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Barriers to Treatment for Anxious and Depressed Youths: Predictors of  
Parents' Anticipated and Experienced Barriers to Care in a Randomized Effectiveness Trial

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

in

Clinical Psychology

by

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2019

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Chair

University of California San Diego

San Diego State University

2019

## DEDICATION

This dissertation is dedicated to my friends and family. Their gracious encouragement, faith in me, and the examples they provide in their daily lives, have been integral to my personal growth, my progress in graduate school, and the completion of this project. Among these are my JDP cohort and many colleagues - I landed in fantastic company in that regard. My thanks in particular to Jessica McCurley, Robyn Migliorini, Minh-Chau Do, Amy Ustjanauskas, Tonya Pan-Weisz, and Susanne Sreedhar. I am grateful to my mother for her persistent support of my education and growth, and for offering an example of grit which I have yet to see matched. Finally, thank you to my spouse, Son Crasnow, whose mind and heart inspire me, with whom I am grateful to learn and grow, and who remains my favorite human.

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Findings from this dissertation are being prepared for publication. The dissertation author was the primary investigator and author of this material. Publications based on this dissertation will be co-authored by V. Robin Weersing.

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Figure 1. CONSORT Flow Diagram for Randomized Trial of BBT from:

Weersing, V. R., Brent, D. A., Rozenman, M. S., Gonzalez, A., Jeffreys, M., Dickerson, J. F., Lynch, F.L., Porta, G., & Iyengar, S. (2017). Brief Behavioral Therapy for Pediatric Anxiety and Depression in Primary Care: A Randomized Clinical Trial. *JAMA Psychiatry*, 74(6), 571-578.

## VITA

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## ABSTRACT OF THE DISSERTATION

Barriers to Treatment for Anxious and Depressed Youths: Predictors of  
Parents' Anticipated and Experienced Barriers to Care in a Randomized Effectiveness Trial

by

Katherine Leigh Conover

Doctor of Philosophy in Clinical Psychology

University of California San Diego, 2019  
San Diego State University, 2019

Professor V. Robin Weersing, Chair

Anxiety and depression in youth are prevalent, yet few affected youths receive an adequate dose of mental health treatment (MHT). Parents' perceptions of barriers to treatment participation may be critical, as parents serve as gatekeepers to services. Providing MHT in high-access settings like pediatric primary care may reduce barriers and increase access to adequate care.

Parents' perceptions of barriers were examined in an RCT ( $n = 185$ ) investigating the effectiveness of primary-care-embedded Brief Behavioral Therapy (BBT) for anxious and/or depressed youths (ages 8-16) versus assisted referral to care (ARC) in traditional outpatient settings. Aims included identifying family characteristics associated with anticipated barriers (A-

BTP; Aim 1) at baseline and experienced barriers (E-BTP; Aim 2) measured at Week 16 after treatment engagement and testing if E-BTP mediated the effects of treatment assignment on receipt of an adequate dose ( $\geq 8$  sessions; Aim 3). It was hypothesized that psychopathology and marginalization would be associated with higher barriers, BBT assignment and lower E-BTP associated with adequate dose, and that associations between A-BTP and E-BTP would be weaker in BBT.

As hypothesized, higher A-BTP was associated with higher parent anxiety and depression at baseline; however, lower youth depression was also associated with higher A-BTP. Higher A-BTP, youth Latinx identity, poorer youth functioning, higher parent anxiety, and older parent age at baseline were associated with higher E-BTP. Associations between A-BTP and E-BTP were weaker in BBT versus ARC (interaction  $\beta = -0.27, p = .020$ ). Assignment to BBT ( $OR = 22.42, p = .039, 95\% CI = 9.06-55.50$ ) was associated with adequate dose. However, contrary to hypotheses, treatment assignment was not related to E-BTP, and models including E-BTP, treatment, and dose were unstable and could not be estimated.

In this sample of anxious/depressed youths, parents' perceptions of barriers were associated with psychopathology and Latinx identity. Anticipated (A-BTP) and experienced barriers (E-BTP) were associated, and assignment to primary care-based BBT was more likely to result in an adequate dose. Families with Latinx youth, elevated parent psychopathology, and poorer youth functioning are more likely to perceive barriers to treatment and may need additional support to facilitate treatment participation.

## CHAPTER 1. INTRODUCTION

Anxiety and depressive disorders in childhood and adolescence are highly prevalent (Merikangas et al., 2010) and associated with significant distress (Beesdo et al., 2009). National survey estimates suggest nearly one in three youths will experience an anxiety disorder (Merikangas et al., 2010), and one in five youths will experience a depressive episode (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). These disorders are also increasingly more common in youths; current depression or anxiety was reported for 4.7% of youths in 2007 and 5.3% in 2011-2012, in national estimates (Bitsko et al., 2018). Depressive and anxiety disorders have well-documented associations with functional impairment for youths across life domains (Bittner et al., 2007; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Further, these disorders are linked to negative outcomes in later adolescence (Bittner et al., 2007; Costello et al., 2003) and into adulthood, such as continuance or recurrence of anxiety and depression, higher risk of additional mental health disorders, more limited educational attainment, and impacts to social functioning (Weissman et al., 1999; Zisook et al., 2007; Fergusson & Woodward, 2002).

Despite the development of evidence-based practices (EBPs) targeting youth anxiety and depression (Weersing, Jeffreys, Do, Schwartz, & Bolano, 2017; Higa-McMillan, Francis, Rith-Najarian, & Chorpita, 2016), only two in five youths in the United States suffering from a depressive disorder will receive related treatment (Merikangas et al., 2011), as will fewer than one in five suffering from anxiety disorders (Merikangas et al., 2011). Youths with behavior disorders (e.g., conduct disorder, oppositional defiant disorder) or attention-deficit hyperactivity disorder are far more likely to receive treatment for those disorders than are youths for anxious and depressive disorders (Costello, He, Sampson, Kessler, & Merikangas, 2014). In fact, youth

anxiety disorders are the least likely youth mental health disorder to be treated (Merikangas et al., 2010; Costello et al., 2014). Initiating care is not the final barrier to clinical gains. Meta-analyses suggest that among children and adolescents who initiate outpatient mental health services, 28-75% will drop out before treatment completion (de Haan, Boon, de Jong, Hoeve, & Vermeiren, 2013).

A frequently overlooked aspect of youth mental health services is the extent to which youth access to treatment, and ability to continue pursuing ongoing care, is frequently outside youth control. The decision to seek mental health services and to continue engagement once services are initiated, is often the purview of parents. Parents' perceptions of barriers to youth treatment may be a critical factor in the gap between youth need and youth service utilization. Parent perceptions of barriers, including (a) concrete stressors and obstacles to care and (b) the perceived demands of treatment participation itself, have been associated with likelihood of initiating care (Thurston & Phares, 2008; Gould et al., 2009), less consistent attendance once services are initiated, engagement in fewer sessions overall, and higher rates of attrition from care (Kazdin et al., 1997b). Recent efforts to expand access to care for youth, reduce concrete barriers to care, and address negative impacts of stigma associated with mental health services, have explored alternative settings for behavioral health care provision, such as school-based services. Offering co-located specialty mental health services in primary care settings has garnered attention as a promising option, as this is a setting often highly accessed by youth and families (Simpson et al., 2005) and which may be more culturally acceptable for some families (Zerr & Pina, 2014; Givens, Houston, Van Voorhees, Ford, & Cooper, 2007). Recent work providing services in primary care settings has found notable success achieving significant clinical gains across youth disorders, particularly for anxious and depressed youths (Asarnow,



Rozenman, Wiblin, & Zeltzer, 2015). In fact, primary care settings may be particularly well suited as a location for treating anxious and depressed youths (Asarnow et al., 2015), as explored in more detail in the following section. However, several implications of service delivery in these settings have, as yet, not been well characterized. For example, it is not known how delivery of specialty mental health services in primary care may affect parents' perceptions of barriers experienced during the course of their youth's treatment, whether parents' perceptions of barriers in pediatric primary care are related to youth service utilization in the same manner as in outpatient settings, or which characteristics of youths and families may predict parent perceptions of barriers in these settings. Additional work is needed to identify relationships and possible mechanisms operating in primary care which may have bearing for reducing parents' perceptions of barriers and bolstering treatment initiation and retention efforts for internalizing youths. To address these questions, the current study examined parents' perceptions of anticipated and experienced barriers to treatment participation in the context of a randomized clinical trial (Weersing et al., 2017) investigating a primary-care-embedded Brief Behavioral Therapy (BBT) versus assisted referral to traditional outpatient MHT (ARC). To situate this investigation in the context of the larger literature, the following sections outline the rationale for offering primary-care based services for anxious and depressed youths. This includes review of findings regarding barriers to youth care, and service utilization across youth diagnostic groups, and findings regarding youth and family characteristics associated with reduced access to and increased barriers associated with youth specialty mental health care.

### **1.1 Pediatric Primary Care: A Promising Access Point for Youth Mental Health Services**

While anxious and depressed youths access mental health services at rates well below documented need (Merikangas et al., 2011), they are high utilizers of medical services (Campo,

Comer, Jansen-McWilliams, Gardner, & Kelleher, 2002). Among youth psychiatric conditions, mood disorders are the class of disorders most closely associated with comorbid, chronic illnesses in childhood (Ortega, Huertas, Canino, Ramirez, & Rubio-Stipec, 2002). A history of asthma is more prevalent among youths with anxiety disorders (Ortega et al., 2002). Broadly, there are also high rates of chronic pain and other somatic symptoms among anxious and depressed youths presenting to pediatric primary care (Campo et al., 2002). Thus, a greater proportion of anxious and depressed youths may have reason to present to pediatric primary care settings for ongoing or maintenance medical services, making pediatric primary care a particularly apt catchment area for youths with mental health service needs.

Recent estimates in a large, nationally representative sample suggest 10.1% of youths with a mental health disorder receive mental health services in a medical setting, compared to 22.8% accessing care through specialty mental health (Costello et al., 2014). Indeed, among initial family contacts seeking resources for a youth's mental health, 42% are contacts with pediatricians (Shanley, Reid, & Evans, 2008). Similarly, anxious and depressed youths also currently receive mental health treatment for these disorders through pediatric primary care; 14.2% of youths with anxiety disorders and 17.6% of those with major depressive disorder or dysthymia receive related mental health treatment from a primary care provider (Costello et al., 2014). Among youth mental health conditions, depressive disorders are those for which the greatest proportion of affected youths receive related mental health treatment from a primary care provider (Costello et al., 2014). There has been widespread discussion of the importance of screening youth for depression in pediatric primary care settings (Forman-Hoffman et al., 2016).

In addition, physical illnesses may provide low-stigma reasons to present to pediatric primary care, potentially easing initiation of care for parents and youths who may be wary of

mental health services. Accessing mental health services in a medical setting may be more culturally acceptable or more aligned with cultural values for some families, and thus serve as a gateway to mental health services for youths who might not access it otherwise (Dwight-Johnson et al., 2010; Cooper et al., 2003; Givens et al., 2007). This is particularly important for ethnic and racial minority youth, as estimates suggest that these youths are disproportionately undertreated, and less likely to receive mental health treatment than non-Hispanic white youths (e.g., Cummings & Druss, 2011) even controlling for other significant covariates associated with service use (Garland et al., 2005). Yet when youths were referred to mental health care by a pediatrician or primary care provider, parents of anxious Latino youths have been found to be more likely than parents of Caucasian youths to initiate the mental health intake process (Zerr & Pina, 2014). In fact, findings suggest that Latinx youth and families may be more likely to take part in mental health services offered in a primary care setting than through traditional outpatient settings (Merikangas et al., 2011). These findings suggest pediatric primary care may be an accessible resource for a broader population of families who might benefit from help linking their youth to mental health care. Further, there is reason to believe mental health services may be effective when delivered in primary care settings. A meta-analysis found that behavioral health services for children and teens received in primary care settings, including co-located services, as in the present study, have been associated with more positive clinical outcomes for youths than were services provided in usual care settings (Asarnow et al., 2015).

Based on these findings, pediatric primary care has been promoted as an essential mental health (or behavioral health, in pediatric parlance) service setting for youth and families (U.S. Code, Title 42, Parity in Mental Health and Substance Use Disorder Benefits, 2008; U.S. Code, Title 42, Patient Protection and Affordable Care Act, 2010, Title 42). These calls for primary

care-based mental health treatment have been based on the proposition that families will experience fewer barriers to treatment initiation and participation in this environment. Parents' perceptions of barriers to MHT participation may be particularly important in the context of services for youths. Children and adolescents are connected to care with their parents' agreement, and primarily through their parents' efforts.

## **1.2 Parents' Perceptions of Barriers to Treatment Participation**

The barriers to treatment participation model, developed by Kazdin and colleagues (Kazdin et al., 1997b) focuses on parents' perceptions of barriers to their youth's care, as reported retrospectively, and has since been the focus of broad research to understand the prevalence of these barriers and their role in mechanisms pertaining to youth mental health treatment. Research suggests that parent perceptions of barriers to their youth's care are common; estimates suggest that in parents of youth with mental or behavioral health needs, 35-61% of parents engaged in connecting their youth to mental health services endorsed one or more barriers to treatment participation (Owens et al., 2002; Girio-Herrera et al., 2013). Parent perceptions of barriers to treatment participation have been conceptualized in different ways by different research groups. In a recent review, Reardon and colleagues (2017) posited four key types of barriers identified across the literature describing parents' perceptual barriers and facilitators to their youth's care: 1- *family circumstances*, such as conflicting responsibilities and demands, and characteristics of the family's support network; 2- *knowledge and understanding* of mental health problem and help-seeking processes, including recognizing the existence, severity, and impact of a problem, of the need for help, and how to access it; 3- *mental health system-related barriers*, including costs, and factors associated with treatment setting; and 4- *attitudes* towards service providers and treatment, including concerns about others' perceptions

of service use for the child, how effective and relevant treatment might be, past experiences with mental health providers and quality of services (Reardon et al., 2017). Across the literature, the authors noted that cost of services was a concern in over ten percent of participants in quantitative studies, most frequently in U.S. samples (Reardon et al., 2017). Concerns about stigma were widespread with more than ten percent of participants in quantitative studies endorsing these. Awareness of help-seeking strategies and resources were a concern for at least 14 percent of participants in quantitative studies, and between 12 and 26 percent of parents across quantitative literature endorsed not identifying a need for treatment or wanting services for their youths as a barrier (Reardon et al., 2017). Of note, the Reardon review (2017) included studies that examined both anticipated barriers to treatment participation as assessed before entry to care, and experienced barriers reported by parents after cessation of treatment. The majority of work has examined experienced barriers to treatment participation. For clarity, in the following review, I highlight where findings are based on parents' report of experienced barriers to their youth's mental health treatment, or parent perception of likely anticipated barriers to treatment participation.

**Barriers to Treatment Participation Scale (BTPS).** Kazdin and colleagues (Kazdin et al., 1997b) conducted an early study that aimed to develop an assessment measure of parents' perceptions of barriers to participation in their youth's mental health treatment, which has since been adopted by several other research groups. This study yielded the Barriers to Treatment Participation Scale (BTPS; Kazdin et al., 1997b), a 44-item measure comprised of four subscales: 1- stressors and obstacles that compete with treatment; 2 - treatment demands and issues; 3 - perceived relevance of treatment; and 4 - relationship with the therapist. The total BTPS score is summed from responses to these 44 items. The BTPS was designed for

retrospective administration to address perceptions of barriers that were experienced during the course of treatment. In the measure development study, it was administered to parents in interview format at the end of a course of treatment or after premature termination of treatment (Kazdin et al., 1997b). A second portion of the original BTPS, a 14-item critical events scale, is an adjunctive portion not included in the total BTPS score.

The association of the BTPS with treatment participation was tested in a sample of 260 youths ages 3 to 14 referred to a university-affiliated outpatient clinic for youths and families due to aggressive, antisocial or oppositional behavior, and their parents. The sample reflected wide variability in family income, though a large proportion of families, 30.6%, received public assistance (Kazdin et al., 1997b). Total barriers scores on the BTPS were associated with treatment participation across indices: higher barriers scores predicted attendance to a smaller number of youth treatment sessions, and were associated with higher rates of dropout and a higher number of cancelled or missed sessions (Kazdin et al., 1997b). In addition, dropout was predicted by several parent and youth characteristics at baseline, including single parent status, socioeconomic disadvantage, and parent history of antisocial behavior (Kazdin et al., 1997a). However, in families at high dropout risk because of these predictive factors, those with low experienced barriers at the end of care were significantly less likely to drop out of MHT prematurely (Kazdin et al., 1997a).

Different barrier types may be stronger predictors of relevant outcomes or may have a greater magnitude of overall impact on youths and families. As discussed previously, in an outpatient sample of 242 youths referred for the conduct problems, ages 3-14 and their parents, total barriers predicted treatment dropout (Kazdin et al., 1997a). The BTPS subscales also were tested separately as dropout predictors. Parent reports of stressors and obstacles that compete

with treatment (1), relevance of treatment (3), and relationship with the therapist (4) significantly discriminated between treatment completers and those who dropped out, with higher barriers scores associated with dropout on those subscales (Cohen's *d* values, respectively: 0.70, 1.07, 0.39), though treatment demands (2) was not significantly different between groups (Kazdin et al., 1997a). Similarly, in an outpatient sample of anxious youths ( $N = 100$ , ages 7-13) receiving a computer-assisted CBT compared to treatment as usual, three of the four barriers most commonly endorsed by parents on the BTPS pertained to stress and obstacles that compete with treatment (subscale 1): experiencing high levels of stress during the course of treatment (32.4%), treatment conflicted with another of the parents activities (23.5%), and scheduling of appointment times for treatment (20.6%; Salloum, Johnco, Lewin, McBride, & Storch, 2016). Parents also frequently endorsed therapists not calling often enough (27.9%; part of subscale 3; Salloum et al., 2016).

