to spend more time supporting between-session practice and more often implement elements outside the treatment manual. These results are consistent with findings from the broader literature that implementation of core treatment components is lower among youth higher levels of life stressors (e.g., Chorpita et al., 2014). Results from these analyses suggest that implementing a transdiagnostic approach among more clinically complex youth may require therapists to balance implementing optimal doses of core treatment elements with flexibility in their approach to fully meet the needs of these youth. As described above, limited research has examined the relationship between adherence and treatment outcomes (Schoenwald & Garland, 2013). Without further work on the relationship between adherence and outcomes, it is difficult to determine whether flexibility in implementation improves outcomes for clinically complex youth or detracts from delivery of critical treatment elements.

A second aim of the current study was to examine predictors of participant engagement, as reported by study therapists. Three aspects of participant engagement were examined: youth engagement in session, homework completion, and parent involvement with treatment. Youth severity and comorbidity were hypothesized to predict engagement in session as well as homework completion. Severity was hypothesized to better predict both measures of engagement compared with comorbidity. Family conflict and parental psychopathology were hypothesized to predict both homework completion and parental involvement. In multivariate analyses, anxiety severity emerged as a robust predictor of youth engagement in

session when controlling for other factors. This finding is consistent with results from the broader literature suggesting youth with greater anxiety severity have more difficulty with in-session exposure practice (e.g., Morgan et al., 2013). It may suggest that therapists need to work with more severely anxious youth to maintain engagement throughout session. In contrast, across measures of parental psychopathology and family conflict, no measure emerged as a robust predictor of in-session engagement in multivariate analyses. This finding is consistent with hypotheses that youth psychopathology, rather than parent psychopathology or family conflict, would predict in-session engagement. Results may be reflective of the flexibility within this treatment model to include parents as needed and demonstrate ability for these factors not to impede engagement within the session.

The relationship between youth completion of between-session practice and youth and family clinical characteristics was also examined. In planned, multivariate analyses parental psychopathology predicted youth homework completion, whereas, youth psychopathology (including severity and comorbidity) was not a robust predictor of homework completion. However, youth *self-report* of depressive symptoms significantly predicted homework completion in bivariate, but not multivariate, analyses. These results partially supported the hypothesis that both parental depression and youth psychopathology would predict homework completion. These findings may lend support to the idea that while parental psychopathology may not impede in-session engagement, that outside the structured setting of a therapist's office youth with depressed parents have greater difficulty implementing the skills learned in session. Indeed, within the broader literature children of depressed parents

have demonstrated failure to acquire skills taught in treatment (Dietz et al., 2014). In contrast, youth psychopathology did not appear to adversely affect between-session engagement. It is possible that therapist's use of greater time spent reviewing and planning homework among more severely anxious youth may have helped to prevent difficulty with between-session engagement.

A final aspect of engagement, parental involvement, was examined as the third part of the second aim. Parental psychopathology and family conflict, rather than severity of youth psychopathology and comorbidity, were hypothesized to predict parental involvement. As hypothesized, parental psychopathology emerged as a significant predictor of parental involvement in multivariate analyses with greater symptoms of parental depression predicting lower levels of parental involvement. In contrast with hypotheses, youth self-reported symptoms of depression also significantly predicted parental involvement in treatment with higher levels of depression severity predicting lower levels of parental involvement. It is, perhaps, unsurprising that parents with symptoms of a disorder characterized by negative affect and behavioral withdrawal would also have greater difficulty engaging in their child's treatment. Where parental involvement is necessary, therapists may need to spend additional time engaging parents with symptoms of depression. The relationship between youth symptoms of depression and parental involvement should be further explored in additional samples as this finding was supported by only one index of youth depression (self-report).

The final aim of the study sought to examine the relationship between engagement and adherence over time and across sessions. Engagement was



hypothesized to predict adherence both within session and between sessions with engagement in earlier sessions hypothesized to predict adherence in later sessions. The relationship between engagement and adherence was first examined within each session with engagement as a time-varying predictor of adherence in latent growth curve analyses. These analyses revealed that while adherence did not vary significantly over time (the slope did not vary significantly from 0), the relationship *between* adherence and engagement did vary significantly over time. Specifically, while in-session engagement, homework completion, and parental involvement did not significantly predict adherence in early sessions, they did significantly predict adherence in later sessions. The relationship between engagement and adherence was then examined both within and between sessions in cross-lagged analyses. This model was largely reflected in cross-lagged analyses, where engagement did not predict adherence in future phases of treatment, but largely was predictive of adherence within phase of treatment across aspects of engagement. These results may suggest that while average level of adherence across sessions does not vary significantly over the course of treatment, the relationship between adherence and engagement might. For example, in earlier sessions that are more didactic in content and focused on teaching new skills, therapists may be able to maintain high levels of fidelity regardless of the child's level of engagement. However, as treatment moves towards focusing on making progress on exposure hierarchies and behavioral activation, the further behind a child falls in making progress on their hierarchy may significantly impact therapist implementation of the manual. In contrast, among children engaged with treatment