**Expectations of treatment efficacy.** Parent pre-treatment beliefs about how effective treatment is likely to be to address the youth's problems, how quickly that progress will be achieved in the course of the overall treatment, and how involved the parent will be in treatment, all comprise the construct of parent expectancies for their youth's treatment (Nock & Kazdin, 2001). This construct was informed by literature regarding adult treatment attendance (for a review, see e.g., Walitzer, Dermen, & Connors, 1999) and by the barriers-to-treatment model (Kazdin, 1996; Kazdin et al., 1997b). Higher parent expectancies for the effectiveness of their child's therapy was highly predictive of parent-perceived barriers (total BTPS score) later, at treatment termination or end of care (Nock & Kazdin, 2001). This was found in a sample of 405 youths ages 2-15 referred to university-affiliated outpatient mental health services due to aggressive, oppositional, or antisocial behaviors (Nock & Kazdin, 2001).

Expectancies relate to anticipated barriers to treatment, a construct measured in the proposed project using the A-BTPS (Anticipated Barriers to Treatment Scale), a prospective measure of parent-perceived barriers, modified from the BTPS (Kazdin et al., 1997b) by Weersing and colleagues (2017) for use in another trial and outlined further in a later section. Expectancies relate in part to subscale 2 on the A-BTPS, which addresses anticipated demands of treatment. Some postulate that parent expectancies may be changeable during the course of treatment (Nock & Kazdin, 2001), however the mechanisms that might produce such change are not fully understood. Given this finding, I expect anticipated barriers to be closely, positively related to experienced barriers.

Both anticipated barriers to youth's MHT and barriers to ongoing treatment have been targeted in a body of work addressing treatment engagement, a construct which encompasses initial session attendance and continuing participation in treatment (see e.g., Szapocznik et al., 1988; McKay & Bannon, 2004). Much of this work directly addresses identified parent-perceived barriers including perceptual barriers, such as beliefs about mental health treatment, cultural barriers, and concrete or logistical barriers to treatment participation. Interventions designed to address treatment engagement before the initial session may be especially relevant in targeting anticipated barriers- strategies for contacting families by phone before the intake session have been associated with positive engagement in youth care (McKay et al., 1996; see e.g., McKay & Bannon, 2004 and Gopalan et al., 2010 for reviews). Engagement strategies also have resulted in increased session attendance in ethnic and racial minority families (McKay & Bannon, 2004).

Beliefs about treatment were also found to be a potent predictor of experienced barriers in a sample of 317 youths who were identified as needing mental health intervention, and referred



to services (associated with study authors) due to their responses on a suicide screener administered in their high schools (Gould et al., 2009). Youths were deemed in need of services if they endorsed history of suicide attempt, serious suicidal ideation, a Beck Depression Inventory (BDI; Beck & Steer, 1993) score of 16 or higher, or other high-risk indicators associated with suicide. Of those, youths who sought care in response to those referrals (70%) and their parents, were assessed two years later to investigate their use of mental health services, and relationships between their participation in mental health treatment over the prior two years and perceptions held by them and their parents. Perceptions about mental health care and experienced barriers to care were assessed in the sample that did not follow up on referrals to care ( $n = 18$ ). Among these youth and their parents ( $n = 17$ ), parent expectancies about the likely efficacy of mental health treatment emerged as significant predictors of not seeking care. These included perceptions that the youth did not require services or that the need for services was not severe, that issues could be handled privately, or that symptoms would resolve on their own (Gould et al., 2009).

**Clinical characteristics of families.** In outpatient samples of youths with conduct problems, several studies have implicated youth symptom severity as a predictor of subsequent parent-reported, experienced barriers to treatment (Kazdin et al., 1997a; Armbruster & Kazdin, 1994). Research has also implicated youth depression status as predicting higher parent-rated anticipated barriers. Meredith and colleagues (2009) tested parent and youth anticipated barriers to treatment, comparing depressed to non-depressed teens in an ethnically diverse (45.8% Hispanic) sample of youths ages 13-17 and parents. Notably, this sample was recruited from primary care practice waiting rooms, and the study was strengthened by use of a matched sample of non-depressed teens along with the depressed sample. The 338 parent participants reported

perceived barriers to any potential future mental health care the youth might pursue (6 months in the future). Comparing parents of depressed and non-depressed adolescents, the former were significantly more likely to endorse anticipated barriers to their youth's mental health care, as reflected in a summary score across 6 barriers items. At the item level, cost of services, and difficulties accessing services (e.g., conflicting with activities, difficult to schedule) were endorsed by more parents of depressed youths than non-depressed youths (Meredith et al., 2009). Additional findings reflected higher rates of anticipated barrier endorsement by depressed teens than non-depressed teens using a measure of youth-perceived barriers. Unlike other findings in the literature, parent report of anticipated barriers was not associated with youth MHT participation in the six months following baseline assessment (Meredith et al., 2009).

However, in other work, associations between youth psychopathology and anticipated barriers have not been found. Families of kindergarteners ( $N = 597$ ) sampled from rural schools were included in a study examining parents' anticipated barriers to youth mental health treatment (Girio-Herrera, Owens, & Langberg, 2013). Barriers were assessed using a modified version of the BTPS in which parents were directed to respond prospectively, as if they were going to seek treatment. Youths were categorized as high or low risk using a risk index for problems across social, behavioral, and emotional domains (based on BASC-2). There was no significant difference in anticipated barriers identified by parents of youth identified as being high risk (1.5 standard deviations above the sample mean; 24% of the sample) compared to barriers reported by parents of low-risk youths (76% of sample; Girio-Herrera, Owens, & Langberg, 2013).

Parental psychopathology may also predict anticipated or experienced barriers to treatment participation. Kazdin and Wassell (2000) used a sample of 169 youths and families referred for to outpatient mental health services to care for aggressive, antisocial or oppositional

behavior. The study focused on factors that preceded experienced barriers, and associations between barriers and youth therapeutic changes associated with attendance to treatment. Consistent with hypotheses, parent psychopathology as assessed at treatment initiation was significantly correlated ( $r = .37$ ) with parent-perceived experienced barriers (i.e., total BTPS score) as assessed at the end of care, as were parent stress and quality of life at baseline, both controlling for the effects of severity of child dysfunction and socioeconomic disadvantage. Contrary to hypotheses, higher severity of youth dysfunction, an index of clinical impairment informed by youth antisocial behavior, symptoms of conduct disorder, and overall mental health symptoms, did not predict higher barriers (Kazdin & Wassell, 2000). Further, increased experienced barriers scores were associated with a decreased magnitude of youth clinical change across the duration of the youth's treatment. Using a cutoff indicating marked clinical change compared to initiation of treatment, youth were less likely to show marked clinical change in the context of a higher level of experienced barriers (Kazdin & Wassell, 2000).

**Race and ethnicity.** Race and ethnicity have also emerged as factors relevant to anticipated barriers. Young and Rabiner (2015) examined differences in parent-perceived barriers to medical and mental health services for their youths in a community sample of 275 parents and their children ages 9-13, recruited from schools. The study assessed barriers parents imagined they would experience (i.e., anticipated barriers) if they were to seek care for their youth, including logistical and socioeconomic barriers, and barriers related to stigma, referring to negative affective responses such as shame or alienation. Barriers were assessed using a measure adapted from the National Center for Health Statistics 2005 version of the National Health Interview Survey (NHIS; NHIS, 2007). Mental health stigma-related barriers were endorsed as significantly more inhibiting (i.e., endorsed, and described as more impactful, using a 1-5 Likert-

scale) for Hispanic parents than for African-American parents, counter to hypotheses (Young & Rabiner, 2015). In addition, Hispanic parents identified practical and socioeconomic barriers as significantly more impactful barriers to their youth's treatment than did African-American parents, including barriers associated with insurance coverage of mental health services (Young & Rabiner, 2015). This is in contrast to other findings, in which Hispanic and Caucasian parents endorsed significantly lower levels of stigma associated with youth receipt of mental health services or youth mental health needs than did African-American parents (Turner, 2010).

Ethnicity of youths has also been explored in relation to barriers, with mixed findings. Parents of ethnic minority youths have reported lower levels of experienced barriers in the areas of treatment expectations and external demands than did parents of Caucasian youths in some studies (Salloum et al., 2016). Of note, the subscales used by Salloum and colleagues (Salloum et al., 2016) are comprised of items from the BTPS, but are alternative subscales put forth based on factor analysis of the BTPS by Colonna-Pydyn and colleagues (Colonna-Pydyn, Gjesfjeld, & Greeno, 2007). In a study of at-risk youths with need for mental health care, fewer barriers were endorsed by parents of ethnic minority youths than by parents of Non-Hispanic White youths (Yeh, McCabe, Hough, Dupuis, & Hazen, 2003). The authors speculated that cultural factors may have informed parents' responses to prompts about barriers (Yeh et al., 2003), raising measurement questions associated with examining barriers.

Some barrier types may be particularly salient to different ethnic or racial groups. Stigma emerged as the barrier to youth mental health treatment most commonly endorsed by parents in a sample of rural, African-American families examined in a combined quantitative and qualitative study of help-seeking behavior in this population (Murry, Heflinger, Suiter, & Brody, 2011). Concerns about stigma as a barrier were endorsed by half of the parent sample, including

concerns that others would perceive the child negatively due to mental health needs, that the parent would be blamed for youth problems, and the notion that knowledge of their help-seeking would be spread in the community and viewed negatively by others (Murry et al., 2011). Stigma-related barriers were most prominent among parents with lower levels of social support (Murry et al., 2011).

Mukolo and Heflinger (2011) studied parents' perceptions of experienced barriers to their youths' MHT in the context of a broader investigation of 175 rural, African-American families and their perspectives on child mental health and services. Participants were sampled from a population of youths who had attended one or more mental health service appointments (73% at an outpatient mental health center), and who had publicly-funded insurance. As a whole, 72% of participating parents endorsed one or more experienced barrier to youth mental health treatment, as reflected in a broader survey of service experiences (Mukolo & Heflinger, 2011). Over 30% of parents endorsed fear that a mental health professional would negatively label their child as a result of seeking mental health services. Caregiver internalizing strain, conceptualized to include parent experience of sadness, guilt, worry, and belief that the youth's problems are a hardship for the family, was significantly associated with higher reports of barriers (Mukolo & Heflinger, 2011). This construct could be conceptualized as related to parent psychopathology, which has also been linked to elevated barriers in other work, as discussed previously (e.g., Kazdin et al., 1997a; Armbruster & Kazdin, 1994; Kazdin & Wassell, 2000). Parent objective strain, which included missing work, impacts on family routines, and interruptions of personal time, (which appears to overlap conceptually with BTPS subscale 1) were positively associated with parent report of barriers (Mukolo & Heflinger, 2011).

In a predominantly ethnic and racial minority sample of 100 treatment-seeking youths and their parents, McKay and colleagues (McKay, Pennington, Lynn, & McCadam, 2001) assessed family and environmental predictors of attendance to first treatment sessions and of ongoing attendance. Participants were sampled from families that called to request an initial youth intake appointment at a local community mental health center. The sample was primarily an urban, minority sample, with 43% Latino youths, 66% Black youths, and 10% Caucasian youths. For families with one parent in the home, youths attended significantly fewer sessions than youths in families with two or more parents. In addition, in families with one or more other youths in the home, rates of attendance to ongoing treatment were lower than for those with one child. In addition, higher rates of family stress also predicted lower levels of attendance in ongoing care (McKay et al., 2001). In other work, family stress assessed before treatment was shown to predict parent reports of experienced barriers to received care (Kazdin et al., 1997). Family support of youth mental health treatment, as an aspect of parent beliefs regarding mental health care, is implicated as a barrier. Levels of family support have been shown to predict engagement in youth's mental health treatment (Nock & Kazdin, 2001).

**Socioeconomic disadvantage.** The literature reflects inconsistent findings regarding socioeconomic disadvantage and relationships with parents' perceptions of barriers to their youths' care. Some have found significant relationships between family socioeconomic disadvantage and higher parent reported retrospective barriers to care, reflected in total BTPS scores (Kazdin et al., 1997a; Nock & Kazdin, 2001). In research comparing parents' barriers to youth mental health care compared to medical care, higher barriers were associated with mental health care, including barriers specific to socioeconomic concerns associated with service use (Young & Rabiner, 2015). However, in an outpatient sample of youth referred for care for

externalizing presentations, more severe socioeconomic disadvantage did not emerge as a significant predictor of higher barriers (BTPS), contrary to the researchers' hypotheses (Kazdin & Wassell, 2000). Null findings have also been reported regarding associations between family income and total BTPS scores (Owens et al., 2002).

**Phase of treatment.** Research is scant that examines both anticipated barriers to treatment initiation and maintenance, and experienced barriers during or after care, in the same sample. However, Owens and colleagues (2002) assessed parents' anticipated barriers to treatment entry or initiation as well as barriers to continued receipt of ongoing youth mental health care, and found that different types of barriers were endorsed depending on whether they were prospective barriers or experienced ones. In the study, youth were sampled from a group initially recruited from first grade classrooms for a prevention project who also later completed a follow-up associated with the study in seventh grade (Owens et al., 2002). Among these, those whose parents' report in seventh grade suggested that the youth needed mental health services in seventh grade were included in the study ( $N=116$ ). Barrier types endorsed by parents differed by time point. Anticipated barriers to entry into care, assessed before treatment, were more likely to include beliefs about mental health problems, whereas experienced barriers associated with ongoing or complete care were more likely to reflect barriers related to structural concerns such as transportation or scheduling (Owens et al., 2002). Comparing parents who reported barriers to those who did not, across anticipated barriers and those associated with ongoing care, those reporting barriers were significantly more likely to experience three or more current stressors, to be divorced, and to report scheduling difficulties. Whether or not parents reported barriers was not associated with child sex or gender, family poverty, mother's age or educational attainment (Owens et al., 2002). However, in evaluating specific subtypes of barriers, parents of male

children were more likely to identify barriers associated with perceptions of mental health services (Owens et al., 2002).

Similarly, Salloum and colleagues (Salloum et al., 2016) found different predictors of barriers depending on whether they were anticipated or experienced barriers, in a trial testing a computer-assisted CBT (6 computer sessions followed by 6 in-person sessions with therapist) compared to treatment as usual in 100 youths ages 7-13. Participating youths were receiving care at an outpatient community mental health clinic, and met criteria for a primary anxiety disorder. The study assessed both child- and parent-reported barriers to youth's treatment participation. As mentioned previously, this study used the BTPS to assess barriers, yet used subscales distinct from those of the BTPS measure developers, and distinct from the subscales used in the present study. Parent stress emerged as the most common parent-reported barrier, endorsed by 32.4% of parents. Treatment completion was predicted by lower perceived mental health stigma and less concern about treatment costs. Dropout was not predicted by the external demands subscale as assessed on the BTPS. Predictors of higher retrospective barriers after treatment included lower treatment satisfaction, more limited treatment response, and white or Caucasian youth identity. Youth anxiety at baseline did not predict total experienced barriers, treatment demands barriers, nor external demands barriers. Similarly, post-treatment youth anxiety was not a significant predictor of the aforementioned barriers scores. In addition, youth functional impairment was not related to BTPS scores, nor was family income. Lower parent satisfaction with treatment predicted high total barriers. Youth minority ethnicity predicted lower BTPS expectations and demands scores than for Caucasian youths (Salloum et al., 2016).

**Service setting.** Treatment setting may be relevant to perceptions of barriers. In a study comparing delivery modalities (i.e., in-person vs phone-supported bibliotherapy) for a child



anxiety CBT intervention offered in primary care, parent-reported experienced barriers to youth MHT were low in both conditions, and not significantly different. Parents' ( $n=48$ ) mean scores on the measure of barriers to youth MHT reflected perceptions that experienced barriers ranged from “never a problem” to “occasionally a problem” on average within the sample (Chavira et al., 2014). This reflects that an in-person treatment housed in primary care did not pose significantly different barriers than a phone-supported bibliotherapy, per parent perceptions. This should be interpreted, however, noting that both intervention arms included a brief (15 minute) engagement intervention directly addressing domains reflected in the BTPS (e.g., attitudes about mental health care, logistical barriers to services; Chavira et al., 2014).

Notably, a large proportion of the research in barriers to youth MHT involved samples drawn from community mental health settings (i.e., Kazdin et al., 1997b; Kazdin et al., 1997a; Kazdin & Wassell, 2000; Nock & Kazdin, 2001; Salloum et al., 2016; McKay et al., 2001); several from school settings (Nanninga et al., 2016b; Owens et al., 2002; Girio-Herrera et al., 2013), community samples (Thurston & Phares, 2008; Young & Rabiner, 2015), and two in primary care through recruitment in the waiting room (Meredith et al., 2009) or pediatrician and self-referral (Chavira et al., 2014). There is limited research regarding associations of pediatric primary care settings with barriers. Ways in which treatment setting and barriers may be related have not been fully explored.

### **1.3 The Current Study**

Attending mental health treatment for children and adolescents poses practical demands for parents and caregivers. Parents' beliefs about mental health treatment may also impede participation. Yet youths are uniquely reliant on parents to address their mental health needs and to access services. Parents' perceived barriers regarding youth MHT, across both anticipated and

experienced barriers, have been associated with a host of factors: youth mental health status and functioning in both directions (Salloum et al., 2016; Meredith et al., 2009) and with some null findings (Girio-Herrera et al., 2013); family factors such as single parent status, lower parent educational attainment, and lower family socioeconomic status and income (Nanninga et al., 2016b; Armbruster & Kazdin, 1994; Nock & Kazdin, 2001; Kazdin et al., 1997a; Kazdin & Wassell, 2000) with some null findings regarding income and SES (Owens et al., 2002; Kazdin & Wassell, 2000, respectively); higher levels of parent psychopathology and stress and lower quality of life for parents (e.g., Kazdin et al., 1997a; Kazdin & Wassell, 2000; Armbruster & Kazdin, 1994); metrics of treatment initiation and participation, and parent satisfaction with treatment (Kazdin et al., 1997b; McKay et al., 2001; Salloum et al., 2016; Gould et al., 2009); youth and parent race and ethnicity (Yeh et al., 2003; Thurston & Phares, 2008; Salloum et al., 2016); and youth sex (Nanninga et al., 2016b). However, relationships between anticipated and experienced barriers are little explored and understood. Examinations of barriers heavily represent samples of youths exhibiting externalizing behaviors (e.g., Kazdin & Wassell, 2000; Nock & Kazdin, 2001; Kazdin et al., 1997b; Kazdin, et al., 1997a) with limited work focused on anxious and/or depressed samples (for exceptions see Owens et al., 2002; Salloum et al., 2016). Finally, the implications of treatment setting for treatment entry and continuation are not fully characterized.