and making progress on their hierarchy, therapist ability to implement core elements of treatment may become easier over time.

As hypothesized, baseline clinical characteristics of youth were associated with therapist adherence and participant engagement in treatment in a transdiagnostic, behavioral intervention for pediatric anxiety and depression. Clinical characteristics selected had either been previously identified in the therapy process literature as consequential for treatment implementation or were factors associated with poor treatment outcomes in the broader internalizing literature, including severity of psychopathology, comorbidity, parental psychopathology, and family conflict. Anxiety severity was a robust predictor of multiple aspects of adherence and engagement. While depression severity and internalizing comorbidity predicted adherence and engagement at times, anxiety severity better predicted these factors. This result is consistent with the literature on predictors of treatment outcomes where severity of target symptoms more clearly predict response to treatment than comorbidity (Higa-McMillan, Francis, Rith-Najarian, & Chorpita, 2016; Weersing et al., 2016). Moreover, it suggests that within the context of a transdiagnostic trial therapists were able to implement the protocol effectively with youth with multiple problem areas targeted in treatment. However, among youth with more severe anxiety, therapists may struggle to effectively implement the intervention. Based on observer-coded analyses, this appears to be due in part to therapist need to spend greater time structuring the session and planning between-session practice. For example, for a child with severe generalized anxiety, setting up between-session exposure practice that effectively challenges their core fear may take more time than

assigning continued exposures for separation anxiety. Further work is needed to determine whether flexibility in manual implementation promotes outcomes among more severe youth or whether youth would be better served by more time in session focused on exposure and behavioral activation. The factors that best predicted adherence and engagement varied depending on whether in-session or between session processes were being examined. Specifically, therapist adherence in session and participant engagement in session were both better predicted by severity of youth psychopathology. In contrast, youth completion of homework between session and parent involvement between session was better predicted by parental psychopathology.

Results of the current study suggest that therapists were able to implement a transdiagnostic protocol in primary care with high adherence and participant engagement. However, among youth with more severe clinical features and higher levels of family stress therapists may expect to have greater difficulty with implementation of treatment and participant's engagement with treatment. Moreover, we may be able to predict the type of difficulty a therapist or family might have based on the participant's clinical picture. Our ability to predict difficulty with treatment implementation can also help us to choose additional strategies to increase engagement and prevent low fidelity to the treatment model. For example, therapists may want to consider proactively involving parents with their own history of depression in treatment and develop specific and concrete plans to improve homework completion or increase motivation for their involvement in treatment. Therapists may also be mindful of the effect of parental depression on treatment for youth and

consider referring parents to treatment when appropriate. For youth with more severe symptoms, therapists might anticipate difficulty maintaining fidelity. Specifically, they may spend less time practicing exposure or behavioral activation within session. As described above, this may be driven in part by more demanding between-session assignments that require more time in treatment to plan. However, given lower levels of in-session engagement among more severely anxious youth, this finding might be driven by youth avoidance. Inoculating therapists with this knowledge and paying special attention to these cases in supervision may help to lessen the impact of youth severity on treatment fidelity. Treatment of more severely anxious youth may also require therapists to introduce techniques outside the treatment manual. Initial training and supervision that guides therapists in use of supplemental strategies to support, rather than detract from, core treatment elements may also aid in effective treatment implementation. Finally, results suggested that in later treatment sessions adherence is associated with engagement. While this may be driven by therapist efforts to engage youth and problem solve around barriers to engagement, being cognizant of this relationship may be valuable in balancing structuring elements of treatment with continued in-session behavioral practice.

Several limitations to the current study as well as important next steps in this line of research exist. First, the current study aimed to establish a relationship between historical predictors of treatment outcomes with two aspects of treatment implementation: adherence and engagement. The relationship between treatment outcomes with both the clinical characteristics examined as predictors as well as adherence and engagement need to be examined in the current sample to move

forward with understanding these variables as factors associated with variability in treatment outcome. Moreover, further examination of the relationship between adherence and treatment outcomes may aid in evaluating whether flexibility in manual implementation can improve outcomes among more severely anxious youth. A second limitation of the study is in the area of observer-coded ratings. While these analyses provide an initial glimpse into the relationship between adherence and clinical characteristics that help to support the results found through therapist-reported adherence, these analyses were not well powered. Further observer ratings are needed to fully examine these questions. Finally, the current analyses were conducted within a trial with a blended efficacy-effectiveness design. While the trial was conducted in primary care, treatment was implemented by well-trained study therapists. Rates of adherence were high with strong use of supervision. Determining whether this relationship between youth clinical characteristics and fidelity exist in a true effectiveness study is an important next step that will allow for generalization of these findings past tightly controlled randomized clinical trials.

TABLES

Table 1: Colinearity Statistics for Predictors of Adherence

	<b>Tolerance</b>	<b>VIF</b>
<b>PARS</b>	0.835	1.198
<b>CDRS-R</b>	0.739	1.354
<b>CGI-S</b>	0.681	1.469
<b>CES-D</b>	0.963	1.039
<b>CBQ-C</b>	0.924	1.083

CBQ-C = Conflict Behavior Questionnaire-Child Report, CDRS-R = Children's Depression Rating Scale-Revised, CES-D = Center for Epidemiological Studies Depression Scale, CGI-S = Clinician Global Impressions-Severity Scale, PARS = Pediatric Anxiety Rating Scale, VIF = Variance Inflation Factor

Table 2: Bivariate Correlations Between Predictors

	PARS	CDRS-R	CGI-S	CES-D
PARS				
CDRS-R	.232 (.024)			
CGI-S	.395 (.000)	.455 (.000)		
CES-D	.033 (.748)	.055 (.600)	-.120 (.248)	
CBQ-C	.081 (.435)	.272 (.008)	.148 (.152)	.047 (.650)

CBQ-C = Conflict Behavior Questionnaire-Child Report, CDRS-R = Children's Depression Rating Scale-Revised, CES-D = Center for Epidemiological Studies Depression Scale, CGI-S = Clinician Global Impressions-Severity Scale, PARS = Pediatric Anxiety Rating Scale

Table 3: Demographic and Clinical Characteristics

	BBT <i>N (%)</i>
N	95
Age, M(SD)	11.3 (2.4)
Gender	54 (56.8)
Race	71 (74.7)
Ethnicity	18 (18.9)
Living with both bio parents	67 (70.5)
Parent at least college graduate	61 (65.6)
Site, N(% San Diego)	49 (51.6)
Monthly income (thousands), Median (range)	4.4 (0.6-130)
Randomized with elevated depression	36 (37.9)
Conflict Behavior Questionnaire, Child-Report, M(SD)	4.2 (4.3)
Children's Depression Rating Scale, Revised, M(SD)	32.2 (12.6)
Center for Epidemiologic Studies Depression Scale, Revised, M(SD)	12.5 (9.3)
Clinical Global Impressions Severity, M(SD)	4.2 (0.8)
Mood and Feelings Questionnaire, Child Report, M(SD)	15.2 (11.2)



Table 3: Demographic and Clinical Characteristics, Continued

Pediatric Anxiety Rating Scale, M(SD) <sup>‡</sup>	20.1 (5.6)
State-Trait Anxiety Inventory, State Subscale, M(SD)	33.8 (11.2)
Screen for Child Anxiety and Related Emotional Disorder, Child-Report, M(SD)	28.9 (12.0)

Table 4: Exploratory Bivariate Predictor Analyses of Participant Engagement

	<b>In-Session Engagement</b>	<b>Homework Completion</b>	<b>Parental Involvement</b>
<b>Age</b>	0.031214	-0.04506	-.07207
<b>Gender</b>	0.014011	0.041491	-0.19527
<b>Minority Status</b>	-0.04521	-0.04835	0.039685
<b>PARS</b>	-.03174*	-0.02329	-0.03046
<b>SCARED-P</b>	-0.00946	-0.00486	-0.00533
<b>SCARED-C</b>	-0.00240	-.01172	-.01922*
<b>CDRS-R</b>	0.000637	-0.00811	-.01502
<b>MFQ-P</b>	-.01273*	-0.00948	-.01540
<b>MFQ-C</b>	-0.00995	-.02117**	-.02764**
<b>Elevated Depression</b>	-0.10012	-0.08227	-0.29481
<b>CGI-S</b>	0.023630	-0.02785	-0.06438
<b>CES-D</b>	-0.01237	-.01883*	-.04100***
<b>STAI-S</b>	-0.01002	-.01767*	-.02927**
<b>STAI-T</b>	-0.00649	-.01557*	-.02451**
<b>CBQ-P</b>	-.02807*	-.03148*	-.04161*
<b>CBQ-C</b>	-0.01585	-0.02798	-0.03627