To address these gaps in the literature, the proposed study used data from a completed randomized clinical trial with 185 anxious and/or depressed youths and their caregivers who were sampled among families seeking medical services in pediatric primary care settings. The study compared a transdiagnostic brief behavioral therapy (BBT) for youth anxious and/or depressive disorders provided in a primary care setting, to an assisted referral to care (ARC)

model in which youth were connected to available behavioral health services in local service settings (for additional details see Weersing et al., 2017). Sociodemographic characteristics were gathered and clinical assessments of youth and caregivers were conducted at baseline (i.e., before randomization and initiation of treatment). Parents reported anticipated barriers to their youth's treatment at baseline (i.e., prospectively), and reported experienced barriers to treatment at a follow-up 16 weeks after baseline. The sixteen-week interval was selected to allow adequate time for youths to potentially attend and complete a brief course of treatment, either the 8- to 12-session BBT model, or outpatient mental health care received through the ARC condition.

#### **1.4 Specific Aims**

##### **Aim 1. Associations with Parents' Anticipated Barriers to Treatment**

**Participation.** In this aim, parent and youth sociodemographic and clinical characteristics assessed at baseline were tested for associations with indices of parents' anticipated barriers to treatment participation (A-BTP) at baseline, before initiation of treatment in either BBT or ARC. Anticipated barriers were assessed using three indices: Total Anticipated Barriers and two subscale scores: Anticipated Stressors (subscale 1) and Anticipated Treatment Demands (subscale 2).

**Hypothesis 1.** Higher levels of psychopathology and clinical severity in parents and youths were hypothesized to be associated with higher levels of anticipated barriers to treatment participation reflected in all indices of the A-BTPS. Sociodemographic disadvantage as indicated by single parent status, lower household income quintile, and more limited parent educational attainment were hypothesized to predict higher overall levels of anticipated barriers. Higher levels of anticipated barriers were also hypothesized to be associated with youth Latinx identity, and racial and/or ethnic minority identity.

## ***Aim 2. Associations with Parents' Experienced Barriers to Treatment***

***Participation.*** In this aim, clinical and demographic factors, treatment arm, and indices of anticipated barriers were tested as predictors of parents' perceptions of barriers they actually experienced reflected in each of three indices of experienced barriers (E-BTPS): Total Experienced Barriers and two subscale scores: Experienced Stressors (subscale 1) and Experienced Treatment Demands (subscale 2).

***Hypothesis 2.*** *2a:* As in Aim 1, parent and youth clinical severity and psychopathology at baseline were expected to have a positive association with indices of experienced barriers to treatment (E-BTPS). Single parent status, lower household income quintile, and more limited parent educational attainment were hypothesized to be associated with higher experienced barriers indices. Further, both Latinx status and racial/ethnic minority identity for youth were hypothesized to be associated with higher levels of experienced barriers across all three indices. This hypothesis was the same across interactions association with all three indices of experienced barriers. *2b:* Higher scores on indices of anticipated barriers were hypothesized to be associated with higher scores on indices of experienced barriers. *2c:* The effect of treatment arm was hypothesized to interact with anticipated barriers indices such that the association of higher anticipated barriers indices with experienced barriers indices would be stronger for youths in the ARC condition relative to the BBT condition. With respect to treatment arm, a main effect on experienced barriers was hypothesized, with assignment to ARC expected to be associated with higher experienced barriers relative to BBT.

**Exploratory Aim 3. *Associations Between Experienced Barriers, Receipt of an Adequate Dose of Treatment, and Treatment Assignment.***

*Aim 3a.* Each index of experienced barriers was examined independently for associations with youth treatment participation as reflected in receipt of an adequate dose of treatment, defined as 8 or more sessions. In *Aim 3b*, the impact of treatment assignment on receipt of adequate dose was also tested. *Aim 3c* explored a possible statistical mediation effect in which the impact of treatment arm on receipt of adequate dose was statistically mediated by experienced barriers. Throughout *Aim 3c*, tests controlled for significant clinical and sociodemographic correlates of experienced barriers indices in the context of any path including experienced barriers.

**Hypothesis 3.** *3a.* Higher levels of parents' experienced barriers to treatment participation were hypothesized to be associated with lower levels of service utilization as reflected in fewer youth completing an adequate dose of treatment across BBT and ARC. This pattern was hypothesized to be consistent across experienced barriers total score and subscale scores. *3b.* It was hypothesized that youths assigned to BBT would have higher rates of participation in treatment, reflected in increased likelihood of BBT youth receiving an adequate dose of treatment. In *3c*, the effect of treatment assignment on receipt of an adequate dose of treatment was hypothesized to be statistically mediated by experienced barriers. This pattern was hypothesized for associations with total experienced barriers, and each of the subscale scores.

Findings from this dissertation are being prepared for publication. Publications based on this dissertation will be co-authored by V. Robin Weersing. The dissertation author was the primary investigator and author of this material.

## CHAPTER 2. METHODS

### 2.1 Participants.

Youth participants for the proposed study were drawn from the sample of a completed randomized effectiveness trial (Weersing et al., 2017). For the original trial, participating families were recruited from nine pediatric primary care practices in San Diego, California and Pittsburgh, Pennsylvania. Primary care physicians referred youths they suspected of suffering from anxiety and/or depressive symptoms based on patient presentation or report, frequency of visits, frequent somatic complaints, or other possible indicators. A small number of youth and families also self-referred in response to flyers posted in these same primary care practices.

**Inclusion criteria.** Eligible youth were ages 8.0 to 16.9 years old at baseline and had been living with the participating, consenting legal caregiver/parent for six months or longer. Youths and caregivers were English-speaking. Youth diagnostic status at baseline also informed eligibility. This was assessed via in-person clinical interviews with participating youths and one participating caregiver or parent. Based on reports from both respondents, youths who met criteria for one or more of the following full or probable diagnoses at baseline were eligible for randomization: major depression, dysthymic disorder, minor depression, social phobia, separation anxiety disorder, generalized anxiety disorder. Youth were excluded who did not read at or above a second-grade level or who had significant developmental disabilities per parent report. Also excluded were youths currently experiencing child maltreatment or uncontrolled serious physical illness or with a current plan for suicide. Youths participating in active treatment to address depressive and/or anxiety symptoms were ineligible, as were youth with significant psychopathology for whom an intervention addressing another mental health concern might be more clinically appropriate. This included youths who met screening criteria for substance

dependence, conduct disorder, psychosis, bipolar disorder, or posttraumatic stress disorder. Finally, youths currently shifting their dose of a psychoactive medication (e.g., stimulants for attention difficulties) who had not been on their current dose for four weeks or longer, were excluded.

**Enrolled sample.** The total enrolled sample of 185 youths had a mean age of 11.3 (SD = 2.6) and was 57.8 percent female ( $n = 107$ ), 96 (51.9%) of whom received care in San Diego, and 89 in Pittsburgh. Latinx youths comprised 20.7% of the sample ( $n = 38$ ). Racial minority youths included 14 (7.6%) African-American or Black youths, 14 (7.6%) bi- or multi-racial youths, and 1 (0.5%) Asian youth; 13 youths (7.0%) chose not to report racial identity separate from Latinx ethnicity status. Racial and/or ethnic minority youths comprised 32.4% ( $n = 60$ ) of the total sample. Non-Hispanic white (NHW) youths comprised the remaining 67.6% of the sample ( $n = 125$ ). The majority of youths lived with both biological parents ( $n = 125$ , 67.6%). Clinical indicators reflected a range of youth presentations across the spectrum of anxiety and depression, with a predominantly anxious sample: 61.6% of youth met criteria for at least one anxiety disorder ( $n = 114$ ). A smaller number of youth ( $n = 11$ ; 5.9%) presented with clinically significant depression and without an anxiety disorder. Approximately a third of the sample ( $n = 60$ ; 32.4%) showed clinically elevated depressive symptoms concurrent with anxiety at baseline. The randomization algorithm was designed to balance the sample between treatment arms on race and ethnicity, sex, and a dichotomous indicator of elevated depressive symptoms as indicated by either an elevated score on the Children's Depression Rating Scale-Revised (CDRS-R; Poznanski & Mokros, 1996) or a probable diagnosis of a depressive disorder. There were no significant differences in demographic or clinical characteristics assessed at baseline between study arms, either in the entire sample or between arms within sites; further, site did not

moderate primary outcomes of the trial (see Weersing, 2017). Accordingly, to preserve power, site was not included as a covariate in analysis in the current project. For additional information on enrollment, see the CONSORT Flow Diagram in Figure 1.

## **2.2 Procedures**

**Brief Behavioral Therapy (BBT).** The Brief Behavioral Therapy (BBT) is an 8- to 12-session cognitive-behavioral intervention targeting transdiagnostic features of youth anxiety and depression across a 16-week period of time (Weersing et al., 2017). Sessions lasted 45 minutes, were typically scheduled weekly, and were delivered by study-employed, masters-level providers in the primary care locations from which youth were referred. Development of BBT was informed by research regarding effective components of interventions for anxiety and depressive disorders in youth and in their comorbid presentations. The BBT was tailored to create a time-limited, efficient use of the strategies that might be most likely to impact clinical outcomes for youth with transdiagnostic presentations, and notably omitted use of some cognitive techniques common to many anxiety and depression treatments, including cognitive restructuring. The treatment included psychoeducation regarding the transdiagnostic treatment and focused on exposure with behavioral activation components to emphasize graded engagement with avoided situations and stimuli, problem-solving skills to address stressors, and relaxation skills to target somatic symptoms of anxiety and depression (Weersing et al., 2017). Treatment development and content are reviewed in greater detail in Weersing, Gonzalez, Campo, and Lucas (2008). Findings in the clinical trial reflected high fidelity of BBT delivery in this sample; a review of randomly selected session recordings (10% of all sessions) reflected that 96% of manualized session content was delivered in BBT sessions on average, across sites and BBT providers (Weersing et al., 2017).



**Assisted Referral to Care (ARC).** The public health comparison arm of the study, the ARC arm, was designed to mirror best practices for linking youth to usual mental health care in community settings. Prior work has demonstrated increased attendance to initial psychotherapy appointments and improved engagement and attendance associated with a brief, phone-based intervention at initiation of treatment (McKay & Bannon, 2004; McKay, Stoewe, McCadam, & Gonzales, 1998). Informed by these findings, this condition was designed to test best possible outcomes for youth receiving community-based mental health care in conjunction with guided referral, support, and engagement strategies as implemented by a study coordinator who followed the family from before treatment referral through the 16-week acute treatment phase of the study. Thus, the ARC arm was structured to include an initial 30-minute phone contact between the study coordinator and participating caregiver regarding the clinical presentation of the youth and rationale for seeking treatment; referrals to appropriate community-based care along with education about the process of linking to care (e.g., scheduling, logistics of attendance); and exploring solutions to any barriers to treatment identified by youth caregivers. This was followed by regular phone calls (per family,  $M = 4.2$ ,  $SD = 2.6$  answered calls; Weersing et al., 2017) to inquire about session attendance and any barriers to attendance and engagement, and to problem-solve and offer resources to assist in treatment engagement.

**Assessment procedure.** Assessments at baseline were conducted in person by research study evaluators at a pediatric primary care site via semi-structured interview format with youth and participating caregivers independent of one another. All subsequent assessments were conducted by phone. Assessments were conducted either prior to randomization (baseline) or by clinical independent evaluators (IEs; follow-up) who were masked to study condition. After baseline, follow-up assessments were conducted with youth and caregivers twice: at the end of

the acute treatment phase at 16 weeks after enrollment and again at 32 weeks after enrollment (Weersing et al., 2017). IEs were trained by viewing and scoring recorded assessments, reaching 80% or greater scoring agreement before conducting study assessments. Data for the proposed study are drawn from the baseline and week 16 assessment time points.

### **2.3 Measures**

**Sociodemographic Characteristics.** The current study considered sociodemographic characteristics pertaining to youths, their parents/caregivers, and their families, gathered via a questionnaire completed by parents/caregivers at baseline. Parents/caregivers (hereafter referred to as “parents”) reported their youth’s age, sex, race, and ethnicity. Youth race was indicated by parents who could select one or multiple of the following options: “Black,” “Asian or Pacific Islander,” “White,” “Biracial,” “Native American or Alaskan Native,” or “Other.” Those who specified “Other” were prompted to specify youth race in a free format space. Youth ethnicity was queried using the item, “Is the youth Hispanic or Latino?” with response options: “Yes,” “No,” and “Unknown.” Multiple ways of operationalizing youth and parent clinical characteristics and sociodemographic characteristics were explored. As one indicator of socioeconomic disadvantage, a dichotomous variable was created reflecting youth racial and/or ethnic minority status (minority status coded 1), and another reflecting youth Latinx ethnicity (Latinx identity coded 1). This fits the underlying hypothesis that Latinx identity would be associated with differences in perceptions of barriers. It also reflects the hypothesis that minority status generally, not specific to a particular racial or ethnic identity, per se, would also be associated with differences in parent perceptions of barriers. Parents also reported their own age, sex, and educational attainment. Educational attainment was dichotomized to reflect completion of an undergraduate or more advanced degree (coded as 1) or less than a college degree (coded

as 0). Family characteristics were gathered, including household monthly take-home income. To equate income by site, this variable was recoded into a categorical variable to contextualize each income among the range of incomes reported by all participants enrolled at the same site (i.e., San Diego, CA and Pittsburgh, PA). Specifically, monthly incomes at each site were divided into quintiles by dollar amount, in which families with an income falling in the lowest 20% at that site were coded “1” for the first quintile, those with an income in the 21% - 40% range of dollar amounts per month at that site were coded “2” for the second quintile, and so on, and families reporting incomes in the highest 20% at that site coded “5” for the fifth quintile. Rounded to the nearest US dollar, Pittsburgh monthly household incomes ranged from 571 to 21,000 ( $n = 65$ ;  $M = 5,329$ ,  $SD = 4,413$ ). Among San Diego participants ( $n = 79$ ), monthly household incomes ranged from 600 to 18,000 ( $M = 5,755$ ,  $SD = 3,808$ ). Information was gathered from parents to identify those who were single parents or consistently engaged in most of the caregiving tasks for the participating youth. Of note, the construct of interest here was not related to marital status, but to primarily independent parenting responsibilities, and the absence of another child caregiver in the home. Parents were asked to report whether they co-parented the youth in their home, or whether any other adult(s) consistently provided caregiving for the youth. Parents then identified any adults who served as consistent caregivers. Based on this report, single-parent status was coded dichotomously (single parent coded 1).

**Barriers to Treatment Participation.** The *Anticipated Barriers to Treatment Participation Scale (A-BTPS)* and *Experienced Barriers to Treatment Participation (E-BTPS)* scales were based on a 44 item self-report measure for parents and caregivers (Kazdin, Holland, & Breton, 1991; Kazdin et al., 1997b) designed to assess five areas hypothesized to interfere with retention of families in outpatient care. The five subscales of the original measure

include: (1) stressors and obstacles that compete with treatment (20 items); (2) treatment demands and issues (10 items); (3) perceived relevance of treatment (8 items); (4) relationship with the therapist (6 items); and (5) critical events (14 items).

The A-BTPS includes subscales 1 and 2 from the original measure, reflecting parents' anticipated stressors and obstacles that they believed would compete with treatment and anticipated issues with treatment demands and issues. The instructions and response options for the A-BTPS were modified from the original to prospectively assess anticipated barriers to treatment rather than assess retrospective barriers encountered. Response options included: 1- Not likely to be a problem; 2- Might be a problem once in a while; 3- Might be a problem sometimes; 4 - Likely to be a problem; 5 - Very likely to be a problem. The A-BTPS was administered at baseline (i.e., before randomization and initiation of care). A-BTPS total score included items 1 - 30 and had good internal consistency reliability ( $\alpha = 0.84$ ). A-BTPS subscale 1 (Anticipated Stressors; items 1 – 19 and 28) showed good internal consistency in the full sample ( $n = 177$ ;  $\alpha = 0.80$ ) as did A-BTPS subscale 2 (Anticipated Treatment Demands; items 20 – 27, 29, and 30;  $\alpha = 0.74$ ). A-BTPS subscales 1 and 2 were significantly correlated with one another in the full sample ( $r = .568, p < .001$ ).

Experienced barriers to treatment participation (E-BTPS) were assessed via retrospective report at Week 16. This measure was parallel to the assessment of anticipated barriers (A-BTPS), with the same areas of content comprising the same subscales. However, language was maintained from the original measure probing whether these potential barriers had occurred in the course of seeking or receiving services during the 16-week acute treatment window. In the present study, total scores and subscale scores were analyzed. All scores were calculated as a mean item score for included items. Previous studies with the original retrospective version of

the measure have demonstrated good psychometric properties including predictive validity for client drop-out (e.g., Kazdin et al., 1997a). In the present study, E-BTPS subscale 1 (Experienced Stressors; items 1 – 19 and 28) had good internal consistency among youth who participated in treatment ( $n = 124$ ;  $\alpha = 0.86$ ), as did subscale 2 (Experienced Treatment Demands; items 20 – 27, 29, and 30;  $\alpha = 0.82$ ). The Total E-BTPS (items 1-30) also reflected good internal consistency ( $\alpha = 0.85$ ). Experienced Barriers subscales 1 and 2 were correlated in the sample of treated youth ( $r = .605, p < .001$ ). Copies of the A-BTPS and E-BTPS scales used in this study are provided in Appendices 1 and 2, respectively.

**Youth clinical characteristics.** Clinical characteristics of youths were assessed with clinical interview tools rated by independent evaluators (IEs) and on dimensional symptom scales completed directly by youths and parents. IEs rated youth anxiety severity on the *Pediatric Anxiety Rating Scale (PARS; RUPP, 2002)*. Parents and youths were interviewed by IEs using a checklist of 50 symptoms pertaining to the previous week. They also responded to 7 items reflecting severity/impairment. The assessor then scored a summary score from both respondents, from 6 of the 7 severity items. This score can range from 0 to 30. Higher scores reflects greater anxiety symptom severity. The PARS has been found to have high interrater reliability, fair internal consistency, adequate test-retest reliability, and satisfactory convergent and divergent validity (RUPP, 2002). In this sample, the PARS had acceptable internal consistency reliability reflected in a Cronbach's alpha value of  $\alpha = .76$ . Depression severity was rated by IEs using the *Children's Depression Rating Scale-Revised (CDRS-R; Poznanski & Mokros, 1996)*. The measure is comprised of 17 items pertaining to the past two weeks, targeting depression symptom criteria as defined by DSM-IV, fourteen of which are scored using a clinician integrated summary score based on both youth and parent report. Three items are

scored on the basis of clinician observation of symptoms. Item responses are formatted with a Likert-type scale which ranges from 1 to 5 on some items and 1 to 7 on others. Summed, total scores range from 17 to 113, with scores of 40 and above reflecting symptoms consistent with a diagnosis of depression. The measure has demonstrated good interrater reliability, good internal consistency, and good convergent validity with youth depression measures. In this sample, the CDRS-R had good internal consistency reliability reflected in a Cronbach's alpha value of  $\alpha = .86$ . Youth functional impairment was rated by IEs using the *Children's Global Assessment Scale (CGAS)*; Shaffer et al., 1983). This is a clinician-rated measure of global youth functioning, which was adapted from the adult measure, the Global Assessment Scale (GAS). CGAS scores range from 1 to 100, with higher scores corresponding to more optimal global functioning. For all clinical outcome assessments completed by IEs, interrater reliability was good (intraclass correlation coefficient range: 0.70-0.95; Weersing et al., 2017).

Note that the battery of the original clinical trial included additional dimensional youth- and parent-report measures of anxiety and depression severity (Weersing et al., 2017). However, given concerns regarding collinearity associated with multiple measures of the same construct, a single assessment for each of these clinical constructs was selected a priori. Findings suggest assessments of youth psychopathology that incorporate multiple informants are ideal (de Los Reyes et al., 2015). The IE-rated PARS and CDRS-R were selected as indicators of youth anxiety and depression severity, respectively.

**Parent clinical characteristics.** *State Trait Anxiety Inventory for Adults (STAI)*. The STAI (Spielberger, Gorsuch, Lushene & Vagg, 1983) is a self-report dimensional measure of anxiety symptoms in adults. The STAI includes two scales with 20 items each, which reflect “state anxiety,” or current, time-limited anxiety symptoms, and “trait anxiety,” reflective of a

more general, consistent anxiety. Item responses are selected from a four-point scale: 1 - Not At All; 2 – Somewhat; 3 - Moderately So; and 4 - Very Much So. Total scores range from 40 to 160, with higher scores reflecting more anxiety, and separate trait and state anxiety subscale scores which range from 20 to 80. The STAI demonstrates good internal consistency and good test-retest reliability (Spielberger, Gorsuch, Lushene, & Vagg, 1983). In this sample, the STAI State and STAI Trait subscales both had good internal consistency reliability ( $\alpha = .89$ ,  $\alpha = .93$ , respectively). Due to concerns regarding collinearity, only the STAI Trait, focusing on longstanding patterns of anxiety, was used in the present trial. The *Center for Epidemiological Studies- Depression Scale (CES-D; Radloff, 1977)* is a 20-item self-report measure of depression severity in adults. Item responses are selected regarding the past week, and include: 0 - Rarely or none of the time (less than 1 day); 1 - Some or a little of the time (1 – 2 days); 2 - Occasionally or a moderate amount of the time (3 – 4 days); and 3 - Most or all of the time (5 – 7 days). Total scores range from 0 to 60, with higher scores reflecting greater symptom frequency. The measure demonstrates good psychometric properties including high internal consistency and adequate test-retest reliability (Radloff, 1977; Shafer, 2006). In this sample, the CES-D had good internal consistency reliability reflected in a Cronbach's alpha value of  $\alpha = .82$ .

**Mental health treatment (MHT) participation.** Data on MHT participation were drawn from two sources. Attendance at BBT sessions was coded from therapist-report forms completed at the end of each treatment session. Participation in MHT in the ARC arm was assessed by combined parent and youth report on the *Child and Adolescent Services Assessment (CASA; Ascher, Farmer, Burns, & Angold, 1996; Burns, Angold, Magruder-Habib, Costello, & Patrick, 1994)*, focusing on utilization of outpatient mental health services (excluding other care such as emergency services). Note that participation in ARC phone calls with research staff was not

counted as MHT participation. From these sources, number of sessions of MHT within the BBT arm was operationalized as a count of successful attendance of the parent, child, or family at BBT sessions. In ARC, MHT participation was operationalized as in-person attendance at outpatient mental health care appointments (including intake appointments). In ARC, discrete, outpatient mental health care visits involving the youth, parent, or family of any duration were counted and summed if the purpose of the visit or course of care was to address anxiety or depression symptoms in the youth.

Youth treatment participation was further coded to reflect receipt of adequate dose of care by week 16, which was defined as receipt of eight or more BBT sessions or, for youth assigned to ARC, receipt of eight or more outpatient mental health sessions. This cutoff was selected following past work in benchmarking effective services for youth, which identified eight sessions as an adequate dose (Weersing & Weisz, 2002), and given that receipt of eight sessions was deemed the minimum adequate dose by BBT intervention developers (Weersing, Gonzalez, Campo, & Lucas, 2008).

## **2.4 Data Analytic Plan**

Data screening was planned to examine missingness and to test assumptions of analytic models. Descriptive statistics were generated and data were assessed to check for plausible values for each variable. Multicollinearity statistics were generated anticipating a priori that independent variables may be multicollinear. Models were adjusted accordingly to allow for models with independent predictors. IBM Statistical Package for Social Sciences (SPSS) version 25.0 (IBM Corp., 2017) was used to generate sample characteristics including frequencies of social and demographic characteristics, and to assess descriptive statistics associated with variables of interest. Regression and path analyses were conducted using MPlus Software



(Muthén & Muthén, 2017). Due to identifying several non-normal variable distributions, analyses in MPlus used maximum likelihood estimation with robust standard errors (MLR) to account for these non-normal distributions. Use of maximum likelihood also addresses missing data through multiple imputation (Baraldi & Enders, 2010). Linear and logistic regression coefficients reported are standardized using StdYX standardization in MPlus. These linear regression coefficients reflect the change in outcome variable in standard deviation units of that outcome variable associated with a one standard deviation change in the independent variable (Muthén & Muthén, 2017). In logistic regression, the StdYX standardized odds ratios reflect the change in odds for a one standard deviation change in the associated independent variable. Further analytic details are provided by aim, below.

### **Aim 1: Associations of Sociodemographic and Clinical Characteristics with Parents'**

#### **Anticipated Barriers to Treatment Participation**

For Aim 1, a model-building approach was used. In bivariate analyses, the main effect of each proposed variable on each of the three indices of Anticipated Barriers was tested in separate linear regression models. For each of the three Anticipated Barriers indices, variables identified as promising predictors ( $\alpha \leq .10$ ) in bivariate analyses were included in a multivariate linear regression model associated with the same Anticipated Barriers index. Final multivariate models were then tested, one each for Total Anticipated Barriers score, Anticipated Stressors, and Anticipated Tx Demands, retaining significant variables identified in previous multivariate models, to obtain estimates of effect size and variance accounted for in the best predictor model. These tests used  $\alpha$  set to  $p < 0.05$  for overall significance and for the significance of each predictor.

## **Aim 2: Associations of Sociodemographic and Clinical Characteristics with Parents' Experienced Barriers to Treatment Participation**

In Aim 2, linear regression analyses were planned to test associated between hypothesized youth and parent sociodemographic and clinical predictors and Experienced Barriers at week 16 follow-up, after potential initiation of treatment in either BBT or ARC. Only youth who engaged in at least one session of outpatient mental health treatment between baseline and week 16 were included in Aim 2 analyses. Five sets of analyses were planned to examine the relationships between the indices of anticipated and experienced barriers, controlling for significant clinical and sociodemographic correlates. Models predicting Total Experienced Barriers were tested separately with each index of Anticipated Barriers (subscale 1, subscale 1, and total barriers score), and the subscales of Experienced Barriers were each tested in a model with the corresponding subscale of Anticipated Barriers. Subscales were only examined in relation to the subscale of the same domain (i.e., Anticipated subscale 1 with Experienced subscale 1), and not with the total score or the other subscale score.

*Aim 2a:* As in Aim 1, a model building approach was utilized for Aim 2a. The main effect of each proposed variable on Experienced Barriers was tested in a separate bivariate linear regression model using  $p < 0.10$  to ensure inclusion of all relevant variables. Variables significantly associated with Experienced Barriers in bivariate analyses were further examined in a multivariate linear regression model. The multivariate model was tested using  $p < 0.05$  for overall significance and for the significance of each predictor in the model. A final multivariate model was tested predicting Experienced Barriers retaining significant predictors, to obtain estimates of effect size and variance accounted for in the best predictor model. In this model,  $p$  was set to .05 for overall significance and for the significance of each predictor.

*Aim 2b:* Associations between parents' Anticipated Barriers at baseline and Experienced Barriers at 16 weeks were explored using a linear regression analysis, controlling for significant sociodemographic and clinical predictors of Experienced Barriers identified in the Aim 2a final model as significant using  $p < 0.05$ . Variables found significant in this step using  $p < 0.05$  were included in a multivariate linear regression model testing associations with Experienced Barriers, with  $\alpha$  set to  $p < 0.05$  for the significance of individual predictors and for the overall significance.

*Aim 2c.* Multivariate linear regression analysis was utilized to test the relationship between randomized treatment assignment (BBT or ARC) and Experienced Barriers, controlling for significant predictors of Experienced Barriers identified in the final model in Aim 2b. These analyses used  $p < 0.05$  for overall significance and the significance of each predictor. Next, a test of a moderation effect was planned, with treatment assignment moderating the relationship between Anticipated Barriers at baseline and Experienced Barriers at 16 weeks. The model included the main effect of treatment assignment, the main effect of Anticipated Barriers, and controlled for variables significant at  $p < .05$  in the final model of Aim 2b associated with the index of Experienced Barriers being examined.

### **Aim 3: Associations Between Experienced Barriers, Participation in Treatment, and Treatment Assignment (Exploratory Aim 3).**

In this exploratory aim, associations between parents' Experienced Barriers at week 16, receipt of an adequate dose of treatment, and treatment assignment were explored. Each model tested in Aim 3 that included Experienced Barriers as an outcome variable controlled for significant sociodemographic and clinical predictors for the corresponding outcome variable, as identified in the final multivariate models in Aim 2a. In the plans for Aim 3, all steps in Aim 3

were to be conducted examining relationships with Total Experienced Barriers, and then separately with Subscale 1: Experienced Stressors, and finally with Subscale 2: Experienced Treatment Demands.

In Aim 3a, as the relationship of Experienced Barriers at week 16 with receipt of an adequate dose of treatment by that time was examined using logistic regression analyses using  $p < .05$ . In Aim 3b, treatment assignment (BBT or ARC) was examined in relation to receipt of an adequate dose of treatment. These analyses used  $p < .05$  for overall significance and the significance of each predictor. Lastly, in Aim 3c, planned analyses tested for a statistical mediation effect of Experienced Barriers on the relationship between treatment assignment at baseline and receipt of an adequate dose of treatment by week 16. This model controlled for variables significantly associated with the corresponding measure of Experienced Barriers identified in the final model in Aim 2a. The statistical test of significance of mediation was calculated on the indirect effect (see MacKinnon, Lockwood & Williams, 2004; Preacher & Hayes, 2004). The moderation model considered whether the total effect of treatment assignment on receipt of an adequate dose was significant, using a logistic regression path.

**Power analyses.** Power analyses were conducted using G\*Power (Version 3.1.9.3; Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) using a sensitivity approach, given the use of an existing dataset. As a model building approach was planned for multivariate analyses, power calculations were conducted regarding a range of possible numbers of included parameters in the final multivariate models. Power was evaluated with  $\alpha = 0.05$ , with power set to 0.80, assuming small (.02), medium (.15), and large (.35), effects as reflected in  $f^2$  values in the context of regression analyses (Cohen, 1988, 1992). In multivariate linear regression analyses in Aim 1, models ( $n = 185$ ) were powered to detect small to medium effects

using up five parameters ( $f^2 = .072$ ), 10 parameters ( $f^2 = .092$ ), and small to medium effects with up to 15 parameters ( $f^2 = .109$ ). For Aim 2, tested in the sample of treated youths, power was calculated assuming a reduced sample size of 166. In linear regression in Aim 2, if up to five a priori predictors were found to be significant in bivariate models and subsequently included in the multivariate model, linear regression models would be powered to detect a small to medium effect ( $f^2 = .0804$ ), and small to medium effects using 10 ( $f^2 = .104$ ) or up to 15 ( $f^2 = .123$ ). Of note, some Aim 2 analyses included interaction effects. For power analyses associated with interaction effects, the power is impacted by the reliability of the parameters involved in the interaction (Cohen, Cohen, West, & Aiken, 2003). In Aim 2, all interaction effects tested were comprised of a moderation effect of treatment assignment on indices of Anticipated Barriers. Treatment assignment is a highly reliable variable in this context, as it is the randomized study condition, and there were no identified threats to randomization. This reliability maintains power for tests of the moderation effect of treatment assignment in this case.

For Aim 3a, each index of Experienced Barriers was to be tested as an explanatory variable in a logistic regression model with receipt of an adequate dose (dichotomous indicator) as the outcome variable. No covariates were included in these models. Sensitivity analyses conducted in G\*Power (Version 3.1.9.3; Faul, Erdfelder, Lang, & Buchner, 2007; Faul, Erdfelder, Buchner, & Lang, 2009) estimated power to detect an odds ratio of .611 in each of these models, assuming a sample size of  $n = 166$ , power of 0.80, and  $p$  set to .05. In Aim 3b, treatment assignment was tested in association with receipt of an adequate dose. Power analyses here mirror those in 3a, as the sample size and other stipulations for analyses are the same. I expected power to detect an odds ratio of .611 in each model in Aim 3a.

For the mediation effects examined in Aim 3c, power to test the indirect effect of treatment assignment on receipt of adequate dose of treatment (mediated through indices of Experienced Barriers) was tested with the online utility hosted by Dr. David Kenny (<https://davidakenny.shinyapps.io/MedPower/>). With a sample size of 166, power to detect the indirect effect was estimated at 0.95, assuming beta coefficients of 0.30 between treatment assignment (BBT vs. ARC) and Total Experienced Barriers (E-BTPS total) and between Experienced Barriers and receipt of adequate dose and a beta of 0.10 between treatment assignment and receipt of an adequate dose.

Findings from this dissertation are being prepared for publication. Publications based on this dissertation will be co-authored by V. Robin Weersing. The dissertation author was the primary investigator and author of this material.

## CHAPTER 3. RESULTS

### 3.1 Data Screening

The presence of outliers and otherwise influential cases was assessed using scatterplots and standardized DFBeta values, with a plan to further investigate any individual cases for which the standardized DFBETA value was greater than the absolute value of one. No such case was identified through this process. When possible, continuous measures were retained to preserve power. However, the distributions of number of treatment sessions completed were skewed in both treatment conditions. These distributions did not achieve normality using natural log transformations. For this reason, receipt of treatment was dichotomized to reflect receipt of an adequate dose, using 8 or more sessions as the criterion for adequate dose of treatment, based on previous findings (Weersing & Weisz, 2002; Angold, Costello, Burns, Erkanli, & Farmer, 2000). Data screening revealed that a variable reflecting the number of youths living in a participating youth's home could not be reliably parsed from the total number of individuals living in that home. For this reason, the number of youths living in the home, which was proposed for use in models in the present study, was omitted. In addition, parent race and ethnicity were not reported, and thus not available for analysis, and parent sex was omitted, as the sample of parents in the study was predominantly female ( $n = 167$ ; 90.3%), limiting variance in the variable and thus its power to detect effects.

To address missingness of items on the E-BTP and A-BTP measures, a total score or subscale score was only computed if at least 80 percent of the included items on the measure had valid responses. To eliminate error contributed by using a total score of summed item responses, a mean item score was computed for each respondent for both the Total scores and both subscale scores for both the Total Anticipated Barriers to Treatment Participation Scale at baseline and the

Experienced Barriers to Treatment Participation Scale at 16 weeks. Diagnostics were computed to discern whether multicollinearity might be impacting each model. Using guidelines with acceptable scores of variance inflation factor of  $< 10$  (Myers, 1990) and therefore tolerance of  $> .20$  (Menard, 2005), all models reflected acceptable multicollinearity diagnostics. Bivariate correlations were reviewed to allow additional consideration of collinearity. Parent Trait and State anxiety (STAI-T and STAI-S) were collinear at baseline (Pearson's  $r = .809, p < .001$ ). STAI-Trait was used in the multivariate model, and STAI-State omitted due to collinearity. All other models reported hereafter had acceptable multicollinearity statistics.