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

CBQ-C = Conflict Behavior Questionnaire, Child Report; CBQ-P = Conflict Behavior Questionnaire, Parent Report; CDRS-R = Children's Depression Rating Scale-Revised; CES-D = Center for Epidemiological Studies Depression Scale; CGI-S = Clinician Global Impressions-Severity Scale; MFQ-C= Mood and Feelings Questionnaire, Child Report; MFQ-P= Mood and Feelings Questionnaire, Parent Report; PARS = Pediatric Anxiety Rating Scale; SCARED-C = Screen for Childhood Anxiety and Related Emotional Disorders, Child-Report; SCARED-P = Screen for Childhood Anxiety and Related Emotional Disorders-Parent-Report; STAI-S = State-Trait Anxiety Inventory, State Subscale; STAI-T = State-Trait Anxiety Inventory, Trait Subscale

FIGURES

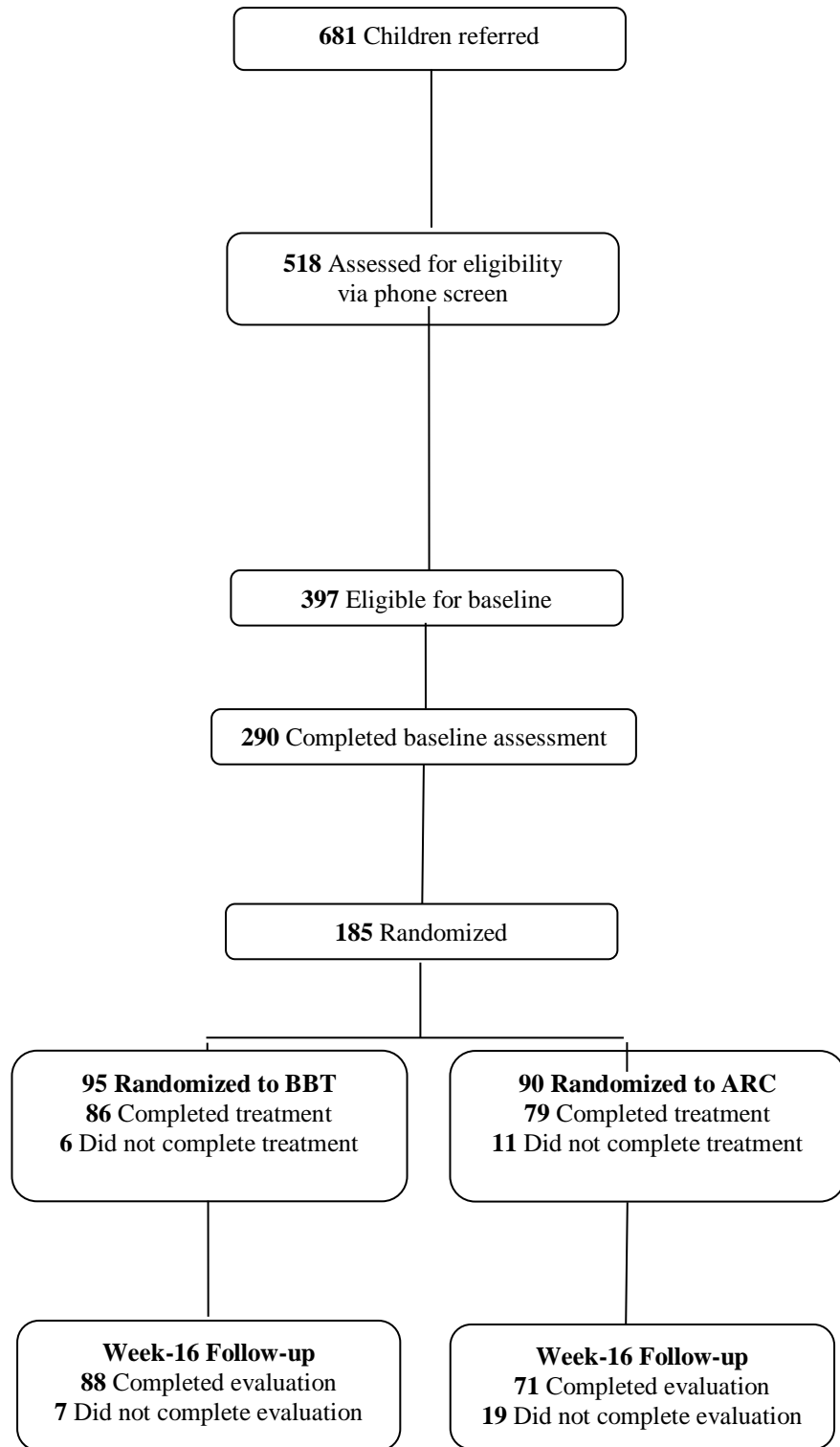


Figure 1: CONSORT Chart

## APPENDICES

### Appendix A: Therapy Process Form

<b>In Session</b>						
Child engagement with the therapeutic process	<input type="radio"/> 0 Youth not engaged	<input type="radio"/> 1	<input type="radio"/> 2 Youth occasionally or somewhat engaged	<input type="radio"/> 3	<input type="radio"/> 4 Youth actively engaged	<input type="radio"/> NA
Therapeutic alliance	<input type="radio"/> 0 Poor therapeutic alliance	<input type="radio"/> 1	<input type="radio"/> 2 Average therapeutic alliance	<input type="radio"/> 3	<input type="radio"/> 4 Excellent therapeutic alliance	<input type="radio"/> NA
<b>Out of Session</b>						
Homework completion	<input type="radio"/> 0 Did not complete homework	<input type="radio"/> 1	<input type="radio"/> 2 Some homework completed	<input type="radio"/> 3	<input type="radio"/> 4 All homework completed	<input type="radio"/> NA
Homework quality	<input type="radio"/> 0 Poor	<input type="radio"/> 1	<input type="radio"/> 2 Satisfactory	<input type="radio"/> 3	<input type="radio"/> 4 Excellent	<input type="radio"/> NA
Child engagement with the therapeutic process	<input type="radio"/> 0 Youth not engaged	<input type="radio"/> 1	<input type="radio"/> 2 Youth occasionally engaged	<input type="radio"/> 3	<input type="radio"/> 4 Youth actively engaged	<input type="radio"/> NA