### **3.2 Demographics**

Of the 290 youth who completed the baseline assessment for the study, 185 youth were randomized, including 95 randomized to BBT and 90 to the ARC condition. The sample for the present study included all youth randomized at baseline. Among those, 159 youth (85.9%; 88 in BBT, 71 in ARC) completed the week 16 follow-up assessment. The enrolled sample of youth was 57.8% ( $n = 107$ ) female with a mean age of 11.27 ( $SD = 2.55$ ). Among youth, 21.1% identified as Latinx ( $n = 39$ ), and 32.4% ( $n = 60$ ) identified as a member of a racial and/or ethnic minority group. Among parents of enrolled youth, 16.2% ( $n = 16.2\%$ ) were single parents. The mean parent age was 43 ( $SD = 6.37$ ), and the majority ( $n = 116, 62.7\%$ ) completed an undergraduate degree or more advanced education. The sample included 96 youth (51.9%) enrolled in San Diego, CA and 89 (48.1%) in Pittsburgh, PA. As discussed earlier, study arms did not differ significantly in terms of demographic and clinical characteristics or A-BTPS scores, and study sites did not differ by demographic characteristics (save Latinx ethnicity,  $p < .001$ ), or baseline A-BTPS scores; site was, thus, not included as covariate in analyses, in order to preserve power. Among youth who received one or more sessions of MHT, 60.00% ( $n = 111$ )



of youth received 8 or more sessions of treatment, including 26 youth randomized to ARC (34.7% of the treated ARC sample), and 85 in BBT (92.4% of treated BBT sample). These and additional clinical and treatment utilization characteristics of youth and parents, as relevant to the present study, are reported for the overall sample at baseline ( $N = 185$ ) and in the subsamples that were randomized to BBT ( $n = 95$ ) and to ARC ( $n = 90$ ) in Table 1 and 2. Baseline descriptive statistics are also provided characterizing the overall sample of treated youth, defined as youth who received one or more outpatient mental health sessions with their respective treatment arm ( $n = 166$ ), and within that, the subsamples of treated youth who were randomized to BBT ( $n = 92$ ) and ARC ( $n = 74$ ).

### **3.3 Aim 1. Sociodemographic and Clinical Characteristics Associated with Anticipated Barriers to Treatment Participation at Baseline**

As planned, youth and parent sociodemographic characteristics, family factors, and clinical characteristics were tested to determine associations with indices of Anticipated Barriers identified prospectively by parents at baseline. Analyses in this aim examined Total Anticipated Barriers scores, as well as the two subscales: Anticipated Stressors and Anticipated Tx Demands. Anticipated Barriers were first explored in bivariate analyses, with significance testing used  $p < .10$  to ensure identification of relevant variables. A model building approach was then used with each of the three indices of Anticipated Barriers.

**Total Anticipated Barriers to Treatment Participation.** In bivariate linear regression analyses, higher Total Anticipated Barriers was associated with single parent status ( $\beta = 0.14, p = .056, R^2 = .021, p = .339$ ), greater parent anxiety severity ( $\beta = 0.33, p < .001, R^2 = .108, p = .020$ ), greater parent depression severity ( $\beta = 0.29, p < .001, R^2 = .082, p = .010$ ), and lower income ( $\beta = -0.18, p = .069, R^2 = .033, p = .363$ ). In the multivariate linear regression model

including all candidate variables, higher Total Anticipated Barriers score continued to be associated with greater parent anxiety severity ( $\beta = 0.22, p = .038$ ). All other variables failed to meet the  $p < .05$  criterion. The final model including only parent anxiety severity remained significant ( $\beta = 0.33, p < .001$ ; overall model  $R^2 = .108, p = .020$ ). Bivariate regression results are detailed in Table 3.

**Subscale 1. Anticipated Stressors.** In bivariate analyses, higher Anticipated Stressors scores were associated with single parent status ( $\beta = 0.15, p = .053, R^2 = .021, p = .333$ ), greater parent anxiety severity ( $\beta = 0.33, p < .001, R^2 = .106, p = .019$ ), and greater parent depression severity ( $\beta = 0.26, p < .001, R^2 = .068, p = .034$ ). In the first multivariate linear regression model, greater parent anxiety severity was related to higher Anticipated Stressors ( $\beta = 0.25, p = .017$ ) all other candidate variables failed to achieve significance. In the final multivariate model, greater parent anxiety severity remained significant ( $\beta = 0.33, p < .001$ ), accounting for ten percent of the variance in Anticipated Stressors ( $R^2 = .106, p = .019$ ). Bivariate regression results are detailed in Table 4.

**Subscale 2. Anticipated Treatment Demands.** Using bivariate linear regression models. Higher Anticipated Tx Demands scores were associated with youth minority status ( $\beta = 0.18, p = .026, R^2 = .031, p = .262$ ), youth Latinx status ( $\beta = 0.16, p = .051, R^2 = .026, p = .329$ ), lower youth depression severity ( $\beta = -0.15, p = .060, R^2 = .021, p = .348$ ), lower family income quintile ( $\beta = -0.22, p = .039, R^2 = .047, p = .301$ ), higher parent anxiety severity ( $\beta = 0.23, p = .003, R^2 = .052, p = .134$ ), and higher parent depression severity ( $\beta = 0.24, p < .001, R^2 = .059, p = .033$ ). In the first multivariate model, lower youth depression severity ( $\beta = -0.16, p = .027$ ) and higher parent depression severity ( $\beta = 0.17, p = .015$ ) were significantly associated with higher Anticipated Tx Demands (overall model  $R^2 = .141, p = .001$ ). No other variables met

the  $p < .05$  criterion in this model. The final multivariate model reflected the same pattern of associations between lower youth depression severity ( $\beta = -0.16, p = .034$ ), higher parent depression severity ( $\beta = 0.25, p < .001$ ), and higher Anticipated Tx Demands. This model was significant and accounted for 8.6% of the variance in Anticipated Tx Demands ( $R^2 = .086, p = .022$ ). Bivariate regression results are detailed in Table 5.

### **3.4 Aim 2. Associations of Baseline Youth and Family Sociodemographic and Clinical Characteristics with Experienced Barriers to Treatment Participation.**

Aim 2 tested relationships with barriers actually experienced by youths who attended mental health treatment. The sample of youth included in these analyses, and in any model including an index of Experienced Barriers, is limited to treated youth, or youth who engaged in one or more outpatient mental health treatment sessions between baseline and week 16. As with the previous analyses, we adopted a model building approach in Aim 2 and utilized linear regression analyses.

#### **Aim 2a. Baseline Sociodemographic and Clinical Characteristics Associated with Experienced Barriers to Treatment Participation at Week 16.**

**Total Experienced Barriers to Treatment Participation.** In separate bivariate regression models, higher Total Experienced Barriers scores were associated with youth Latinx status ( $\beta = 0.16, p = .085, R^2 = .026, p = .389$ ), poorer global youth functioning ( $\beta = -0.23, p = .009, R^2 = .053, p = .191$ ), older parent age ( $\beta = 0.20, p = .016, R^2 = .042, p = .230$ ), single parent status ( $\beta = 0.16, p = .076, R^2 = .025, p = .376$ ), and higher parent anxiety severity ( $\beta = 0.17, p = .041, R^2 = .029, p = .308$ ). All other candidate variables failed to achieve significance using  $p < .10$ . The first multivariate linear regression analysis reflected significant associations between higher Total Experienced Barriers and youth Latinx status ( $\beta = 0.26, p = .001$ ), poorer

youth functioning ( $\beta = -0.22, p = .008$ ), older parent age ( $\beta = 0.26, p = .001$ ), and higher parent anxiety severity ( $\beta = 0.23, p = .005$ ). Single parent status failed to meet the  $p < .05$  criterion for inclusion in the final model. In the final multivariate model including all significant variables in the previous model, all predictors were retained, with Latinx youth status ( $\beta = 0.26, p = .001$ ), poorer global youth functioning ( $\beta = -0.22, p = .005$ ), higher parent age ( $\beta = 0.27, p < .001$ ), and higher parent anxiety severity ( $\beta = 0.24, p = .001$ ) accounting for 23.7% of the variance in Total Experienced Barriers scores ( $R^2 = .237, p = .010$ ). Bivariate regression results are detailed in Table 6.

**Subscale 1. Experienced Stressors.** In bivariate analyses, higher Experienced Stressors scores (Experienced Barriers Subscale 1) were associated with greater youth depression severity ( $\beta = 0.18, p = .068, R^2 = .033, p = .361$ ), poorer global youth functioning ( $\beta = -0.18, p = .064, R^2 = .032, p = .355$ ), and older parent age ( $\beta = 0.21, p = .027, R^2 = .046, p = .269$ ). All other variables failed to meet the  $p < .10$  criterion for inclusion in the multivariate model. In the multivariate model, older parent age was associated with higher Experienced Stressors ( $\beta = 0.18, p = .042$ ); however, this model did not account for significant variance in Experienced Stressors ( $R^2 = .076, p = .104$ ). The final model included only parent age, ( $\beta = .21, p = .027$ ) and, again, did not significantly account for variance in Experienced Stressors ( $R^2 = .046, p = .269$ ).

Bivariate regression results are detailed in Table 7.

**Subscale 2: Experienced Treatment Demands.** In bivariate models, higher Experienced Tx Demands scores were associated with older parent age ( $\beta = 0.28, p = .001; R^2 = .080, p = .091$ ) and poorer global youth functioning ( $\beta = -0.17, p = .042; R^2 = .029, p = .310$ ). All other variables failed to meet the a priori  $p < .10$  criterion. In the final multivariate model, only parent age was significantly associated with Experienced Treatment Demands ( $\beta = 0.27, p =$

.001), but did not account for significant variance in outcome ( $R^2 = .080, p = .091$ ). Bivariate regression results are detailed in Table 8.

### **Aim 2b. Associations Between Anticipated and Experienced Barriers.**

**Total Experienced Barriers to Treatment Participation.** Next, linear regression analyses were used to test associations between Anticipated and Experienced Barriers. Models controlled for variables found significant in the final model in Aim 2a associated with the same outcome variable. Higher Total Experienced Barriers was associated with higher Total Anticipated Barriers ( $\beta = 0.41, p < .001$ ), youth identifying as Latinx ( $\beta = 0.18, p = .023$ ), poorer global youth functioning ( $\beta = -0.29, p < .001$ ), and older parent age ( $\beta = 0.23, p = .002$ ). Parent anxiety severity was not significant within this model. In the final multivariate model, the pattern of findings was consistent with the previous model. Higher Total Experienced Barriers was associated with higher Total Anticipated Barriers ( $\beta = 0.45, p < .001$ ), youth Latinx status ( $\beta = 0.15, p = .040$ ), older parent age ( $\beta = 0.20, p = .005$ ), and poorer overall youth functioning ( $\beta = -0.29, p < .001$ ) accounting for 34.7% of variance in Total Experienced Barriers ( $R^2 = .347, p < .001$ ).

Next, Total Experienced Barriers score was tested in a model with Anticipated Barriers Subscale 1: Anticipated Stressors. As planned, the model controlled for significant variables identified in Aim 2a final models. Higher Total Experienced Barriers was related to higher Anticipated Stressors ( $\beta = 0.39, p < .001$ ), youth Latinx group membership ( $\beta = 0.20, p = .011$ ), poorer global youth functioning ( $\beta = -0.26, p < .001$ ), and older parent age ( $\beta = 0.24, p = .001$ ). Parent anxiety severity was not significant within this model. The final model reflected the same pattern of findings. Higher Total Experienced Barriers was associated with higher Anticipated Stressors ( $\beta = 0.43, p < .001$ ), youth Latinx status ( $\beta = 0.17, p = .024$ ), poorer global youth

functioning ( $\beta = -0.27, p = .004$ ), and older parent age ( $\beta = 0.21, p = .004$ ). This final multivariate model accounted, accounting for 33.7% of variance in Total Experienced Barriers ( $R^2 = .337, p < .001$ ).

Next, Total Experienced Barriers was examined in relation to Anticipated Barriers Subscale 2: Anticipated Tx Demands. Higher Total Experienced Barriers was significantly positively associated with Anticipated Tx Demands ( $\beta = 0.31, p = .001$ ), youth Latinx identity ( $\beta = 0.19, p = .015$ ), poorer global youth functioning ( $\beta = -0.29, p < .001$ ), and higher parent age ( $\beta = 0.21, p = .004$ ). Parent anxiety severity was not significantly associated. In the final model, higher Anticipated Tx Demands ( $\beta = 0.36, p < .001$ ), youth Latinx status ( $\beta = 0.15, p = .049$ ), poorer youth functioning ( $\beta = -0.30, p < .001$ ), and older parent age ( $\beta = 0.18, p = .010$ ) were significantly associated with higher Total Experienced Barriers (overall model  $R^2 = .267, p = .005$ ).

**Subscale 1. Experienced Stressors.** Next, a model building approach was used to examine Experienced Stressors as reported at week 16 in relation to Anticipated Stressors at baseline, controlling for significant variables identified in final models in Aim 2a. Higher Experienced Stressors was significantly associated with higher Anticipated Stressors ( $\beta = 0.47, p < .001$ ) and older parent age ( $\beta = 0.19, p = .018$ ). The overall model significantly predicted Experienced Stressors, and accounted for 27.0% of the variance in Experienced Stressors ( $R^2 = .270, p = .002$ ).

**Subscale 2. Treatment Demands.** Next, a model building approach was used to examine associations with Experienced Treatment Demands at week 16 with Anticipated Treatment Demands reported prospectively at baseline. Tests controlled for variables significantly associated with Experienced Treatment Demands in final models in Aim 2a. Higher

Experienced Tx Demands was associated with higher Anticipated Tx Demands ( $\beta = 0.37, p < .001$ ) and older parent age ( $\beta = 0.25, p = .001$ ). The overall model significantly accounted for 21.8% of the variance in Experienced Tx Demands ( $R^2 = .218, p = .010$ ).

**Aim 2c. Associations of Treatment Assignment and Anticipated Barriers with Experienced Barriers to Treatment Participation.**

**Total Experienced Barriers to Treatment Participation.** Using a model building approach, treatment assignment was added to the model including Total Anticipated Barriers in association with Total Experienced Barriers, including significant variables identified in the final model in the previous Aim (Aim 2b). Higher Total Experienced Barriers scores were associated with higher Total Anticipated Barriers ( $\beta = 0.44, p < .001$ ), youth Latinx status ( $\beta = 0.15, p = .037$ ), poorer global youth functioning ( $\beta = -0.29, p < .001$ ), and older parent age ( $\beta = 0.20, p = .005$ ). Treatment was not significant in this model. The overall model was significantly associated with Total Experienced Barriers and accounted for 34.8% of the variance ( $R^2 = .348, p < .001$ ).

Next, models including Anticipated Stressors and treatment were explored. Total Experienced Barriers was related to higher Anticipated Stressors ( $\beta = 0.43, p < .001$ ), youth Latinx status ( $\beta = 0.17, p = .022$ ), poorer global youth functioning ( $\beta = -0.27, p < .001$ ), and older parent age ( $\beta = 0.22, p = .003$ ). Treatment did not achieve significance in this model. The overall model was a significant predictor of Total Experienced Barriers and accounted for 33.7% of the variance ( $R^2 = .337, p < .001$ ).

The multivariate model including Anticipated Tx Demands reflected the same pattern of findings in which higher Total Experienced Barriers was positively associated with higher Anticipated Tx Demands ( $\beta = 0.36, p < .001$ ), youth Latinx status ( $\beta = 0.15, p = .047$ ), poorer

global youth functioning ( $\beta = -0.30, p < .001$ ), and older parent age ( $\beta = 0.18, p = .011$ ).

Treatment assignment did not achieve significance in this model. The overall model was significantly associated with Total Experienced Barriers, accounting for 27.5% of the variance ( $R^2 = .275, p = .003$ ).

**Subscale 1. Experienced Stressors.** Next, Experienced Barriers Subscale 1 (Experienced Stressors) was examined in a model including treatment assignment, controlling for Anticipated Stressors and other covariates significantly associated with Experienced Stressors in Aim 2b. Higher Experienced Stressors was associated with higher Anticipated Stressors ( $\beta = 0.47, p < .001$ ) and older parent age ( $\beta = 0.19, p = .018$ ). Treatment did not achieve significance in this model. The overall model was significantly associated with the outcome variable, accounting for 26.9% of the variance ( $R^2 = .269, p = .002$ ).

**Subscale 2. Experienced Tx Demands.** Analyses testing associations with Experienced Tx Demands reflected a different pattern of findings. Higher Experienced Tx Demands was significantly associated with assignment to the ARC treatment condition ( $\beta = -0.19, p = .014$ ), with higher Anticipated Tx Demands ( $\beta = 0.25, p < .001$ ), and with older parent age ( $\beta = 0.37, p < .001$ ). The overall model accounted for 25.2% of Experienced Treatment Demands, a significant proportion of variance ( $R^2 = .252, p = .002$ ).

**Moderation Analyses with Total Experienced Barriers to Treatment Participation.** Moving forward with Aim 2, linear regression analyses were used to test a moderation effect of treatment assignment on the relationship between Total Anticipated Barriers and Total Experienced Barriers, controlling for significant sociodemographic and clinical variables as previously discussed. The model also included the main effect of treatment assignment and the main effect of Total Anticipated Barriers. Findings reflected a significant, positive main effect of



Total Anticipated Barriers on Total Experienced Barriers ( $\beta = 0.65, p < .001$ ), but no significant main effect of treatment assignment ( $\beta = -0.07, p = .315$ ). However, as hypothesized, the moderation effect of treatment assignment on the relationship between Anticipated and Experienced Barriers Total scores was significant ( $\beta = -0.27, p = .020$ ). Higher Total Experienced Barriers was also associated with youth Latinx status ( $\beta = 0.15, p = .031$ ), older parent age ( $\beta = 0.21, p = .002$ ), and poorer global youth functioning ( $\beta = -0.28, p < .001$ ) in the model, which accounted for 39.4% of the variance in Total Experienced Barriers overall ( $R^2 = .394, p < .001$ ).

Simple effects analyses were used to further characterize the moderating effect of treatment on the relationship between Anticipated and Experienced Barriers Total scores. There was a significant simple main effect in each treatment condition in which higher Total Anticipated Barriers was associated with higher Total Experienced Barriers. However, compared to the magnitude of the simple main effect in ARC ( $\beta = 0.65, t(163) = 5.90, p < .001$ ), the relationship between Total Anticipated Barriers and Experienced Barriers was buffered in BBT ( $\beta = 0.27, t(163) = 2.64, p = .008$ ).

In continuing to examine moderation effects of treatment as hypothesized, the next analyses tested a model with Anticipated Stressors instead of the Total Anticipated Score. In this model, higher Total Experienced Barriers was associated with higher Anticipated Stressors ( $\beta = 0.63, p < .001$ ), and this effect was moderated by treatment assignment ( $\beta = -0.28, p = .016$ ). Higher Total Experienced Barriers scores were also associated with youth Latinx status ( $\beta = 0.18, p = .009$ ), older parent age ( $\beta = 0.23, p = .001$ ), and poorer global youth functioning ( $\beta = -0.25, p = .001$ ). There was no significant main effect of treatment assignment ( $\beta = -0.07, p =$

.323). The overall model was significant, and accounted for 38.1% of the variance in Total Experienced Barriers ( $R^2 = .381, p < .001$ ).

Simple effects analyses were used to further characterize the moderating effect of treatment on the relationship between Anticipated and Experienced Barriers Total scores. There simple main effects of Total Anticipated Barriers on Total Experienced Barriers were significant in both treatment conditions. However, compared to the magnitude of the simple main effect in ARC ( $\beta = 0.62, t(163) = 6.20, p < .001$ ), the relationship between Total Anticipated Barriers and Experienced Barriers was buffered in BBT ( $\beta = 0.25, t(163) = 2.32, p = .021$ ).

Next, a moderation effect was tested on the relationship between Anticipated Tx Demands and Total Experienced Barriers using multivariate linear regression analyses. As in previous analyses, the main effects of treatment and the index of Anticipated Barriers were included in the model, as were significant covariates as previously identified in Aim 2b. h Findings supported a significant main effect of Anticipated Tx Demands ( $\beta = 0.52, p < .001$ ), with higher Anticipated Tx Demands associated with higher Total Experienced Barriers. Higher Total Experienced Barriers were also associated with older parent age ( $\beta = 0.19, p = .006$ ), and poorer global youth functioning ( $\beta = -0.29, p < .001$ ). There was no significant moderation effect of treatment assignment, nor significant main effects of youth Latinx status or treatment assignment. The overall model was significant, and accounted for 30.3% of the variance in Total Experienced Barriers ( $R^2 = .303, p = .003$ ).

**Subscale 1: Experienced Stressors.** Analyses then turned to examination of a hypothesized moderation effect of randomized treatment assignment on the relationship between Anticipated Stressors at baseline and Experienced Stressors at week 16. The multivariate model included the main effects of treatment assignment and Anticipated Stressors, as well as variables

significantly associated with Experienced Stressors, as identified in Aim 2b. Higher Experienced Stressors were significantly associated with higher Anticipated Stressors ( $\beta = 0.73, p < .001$ ) and older parent age ( $\beta = 0.18, p = .011$ ). The moderation effect of treatment was significant ( $\beta = -0.37, p = .001$ ), however there was no significant main effect of treatment assignment ( $\beta = -0.03, p = .668$ ) The overall model was significant, and accounted for 32.4% of the variance in Total Experienced Barriers ( $R^2 = .324, p = .001$ ).

Simple effects analyses were used to further probe the moderation effect. The simple main effects of Anticipated Stressors on Experienced Stressors were significant in both treatment conditions. However, compared to the magnitude of the simple main effect in ARC ( $\beta = 0.73, p < .001$ ), the relationship between Anticipated Stressors and Experienced Stressors was buffered in BBT ( $\beta = 0.24, p = .013$ ).

**Subscale 2: Experienced Treatment Demands.** Next, a hypothesized moderation effect of treatment assignment on the relationship between Anticipated Tx Demands and Experienced Tx Demands was tested using multivariate linear regression. The model included the main effects of treatment assignment and Anticipated Tx Demands, as well as variables significant associated with Experienced Tx Demands, as identified in Aim 2b. Higher Experienced Tx Demands was significantly associated with higher Anticipated Tx Demands at baseline ( $\beta = 0.50, p = .003$ ), older parent age ( $\beta = 0.26, p < .001$ ), and assignment to the ARC treatment condition ( $\beta = -0.20, p = .013$ ). A significant moderation effect of treatment assignment on the relationship between Anticipated and Experienced Tx Demands was not found. The overall model accounted for 28.5% of the variance in Experienced Tx Demands ( $R^2 = .285, p = .006$ ).

### **3.5 Aim 3. Associations Between Anticipated and Experienced Barriers, Treatment Assignment, and Youth Receipt of An Adequate Dose of Mental Health Treatment.**

**Aim 3a.** Initial tests of models in Aim 3a, using logistic regression to test associations of Experienced Barriers with receipt of an adequate dose, produced unstable results. On examination, this instability appeared to have been driven by markedly different cell sizes in the number of youths receiving an adequate dose of treatment by arm (i.e., only 3 BBT youths did not receive an adequate dose). Logistic models may become unstable and unreliable with insufficient cell sizes and with very unequal distributions across variables of interest, making the results of such analyses uninterpretable (Nemes, Jonasson, Genell, & Steineck, 2009). As a result, the planned logistic regression analyses were unable to be estimated and are not reported.

**Aim 3b.** In Aim 3b binary logistic regression was used to test a simpler model in which only treatment assignment was used to predict receipt of an adequate dose of treatment. Treatment assignment was found to be significantly associated with receipt of an adequate dose ( $OR = 22.42, p = .039; 95\% CI = 9.06 - 55.50$ ). Compared to youth assigned to the ARC condition, youth assigned to BBT were 22.42 times as likely to receive 8 or more sessions of treatment between baseline and week 16. The model accounted for approximately 42.1% of the variance in whether or not a youth received an adequate dose of treatment and was statistically significant ( $p < .001$ ).

**Aim 3c.** Like Aim 3a, proposed models reflecting statistical mediation in Aim 3c would include logistic regression paths with the same imbalanced cell sizes between ARC and BBT and within treatment assignment, between youth who did and did not receive an adequate dose of treatment. These model results were again unstable and could not be estimated and, thus, are not reported here.

Findings from this dissertation are being prepared for publication. Publications based on this dissertation will be co-authored by V. Robin Weersing. The dissertation author was the primary investigator and author of this material.

## CHAPTER 4. DISCUSSION

Anxiety and depressive disorders in youth are prevalent, highly comorbid, and associated with significant impairment into adulthood, yet the majority of affected youths do not receive an adequate dose of mental health treatment (MHT). One contributor to this gap in care may be barriers to participation in treatment, including both concrete stressors and obstacles to care and perceived demands of treatment. For youths, parents' perceptions of these barriers may be critical, as they serve as gatekeepers to services. The present study was designed to examine parents' perceptions of barriers to participation in their youth's mental health treatment examined prospectively at intake (i.e., Anticipated Barriers) and retrospectively (i.e., Experienced Barriers) after receipt of care. Relationships between barriers and sociodemographic and clinical characteristics of youth and parents were examined, as well as associations with youth service utilization. These relationships were tested in a sample of youths randomized to one of two conditions—a Brief Behavioral Therapy (BBT) provided in pediatric primary care or to assisted referral to care (ARC) in which families were assisted in navigating service systems in pursuit of community outpatient treatment as usual. The study centered on three aims. In Aim 1, associations of youth and family clinical and sociodemographic characteristics with Anticipated Barriers were examined. In Aim 2, associations of the same sociodemographic and clinical characteristics to Experienced Barriers were tested, as were relationships of Anticipated Barriers and treatment assignment to Experienced Barriers. In Aim 3, Experienced Barriers and treatment assignment were planned to be tested in association with youth receipt of an adequate dose of treatment. However, due to small cell sizes, this model was not able to be estimated.

#### **4.1 Associations of Youth and Family Sociodemographic and Clinical Characteristics with Indices of Anticipated Barriers at Baseline.**

A priori, it was hypothesized that severity of youth and parent psychopathology and indices of family disadvantage would be linked to parents' perceptions of greater barriers to treatment. In the present study, parent and youth psychopathology were significantly associated with Anticipated Barriers. In multivariate analyses, the most parsimonious models for Total Anticipated Barriers and Anticipated Stressors each included only parent anxiety severity. In contrast, higher parent depression severity but *lower* youth depression severity was significantly associated with higher Anticipated Treatment Demands scores. The relationship between parental psychopathology was as hypothesized and is consistent with other findings in the literature (Kazdin & Wassell, 2000). Of note, parental internalizing psychopathology may be particularly important in considering the barriers constructs as studied here, as they do not reflect objectively measured barriers but rather parent perceptions of barriers. As discussed previously, inherent in the measures of barriers used in this project is the stipulation that the barriers *will be* (for Anticipated Barriers) a problem or hindrance actually impacting attendance to and receipt of youth mental health treatment. Anxious parents may be more likely to view barriers they anticipate as overwhelming or insurmountable, and parental depression symptoms of anhedonia, fatigue, hopelessness and difficulty concentrating and making decisions could well impact perceptions of ease of participation in treatment. The inverse association with youth depression is counter to hypotheses and more difficult to understand. In other work, parents of depressed adolescents reported significantly higher anticipated barriers to youth depression treatment than parents in a matched sample of non-depressed youths (Meredith et al., 2009). One possibility may relate to differences in the recruitment strategies for the current work. The sample for the

current study was recruited to meet criteria for anxiety, depression, or both, and the vast majority of enrolled youths met criteria for anxiety disorders, with a smaller proportion also meeting criteria for comorbid depression (Weersing et al., 2017). Perhaps the presence of more serious depression symptoms in youths within the context of an “anxiety study” in primary care is more alarming and overrode parents’ concerns regarding any barriers they anticipated (resulting in lower barriers scores in the presence of higher symptoms). In a community sample, with parents asked to consider what prospective barriers they might experience to youth care, higher levels of youth psychopathology were associated with a greater number of parent-reported prospective barriers to youth care (Nanninga, 2016b). It may be the case that different types of youth psychopathology are differentially observable to parents, and thus perhaps also differentially impact parents’ concern, motivations for treatment, and perceived barriers.

#### **4.2 Associations of Youth and Family Sociodemographic and Clinical Characteristics with Indices of Experienced Barriers**

In multivariate models, higher Total Experienced Barriers was significantly associated with poorer youth functioning (CGAS), tested in models both with and without inclusion of Anticipated Barriers indices. Youth functioning remained significant after adding interaction effects of treatment assignment and Anticipated Barriers indices. There have been mixed findings in the literature associated with these and related constructs. For example, in a sample of youths seeking treatment in publicly-funded outpatient settings, youth report of higher severity of symptoms was associated with attending a higher number of treatment sessions (Brookman-Frazer, Haine, Gabayan, & Garland, 2008), which suggests the possibility that poorer functioning in this sample may have been associated with reduced barriers. Other studies have had null findings of association between a broad measure of psychopathology, including



assessment of functional impairment, and BTPS scores at post-treatment in a treatment-seeking sample (Salloum et al., 2016). Yet, poorer youth functioning has been related to reduced attendance to youth treatment (Kazdin, Mazurick, & Siegel, 1994) and higher rates of attrition from ongoing care in multiple samples (e.g., Kazdin, Mazurick, & Siegel, 1994; Nock & Kazdin, 2001).

For parents who recognize their youth's poor functioning, it is possible that this relationship may be partially explained by parents' beliefs about what it *means* that their child's functioning is poor. For example, parents may interpret poor functioning to indicate their child is unlikely to improve and potentially have less confidence in the possibility of improving youth functioning via treatment. Another possibility is that stressors associated with poorer youth functioning, such as undesirable parent contacts with schools, demands associated with declining academic performance, peer difficulties, or pervasive family conflict, may pose competing demands with those associated with engagement in the youth's treatment. In this sense, if a referral coincides with a period of frequent calls from the school, and/or complaints from coaches or club leaders, for example, overburdened parents may experience recommended engagement in treatment as more of the "noise" of tending to their child who is struggling. In this context, it may be difficult to prioritize among these demands for responsiveness associated with parenting this youth, and easier to set aside treatment than to delay responding to disciplinary action at school or addressing increased sibling conflict, for example. Mental health treatment may be de-prioritized in this context.

In addition, a significant association was found in the current study between youth Latinx identity and higher Total Experienced Barriers scores in multivariate models, as hypothesized. This aligns with related literature that reflects reduced service utilization by Latinx

youths as compared to non-Hispanic White youths (Kataoka, Zhang, & Wells, 2002; Yeh et al., 2003). However, research findings have been inconsistent related to youth Latinx identity and barriers. Contrary to findings in the current study, lower retrospective barrier scores were reported by parents of Latinx youth than by parents of Caucasian youths (Salloum et al., 2016). Using another measure of parents' perceptions of barriers to youth treatment, lower barriers were reported by parents of ethnic minority youths, in a sample including Latino-identified youth, than by parents of Caucasian youths (Yeh et al., 2003). Some have raised questions about the possibility that positive relationships between parent-reported barriers and youth service utilization may be affected by parent interpretations of barriers items, as informed by cultural identity (Yeh et al., 2003). As these authors noted (Yeh et al., 2003), additional work is needed to fully understand cultural differences in interpretations of items on barriers measures. These issues warrant further research in service of more fully understanding the ways barriers function across youth and family populations, in developing culturally competent interventions and policies to address barriers, and more broadly, to target disparities in youth mental health service utilization.

Higher scores in all indices of Experienced barriers also were significantly associated with older parent age, the only sociodemographic or clinical variable that remained significant in multivariate analyses of association with Experienced Stressors, and with Experienced Treatment Demands. The mechanism behind this is unknown. However, it may be that parent age serves as a proxy here for another variable not examined in this study or not assessed in this sample. For example, one might speculate that older parent age may correlate with any one of myriad life stressors that might impact perceptions of barriers, such as for example, responsibilities associated with aging parents. These are questions that were not investigated in the current study.

Previous findings of association between parent age and barriers have been limited and mixed, including null findings of association between the age of a youth's mother and her retrospective report of barriers to her child's care (Owens, 2002; Kazdin et al., 1997b), and positive associations between younger parent age and increased parent participant engagement in their child's mental health treatment (Hansen & Warner, 1994).

Finally, parent anxiety severity was also significantly associated with Total Experienced Barriers in multivariate models. This is consistent with hypotheses, and with related findings in the literature in which higher parent psychopathology has been associated with higher total BTPS scores for parents (Kazdin & Wassell, 2000; Armbruster & Kazdin, 1994; Kazdin et al., 1997a). In addition, higher parent stress has been linked to higher total BTPS scores (Kazdin et al., 1997a). To continue earlier discussion of parent anxiety, many of the possible relationships previously discussed associated with Anticipated Barriers may be operating when parents consider barriers retrospectively, as well. For example, it is conceivable that parents' high levels of worry or experience of overwhelm associated with demands, including demands associated with treatment participation, may indeed have posed problems for treatment participation. Requests for parents to be involved in their youth's psychotherapy, for example, might be stressful and exacerbate anxiety in already-anxious parents.

#### **4.3 Relationships of Treatment Assignment and Anticipated Barriers with Experienced Barriers**

As expected, parent reports of anticipated barriers before engaging in treatment were consistently and positively associated with their reports of the barriers they actually experienced when seeking services for their child. This suggests that parents predicted, with relative accuracy, how challenging various categories of barriers (i.e., total, stressors, and treatment

demands) would be in the context of engaging in youth services. It should be noted that this does not necessarily indicate that parents predicted which *specific* barriers they would later experience (findings reflect that mean scores were related rather than indicating a 1-to-1 correspondence of specific factors). The association between Anticipated and Experienced Barriers is more intuitively understandable in the case of the Stressors subscale, given that this subscale taps aspects of treatment engagement that the parent may already have experienced in other settings (e.g., arranging pediatric check-ups). For example, it refers to how much of a problem arranging childcare for other youth may be in order to allow session attendance, or how difficult it may be to secure time away from the workplace to allow for session attendance. Importantly, Anticipated Barriers were assessed before randomization to treatment arm, and the Anticipated Barriers measure, in essence, asked parents to forecast barriers generally across specific interventions and settings and respond with the magnitude of how much of a problem those barriers would be for engagement in their youth's care, regardless of treatment assignment.