Parent involvement with child's therapeutic process	<input type="radio"/> 0 Parent not involved in youth's treatment	<input type="radio"/> 1	<input type="radio"/> 2 Parent adequately involved, completes most tasks as assigned	<input type="radio"/> 3	<input type="radio"/> 4 Parent involved, completes all tasks assigned	<input type="radio"/> NA
<b>Overall</b>						
Youth's overall treatment progress	<input type="radio"/> 0 No progress	<input type="radio"/> 1	<input type="radio"/> 2 Moderate progress	<input type="radio"/> 3	<input type="radio"/> 4 Great progress	<input type="radio"/> NA
Therapist's adherence to therapy model	<input type="radio"/> 0 Poor adherence	<input type="radio"/> 1	<input type="radio"/> 2 Acceptable adherence	<input type="radio"/> 3	<input type="radio"/> 4 Excellent adherence	<input type="radio"/> NA
Overall rating of session	<input type="radio"/> 0 Poor session	<input type="radio"/> 1	<input type="radio"/> 2 Average session	<input type="radio"/> 3	<input type="radio"/> 4 Excellent session	<input type="radio"/> NA
<b>S/CGI</b>						

## Appendix B: Observer-Rated Adherence Forms

	Was topic covered?	
	YES	NO
<b>Review of Previous Session</b>		
6.1 Set agenda (continue working on master plan)		
6.2 Review previous session content (e.g., skills, avoidance, master plans and goals)		
6.3 Review of Master Plan implementation		
6.4 Review mood monitoring and relaxation		
<b>Master Plan and In-Session Practice</b>		
6.5 Review rationale for facing stressors		
6.6 Review progress on Master Plan		
6.7 Identify one or more step on the Master Plan to complete in session		
6.8. Practice in-session		
<b>Summary and Between-Session Practice</b>		
6.9 Assign mood monitoring and relaxation		
6.10 Assign plans taken from Master Plan over the next week		
6.11 Discuss specifics of when assignments will be completed		
6.12 Summarize session content		



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