Of note, treatment assignment to BBT was not generally associated with lower Experienced Barriers to treatment participation. These findings ran both counter to specific hypotheses for this study and counter to the notion that location of services in "easy access" community settings would lower families' experience of barriers to treatment participation. In only one analysis did parents of youths in BBT report lower experienced barriers — Subscale 2, the domain of demands associated with treatment. Beliefs reflected in items in the Experienced Treatment Demands subscale include, for example, that the assigned work for the parent associated with treatment was too difficult, that session information seemed confusing, that the child refused to attend, and that treatment lasted too many weeks. Interestingly, the transdiagnostic behavioral model employed in BBT may itself be more demanding of families in

terms of parent participation, homework, and in session engagement than many forms of eclectic usual care community services (see Weersing & Weisz, 2002), which would run counter to the items endorsed on this scale. Data were not available on the type of techniques employed in the outpatient service included in the ARC arm, leaving this open to speculation. Of note, youths randomized to the BBT arm experienced significantly more clinical improvement than youths in ARC (see Weersing et al., 2017), and the Experienced Barriers measure was administered at the same assessment where parents were interviewed on youths' post-treatment symptoms and functioning. Although the barriers scale does not ask parents whether the demands were “worth it,” it is possible that the positive halo from youths' clinical progress may have influenced parents view of the Treatment Demands in BBT. One additional important difference between the treatment conditions was cost — the “experimental” BBT services were provided free of charge, while families in ARC were responsible for any cost associated with services (i.e., cost and payment processes were not manipulated). At both sites, very low-cost community mental health referral services were provided, and youths and families were all drawn from healthcare practices, many with access to within-network mental health care. However, given this difference, post-hoc item level analyses were conducted within the Experienced Treatment Demands subscale associated with item 29: “I felt that treatment cost too much.” Item 29 was omitted, and Adjusted Experienced Treatment Demands subscale scores were calculated using the remaining items, with variables calculated and transformed as in the original analyses. Exploratory analyses suggest that the lower mean score for Treatment Demands in BBT may be driven by the fact that treatment was free. Additional investigation of the demands of evidence-based treatment and the role of cost in barriers to care in primary care and specialty care services is warranted.

Although a main effect of treatment assignment was not significant in the majority of models, treatment assignment did moderate the associations between Anticipated Barriers and Experienced Barriers in models that did *not* include the Treatment Demands subscale. In addition to the *treatment x anticipated barriers* interaction, there was a significant main effect of Anticipated Barriers on Experienced Barriers in each of these models. Simple effects analyses reflected the same pattern of moderation findings across models. The positive association between Anticipated and Experienced Barriers was stronger in ARC and weaker in BBT. In the absence of a main effect of treatment type, these effects are somewhat puzzling. They do not seem to be driven by BBT surprising parents with lower than expected experienced barriers, as would be the case if the interaction and both main effects of treatment and anticipated barriers were significant. Rather it appears that the barriers to care in BBT may have been surprising, and reduced parent's accuracy in prediction from their anticipated barriers. This appears to be an area for fruitful additional research, given the additional findings in this study suggesting the BBT led more youth completing an adequate dose of care and the association of BBT with superior clinical outcomes in the main trial (Weersing et al., 2017). Parents' perceptions of barriers to care in BBT may benefit from additional exploration, including qualitative work to map out other potentially unmeasured barriers and factors that measurement instruments in our current assessment battery may not capture.

#### **4.4 Youth Receipt of an Adequate Dose of Treatment Associated with Experienced Barriers and Treatment Assignment**

Although receipt of BBT was not significantly associated with reduced barriers indices, participation in BBT was strongly and significantly associated with receipt of an adequate dose of treatment. BBT youths were over 22 times as likely to complete eight or more sessions than

youth assigned to traditional outpatient mental health in ARC. Findings highlight the impact of delivering youth mental health interventions in primary care settings and possible associated gains in service utilization. This is a robust finding that supports further work using services embedded in primary care settings. This also raises questions about the mechanisms involved in achieving this level of retention. In addition to the effects of BBT on treatment dose, both lower Total Experienced Barriers and lower Experienced Treatment Demands were independently associated with a higher likelihood that youth received an adequate dose of treatment, although instability of these models warrants caution. These findings are consistent with some extant research findings. In a sample of youth seeking care in an outpatient mental health setting, lower total BTPS scores were associated with a higher number of sessions, lower rate of dropout, and lower rates of cancelled or unattended sessions (Kazdin et al., 1997b). However, in the Kazdin paper, subscale 1 Stressors scores (versus subscale 2 Treatment Demands) significantly separated treatment completers from youth who dropped out, with lower barriers associated with better retention.

As reported previously, planned analyses of a statistical mediation effect of Experienced Barriers indices on the relationship between treatment assignment and dose were not tenable in the dataset for this due to unequal cell sizes (Nemes et al., 2009); in essence the effect of arm on adequate dose was so complete that little additional variance remained to be explored.. Future work may benefit from examining experienced barriers associated with service utilization, using larger samples and under conditions where the association between primary care services and dose may be more variable (e.g., if the BBT model was implemented in widespread practice with perhaps less fidelity).

## 4.5 Limitations

The current study benefited from multiple strengths including random assignment to treatment condition, use of a comparison condition which hews closely to the actual conditions under which youths in the community receive care, and a sample recruited from multiple sites. Additional strengths include measurement of parents' perceptions of barriers at multiple time points and examination of a service setting with promise for increasing service utilization, particularly for underserved youths. Yet, there are limitations to this study that may have impacted the results observed in this investigation and may necessitate tempering conclusions drawn. First, the experienced barriers measure was, necessarily, only analyzed in families that actually received care. Treatment assignment significantly impacted receipt of an adequate dose of care, with BBT youth more likely to complete an adequate dose, and, thus, the experienced barriers measure was more likely to be completed by families in BBT than ARC. As such, reports of experienced barriers from parents whose youths never connected with care in the ARC condition are, by definition, omitted from analysis. It seems plausible that these families may have experienced high barriers — barriers sufficient to prevent them from obtaining youth care entirely. Thus, it is possible that the generally null effects of treatment assignment on experienced barriers may result, in part, from an underestimate of the barriers actually experienced by families in ARC. Second, the study is further limited by the use of adapted versions of the BTPS (Kazdin et al., 1997b), here the A-BTPS and E-BTPS, which have not been validated and thus are not as readily comparable to measures used in other research. Third, as an experimental treatment, BBT was free of cost for participating families. Families were provided a range of referral options in ARC, including low-cost options and within-health-system referrals with minimal co-pays. However, the availability of BBT free of cost may have directly impacted



the number of sessions attended, without changing barriers. This may have functionally inflated the magnitude of effect on dose associated with BBT assignment. Fourth, this study is limited by reliance on parent perceptions of barriers without “objective” measures of barriers or reports of youth perceptions of barriers. As such, these measures may be overly impacted by parent clinical characteristics, such as anxiety and depression, in predicting perceptions of barriers. Youth reports of barriers have been associated with dropout from treatment (Salloum et al., 2016), and may add to our understanding of the larger set of factors associated with youth treatment utilization. Associations with family demographic characteristics were found more readily with experienced barriers, which may be less amenable to being seen through the lens of parent perception than anticipated barriers might be. Fifth, planned analyses examining Experienced Barriers associated with adequate dose and testing Experienced Barriers as a mediator between treatment assignment and adequate dose were not possible in this sample. Cell sizes differed between BBT and ARC on multiple dimensions: in the number of youths who engaged in treatment, the number whose parents completed Experienced Barriers measures, and the number who completed an adequate dose of treatment. The unbalanced cell sizes between treatment conditions in the number of Experienced Barriers measures completed impacted power needed for analyses associated with receipt of an adequate dose. In this sample, these differences rendered planned logistic regression analyses testing associations of Experienced Barriers with dose untenable due to unstable models.

Relationships between Experienced Barriers and youth service utilization will be important for future research with larger samples to further investigate in more stable analyses. Also, while the sample reflected a range of youth ethnic and racial identities, cell sizes for some groups were not sufficient to allow for group-specific analyses. Another limitation is the

possibility of Type I error, particularly given the number of models tested. As such, there is the possibility of some spurious results. Finally, although power analyses suggest that many of the key tests in this investigation were adequately powered, the study was underpowered for potentially interesting post-hoc follow-up analyses to unpack and better understand effects (e.g. interactions between ethnicity and treatment assignment; Weersing et al., 2017).

#### **4.6 Summary and Clinical Implications**

Limited previous work has investigated parents' perceptions of barriers measured both prospectively at the time of treatment initiation, and retrospectively, after receipt of care. Further, few studies have tested differences in barriers in the context of a randomized clinical effectiveness trial including care situated in a primary care setting, and care provided in typically utilized community mental health settings. The present study contributes to the literature by further elucidating relationships with parents' perceptions of barriers at multiple time points in relation to youth treatment. It also broadens our understanding of the ways in which barriers may be associated with treatment setting for youth with anxiety and depression. Finally, this work may inform efforts to expand mental health service provision to alternative settings such as pediatric primary care and in working with diverse populations of families.

Overall, this study suggests parents' perceptions of barriers were significantly associated with psychopathology (A-BTP with parent anxiety and youth and parent depression, E-BTP with youth functioning), and social marginalization (E-BTP with youth Latinx identity). As hypothesized, anticipated barriers (A-BTP) were associated with experienced barriers (E-BTP). Random assignment to pediatric primary care-based services (BBT) was more likely to result in an adequate dose of care compared to assignment to traditional outpatient settings (ARC). Given that families with Latinx youth, elevated parent psychopathology, or poorer youth functioning

are more likely to perceive barriers to youth care across settings, these families may need additional support to facilitate engagement and retention in treatment beyond provision of care in alternate MHT settings. These findings suggest pediatric primary care may be an important venue in which youth identified with possible signs of anxiety or depressive disorders may be effectively linked to treatment in a manner that may retain more youths in care, including families with elevated parent psychopathology, and high-risk populations with lower service utilization, such as Latinx youths.

This work also highlights several areas where additional research may be beneficial. For example, given the links between parent internalizing psychopathology and anticipated barriers, there may be a benefit to programs designed to identify and address psychopathology in parents of internalizing youths in the context of supporting youth service utilization. The superior retention of youths in pediatric primary care-based BBT suggests additional work is warranted to more fully understand aspects of the BBT assignment that may drive this improved service utilization in internalizing youths. Also, in further considering associations with parents' perceptions, future research may be enriched by assessing parents' beliefs regarding their youth's need for mental health services and their perceptions of the severity of any identified mental health or behavioral health problems. Continuing to build on our understanding of the ways barriers operate across service settings may aid in tailoring ongoing efforts to expand access to youth care, and include settings that capitalize on family accessibility, such as pediatric primary care.

Findings from this dissertation are being prepared for publication. Publications based on this dissertation will be co-authored by V. Robin Weersing. The dissertation author was the primary investigator and author of this material.

## Appendix 1. Anticipated Barriers to Treatment Participation Scale (A-BTPS)

BCBT-R01  
Page 1 of 2

BTPS  
Baseline

Families who seek mental health services for their child sometimes find that things get in the way of getting treatment. Listed below are different problems that could be obstacles to care. For each item, please indicate how likely it is that this type of problem may make it difficult for your family to obtain mental health services for your child.

1 = Not likely to be a problem      2 = Might be a problem once in a while      3 = Might be a problem sometimes      4 = Likely to be a problem      5 = Very likely to be a problem

	1	2	3	4	5
1. My child was in other activities (sports, music lessons) that made it hard to come to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Scheduling of appointment times for treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. My job may get in the way of coming to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I may be too tired after work to come to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Treatment may be in conflict with another of my activities (classes, job, friends).....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. During the course of treatment I may experience a lot of stress in my life.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Treatment may add another stressor to my life.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Crises at home may make it hard for me to get to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Treatment may take time away from spending time with my children.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I may have trouble with other children at home, which would make it hard to come to treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
11. I may be sick on the day when treatment is scheduled.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. My child may be sick on the day when treatment is scheduled.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. There is always someone sick in my home.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Transportation (getting a ride, driving, taking a bus) to the clinic for a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. There may be bad weather and this would make coming to treatment a problem.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Getting a baby-sitter so I could come to the sessions.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Finding a place to park at the clinic.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Please do not write below this line.

1 = Not likely to be a problem      2 = Might be a problem once in a while      3 = Might be a problem sometimes      4 = Likely to be a problem      5 = Very likely to be a problem

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
18. I may not have time for the assigned work.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. My child may never be home to do the assigned homework.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Treatment may last too long (too many weeks).....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I feel that treatment may be more work than expected.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Information in the session and handouts may seem confusing.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. My child may have trouble understanding treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. The assigned work for me to do as part of this treatment may be much too difficult.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. The atmosphere at the clinic may make it uncomfortable for appointments.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I do not feel that I will have enough to say about what goes on in treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. My child may refuse to come to the sessions.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I may have a disagreement with my husband, boyfriend, or partner about whether we should come to treatment at all.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I feel that treatment may cost too much.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I may be billed for the wrong amount.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. I have not found previous treatment I obtained for myself or my family helpful.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Problems I had with past treatment may prevent me from wanting to seek treatment now.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Members of my family/community do not approve of using mental health services.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I believe that my child's emotional problems should be dealt with in my family or community.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ID:



## Appendix 2. Experienced Barriers to Treatment Participation Scale (E-BTPS)

BCBT-R01  
Page 1 of 2

### BTPS Follow-up

Families who seek mental health services for their child sometimes find that things get in the way of getting treatment. Listed below are different problems that could be obstacles to care. For each item, please indicate how often this type of problem made it difficult for your family to obtain mental health services for your child.

1 = Not likely to be a problem      2 = Might be a problem once in a while      3 = Might be a problem sometimes      4 = Likely to be a problem      5 = Very likely to be a problem

	1	2	3	4	5
1. My child was in other activities (sports, music lessons) that made it hard to come to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Scheduling of appointment times for treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. My job got in the way of coming to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I was too tired after work to come to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Treatment was in conflict with another of my activities (classes, job, friends).....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. During the course of treatment I experienced a lot of stress in my life.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Treatment added another stressor to my life.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Crises at home made it hard for me to get to a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Treatment took time away from spending time with my children.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I had trouble with other children at home, which made it hard to come to treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I was sick on the day when treatment was scheduled.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. My child was sick on the day when treatment was scheduled.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. There was always someone sick in my home.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Transportation (getting a ride, driving, taking a bus) to the clinic for a session.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. There was bad weather and this made coming to treatment a problem.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Getting a baby-sitter so I could come to the sessions.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Finding a place to park at the clinic.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

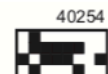
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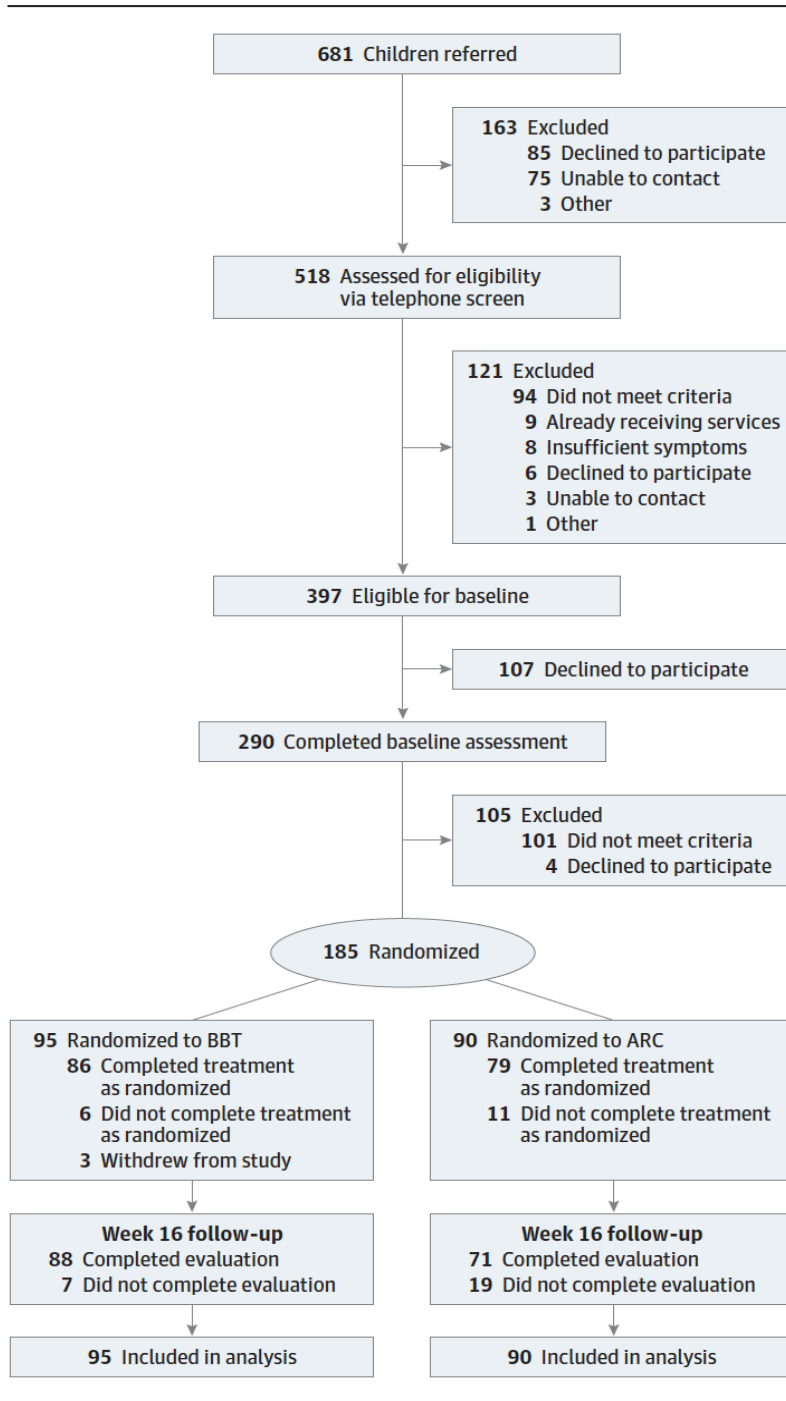
Please do not write below this line.

1 = Not likely to be a problem      2 = Might be a problem once in a while      3 = Might be a problem sometimes      4 = Likely to be a problem      5 = Very likely to be a problem

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
18. I did not have time for the assigned work.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. My child was never be home to do the assigned homework.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Treatment lasted too long (too many weeks).....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I felt this treatment was more work than expected.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Information in the session and handouts seemed confusing.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. My child had trouble understanding treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. The assigned work for me to do as part of this treatment was much too difficult.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. The atmosphere at the clinic makes it uncomfortable for appointments.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I do not feel that I had enough to say about what goes on in treatment.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. My child refused to come to the sessions.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I had a disagreement with my husband, boyfriend, or partner about whether we should come to treatment at all.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I felt that treatment cost too much.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I was billed for the wrong amount.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. I have not found previous treatment I obtained for myself or my family helpful.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Problems I had with past treatment prevent me from wanting to seek treatment now.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Members of my family/community did not approve of using mental health services.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I believe that my child's emotional problems needed to be dealt with in my community.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ID:





ARC indicates assisted referral to care; BBT, brief behavioral therapy.

**Figure 1.** CONSORT Flow Diagram for Randomized Trial of BBT

Used with permission from:

Weersing, V. R., Brent, D. A., Rozenman, M. S., Gonzalez, A., Jeffreys, M., Dickerson, J. F., Lynch, F.L., Porta, G., & Iyengar, S. (2017). Brief Behavioral Therapy for Pediatric Anxiety and Depression in Primary Care: A Randomized Clinical Trial. *JAMA Psychiatry*, 74(6), 571-578.



**Table 1.** Sample Sociodemographic and Clinical Characteristics at Baseline

Characteristic	Total Sample			Treated Sample <sup>^</sup>		
	Overall (N=185)*	BBT (N=95)*	ARC (N=90)*	Overall (N=166)*	BBT (N=92)*	ARC (N=74)*
Youth Age <sup>b</sup> M (SD)	11.27 (2.55)	11.25 (2.45)	11.29 (2.68)	11.31 (2.57)	11.25 (2.46)	11.39 (2.71)
Youth Female <sup>s</sup> n (%)	107 (57.8%)	54 (56.8%)	53 (58.9%)	94 (56.6%)	51 (55.4%)	43 (58.1%)
Youth Latinx <sup>c</sup> n (%)	39 (21.1%)	18 (18.9%)	21 (23.3%)	34 (20.5%)	18 (19.6%)	16 (21.6%)
Youth Racial/Ethnic Minority <sup>a</sup> n (%)	60 (32.4%)	31 (32.6%)	29 (32.2%)	51 (30.7%)	30 (32.6%)	21 (28.4%)
Monthly Household Income Quintile, by Site <sup>c</sup> n (%)	1: 27 (14.6%) 2: 30 (16.2%) 3: 25 (13.5%) 4: 32 (17.3%) 5: 30 (16.2%) (n=144)	1: 10 (10.5%) 2: 17 (17.9%) 3: 16 (16.8%) 4: 18 (18.9%) 5: 13 (13.7%) (n = 74)	1:17(18.9%) 2: 13(14.4%) 3: 9 (10.0%) 4: 14 (15.6%) 5: 17 (18.9%) (n = 70)	1:20 (12.0%) 2: 29 (17.5%) 3: 22 (13.3%) 4: 29 (17.5%) 5: 27 (16.3%) (n = 127)	1:8 (8.7%) 2: 17 (18.5%) 3: 16 (17.4%) 4: 17 (18.5%) 5: 13 (14.1%) (n = 71)	1: 12(16.2%) 2: 12 (16.2%) 3: 6 (8.1%) 4: 12 (16.2%) 5: 14 (18.9%) (n =56)
Single Parent <sup>e</sup> n (%)	30 (16.2%)	16 (16.8%) (n=93)	14 (15.6%)	25 (15.1%) (n=165)	16 (17.4%) (n=90)	9 (12.2%)
Parent Completed College <sup>f</sup> n (%)	116 (62.7%) (n =182)	61 (64.2%) (n=93)	55 (61.1%) (n=89)	105 (63.3%) (n=163)	60 (65.2%) (n=90)	45 (60.8%) (n=73)
Parent Age <sup>b</sup> M (SD) <sup>b</sup>	42.68 (6.37) (n=168)	42.85 (6.51)	42.51 (6.25)	42.81 (6.42) (n=84)	43.00 (6.53) (n=84)	42.57 (6.32) (n=68)
Child Anxiety Severity (PARS) <sup>b</sup> M(SD)	14.86 (5.20)	15.27 (5.31)	14.43 (5.06)	14.88 (5.21)	15.29 (5.40)	14.36 (4.96)
Child Depression Severity (CDRS-R) <sup>b</sup> M(SD)	32.93 (12.56) (n = 184)	32.18 (12.65)	33.73 (12.49) (n=89)	32.66 (12.11) (n=165)	32.26 (12.83)	33.16 (11.22) (n=73)
Child Global Functioning (CGAS) <sup>b</sup> M (SD)	56.14 (6.77)	55.86 (6.48)	56.42 (7.10)	56.16 (6.73)	55.74 (6.54)	56.68 (6.97)
Parent Anxiety Severity (STAI Trait) <sup>b</sup> M (SD)	36.02 (10.96) (n = 184)	36.51 (11.72)	35.49 (10.12) (n=89)	35.85 (10.80) (n=165)	36.10 (11.56)	33.53 (9.83) (n=73)
Parent Depression Severity (CES-D) <sup>b</sup> M (SD)	12.05 (8.34)	12.49 (9.34)	11.59 (7.17)	12.11 (9.20)	12.11 (9.20)	11.91 (7.32)

\* N as listed unless indicated otherwise in table; <sup>^</sup> BBT youth who received ≥ 1 BBT session, and ARC youth who received ≥ 1 outpatient session; <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group; <sup>d</sup> Coded using families with multiple caregivers as reference group; <sup>e</sup> Coded with non-completion as reference group; <sup>f</sup> Coded with

**Table 2.** Treatment Utilization and Barriers

Characteristic	Total Sample			Treated Sample <sup>^</sup>		
	Overall (N=185)*	BBT (N=95)*	ARC (N=90)*	Overall (N=166)*	BBT (N=92)*	ARC (N=74)*
Sessions Completed By Week 16 Follow-Up <i>M (SD)</i>	8.72 (4.71) (n = 174)	11.15 (2.16)	6.06 (5.26)	9.14 (4.40)	11.15 (2.16)	6.64 (5.15)
Received $\geq$ 1 session <i>n (%)</i>	166 (89.7%)	92 (96.8%)	74 (82.2%)	100%	100%	100%
Received $\geq$ 8 Sessions <sup><i>h</i></sup> <i>n (%)</i>	111 (60.00%)	85 (89.5%)	26 (28.9%) (n = 81)	111 (66.9%)	85 (92.4%)	26 (35.1%)
Total ARC Calls <i>M (SD)</i>	4.18 (2.62) (n = 73)	---- n/a----	4.18 (2.62) (n = 73)	4.45 (2.56) (n = 64)	---- n/a----	4.45 (2.56) (n = 64)
Total Anticipated Barriers (A-BTPS) <sup><i>b</i></sup> <i>M (SD)</i>	1.27 (.26) (n = 177)	1.24 (.23) (n = 92)	1.30 (.28) (n = 85)	1.27 (.26) (n = 160)	1.24 (.234) (n = 89)	1.31 (.279) (n = 71)
Total Experienced Barriers (E-BTPS) <sup><i>b</i></sup> <i>M (SD)</i>	1.24 (.27) (n = 129)	1.21 (.23) (n = 74)	1.27 (.30) (n = 55)	1.23 (.27) (n = 124)	1.21 (.233) (n = 73)	1.27 (.306) (n = 51)
Total Experienced Barriers Score Available (y/n) <i>n (%)</i>	129 (69.7%)	74 (77.%)	55 (61.1%)	124 (74.7%)	73 (79.3%)	68 (91.9%)

\* N as listed unless indicated otherwise within table; <sup>^</sup> Youth who participated in  $\geq$  1 session between baseline and week 16; <sup>*b*</sup> Natural log transformed; <sup>*h*</sup> In BBT, only BBT sessions included, for ARC youth only outpatient mental health treatment sessions included

**Table 3.** Baseline Sociodemographic and Clinical Characteristics of Full Sample Associated with Total Anticipated Barriers

Youth Characteristics	Bivariate Linear Regression Analyses with Baseline Sample Characteristics					
	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	$R^2$ ( <i>p</i> )
Age <sup>b</sup>	185	-0.04	0.07	-0.59 (183)	.554	.002 (.767)
Sex <sup>g</sup>	177	0.03	0.08	0.41 (175)	.685	.001 (.839)
Minority Status <sup>a</sup>	177	0.12	0.08	1.57(175)	.116	.015 (.432)
Latinx Status <sup>c</sup>	177	0.10	0.08	1.22 (175)	.224	.009 (.543)
Anxiety Severity (PARS) <sup>b</sup>	185	0.06	0.06	1.04 (183)	.300	.004 (.604)
Depression Severity (CDRS-R) <sup>b</sup>	185	-0.05	0.09	-0.56 (183)	.579	.002 (.781)
Global Functioning (CGAS) <sup>b</sup>	185	0.04	0.07	0.60 (183)	.550	.002 (.765)
Parent and Family Characteristics	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	$R^2$ ( <i>p</i> )
Parent Age <sup>b</sup>	177	0.05	0.09	0.60 (175)	.547	.003 (.763)
Single Parent <sup>e</sup>	176	0.14*	0.08	1.91 (174)	.056	.021 (.339)
Parent Completion of College <sup>f</sup>	174	0.11	0.07	1.54 (172)	.123	.013 (.441)
Quintile of Household Income (By Site)	182	-0.18*	0.10	-1.82 (180)	.069	.033 (.363)
Parent Anxiety Severity (STAI-T) <sup>b</sup>	185	0.33****	0.07	4.64 (183)	<.001	.108 (.020)
Parent Depression Severity (CESD) <sup>b</sup>	185	0.29****	0.06	5.12 (183)	<.001	.082 (.010)

\*  $p < .10$  ; \*\*  $p < .05$ ; \*\*\* $p < .01$  \*\*\*\*  $p < .001$ ; <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group; <sup>d</sup> Beta values reflect STDYX Standardization in MPlus; <sup>e</sup> Coded using families with multiple caregivers as reference group; <sup>f</sup> Coded with non-completion as reference group; <sup>g</sup> Coded with male as reference group

**Table 4.** Baseline Sociodemographic and Clinical Characteristics of Full Sample Associated with Anticipated Stressors

Youth Characteristics	Bivariate Linear Regression Analyses with Baseline Sample Characteristics					
	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Age <sup>b</sup>	185	-0.02	0.07	-0.26 (183)	.799	.000 (.899)
Sex <sup>g</sup>	177	0.03	0.04	0.71 (175)	.479	.003 (.726)
Minority Status <sup>a</sup>	177	0.08	0.08	1.06 (175)	.288	.007 (.595)
Latinx Status <sup>c</sup>	177	0.06	0.08	0.73 (175)	.464	.003 (.714)
Anxiety Severity (PARS) <sup>b</sup>	185	0.09	0.06	1.42 (183)	.155	.007 (.477)
Depression Severity (CDRS-R) <sup>b</sup>	185	-0.002	0.09	-0.03 (183)	.980	.000 (.990)
Global Functioning (CGAS) <sup>b</sup>	185	0.02	0.08	0.24 (183)	.812	.000 (.906)
Parent and Family Characteristics	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Parent Age <sup>b</sup>	177	0.03	0.09	0.35 (175)	.728	.001 (.862)
Single Parent <sup>e</sup>	176	0.15*	0.08	1.94 (174)	.053	.021 (.333)
Parent Completion of College <sup>f</sup>	174	0.12	0.07	1.63 (172)	.103	.014 (.415)
Quintile of Household Income (By Site)	182	-0.14	0.10	-1.41 (180)	.158	.018 (.480)
Parent Anxiety Severity (STAI-T) <sup>b</sup>	185	0.33****	0.07	4.70 (183)	<.001	.106 (.019)
Parent Depression Severity (CESD) <sup>b</sup>	185	0.26****	0.06	4.23 (183)	<.001	.068 (.034)

\*  $p < .10$  ; \*\*  $p < .05$ ; \*\*\* $p < .01$  \*\*\*\*  $p < .001$  <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group; <sup>d</sup> Beta values reflect STDYX Standardization in MPlus; <sup>e</sup> Coded using families with multiple caregivers as reference group; ; <sup>f</sup> Coded with non-completion as reference group; <sup>g</sup> Coded with male as reference group

**Table 5.** Baseline Sociodemographic and Clinical Characteristics of Full Sample Associated with Anticipated Treatment Demands

Youth Characteristics	Bivariate Linear Regression Analyses with Baseline Sample Characteristics					
	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Age <sup>b</sup>	185	-.08	0.07	-1.10 (183)	.273	.006 (.584)
Sex <sup>g</sup>	177	-0.05	0.08	-0.67 (175)	.506	.003 (.739)
Minority Status <sup>a</sup>	177	0.18*	0.08	2.25 (175)	.026	.031 (.262)
Latinx Status <sup>c</sup>	177	0.16*	0.08	1.95 (175)	.051	.026 (.329)
Anxiety Severity (PARS) <sup>b</sup>	185	-0.01	0.06	-0.22 (183)	.822	.000 (.911)
Depression Severity (CDRS-R) <sup>b</sup>	185	-0.15*	0.08	-1.88 (183)	.060	.021 (.348)
Global Functioning (CGAS) <sup>b</sup>	185	0.09	0.07	1.20 (183)	.231	.007 (.549)
Parent and Family Characteristics	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Parent Age <sup>b</sup>	177	0.08	0.08	0.97 (175)	.331	.006 (.627)
Single Parent <sup>e</sup>	176	0.06	0.05	1.25 (174)	.213	.009 (.539)
Parent Completion of College <sup>f</sup>	174	0.06	0.07	0.87 (172)	.384	.004 (.663)
Quintile of Household Income (By Site)	182	-0.22*	0.11	-2.07 (180)	.039	.047 (.301)
Parent Anxiety Severity (STAI-T) <sup>b</sup>	185	0.23***	0.08	3.00 (183)	.003	.052 (.134)
Parent Depression Severity (CESD) <sup>b</sup>	185	0.24****	0.06	4.27 (183)	<.001	.059 (.033)

\*  $p < .10$  ; \*\*  $p < .05$ ; \*\*\* $p < .01$  \*\*\*\*  $p < .001$  <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup>Coded with non-Latinx youth as reference group; <sup>d</sup> Beta values reflect STDYX Standardization in MPlus; <sup>e</sup> Coded using families with multiple caregivers as reference group; <sup>f</sup>Coded with non-completion as reference group; <sup>g</sup> Coded with male as reference group

**Table 6.** Baseline Sociodemographic and Clinical Characteristics of Treated Sample Associated with Total Experienced Barriers at Week 16

Youth Characteristics	Bivariate Linear Regression Analyses with Baseline Sample Characteristics					
	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Age <sup>b</sup>	166	0.002	0.08	0.03 (164)	.976	.000 (.988)
Sex <sup>g</sup>	124	-0.08	0.09	-0.87 (122)	.386	.006 (.665)
Minority Status <sup>a</sup>	124	0.05	0.09	0.50 (122)	.615	.002 (.801)
Latinx Status <sup>c</sup>	124	0.16*	0.09	1.72 (122)	.085	.026 (.389)
Anxiety Severity (PARS) <sup>b</sup>	166	0.11	0.09	1.18 (164)	.237	.012 (.555)
Depression Severity (CDRS-R) <sup>b</sup>	166	0.11	0.10	1.09 (164)	.275	.011 (.586)
Global Functioning (CGAS) <sup>b</sup>	166	0.23***	0.09	-2.62 (164)	.009	.053 (.191)
Parent and Family Characteristics	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Parent Age <sup>b</sup>	165	0.20**	0.09	2.40 (163)	.016	.042 (.230)
Single Parent <sup>e</sup>	122	0.16*	0.09	1.77 (120)	.076	.025 (.376)
Parent Completion of College <sup>f</sup>	121	-0.07	0.09	-0.79 (119)	.430	.005 (.693)
Quintile of Household Income (By Site)	159	0.02	0.11	0.16 (157)	.874	.000 (.937)
Parent Anxiety Severity (STAI-T) <sup>b</sup>	165	0.17**	0.08	2.04 (163)	.041	.029 (.308)
Parent Depression Severity (CESD) <sup>b</sup>	166	0.13	0.08	1.54 (164)	.124	.017 (.441)

\*  $p < .10$  ; \*\*  $p < .05$ ; \*\*\* $p < .01$  \*\*\*\*  $p < .001$  <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup>Coded with non-Latinx youth as reference group; <sup>d</sup> Beta values reflect STDYX Standardization in MPlus; <sup>e</sup> Coded using families with multiple caregivers as reference group; ;<sup>f</sup>Coded with non-completion as reference group; <sup>g</sup> Coded with male as reference group

**Table 7.** Baseline Sociodemographic and Clinical Characteristics of Treated Sample Associated with Experienced Stressors at Week 16

Youth Characteristics	Bivariate Linear Regression Analyses with Baseline Sample Characteristics					
	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Age <sup>b</sup>	166	0.07	0.09	0.80 (164)	.425	.005 (.690)
Sex <sup>g</sup>	127	-0.13	0.08	-1.51 (125)	.132	.016 (.452)
Minority Status <sup>a</sup>	127	0.12	0.09	1.37 (125)	.171	.015 (.493)
Latinx Status <sup>c</sup>	127	0.11	0.09	1.27 (125)	.204	.012 (.525)
Anxiety Severity (PARS) <sup>b</sup>	166	0.09	0.08	1.06 (164)	.291	.008 (.598)
Depression Severity (CDRS-R) <sup>b</sup>	166	0.18*	0.10	1.83 (164)	.068	.033 (.361)
Global Functioning (CGAS) <sup>b</sup>	166	-0.18*	0.10	-1.85 (164)	.064	.032 (.355)
Parent and Family Characteristics	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t</i> (df)	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Parent Age <sup>b</sup>	165	0.21**	0.10	2.21 (163)	.027	.046 (.269)
Single Parent <sup>e</sup>	125	0.14	0.09	1.54 (123)	.123	.018 (.441)
Parent Completion of College <sup>f</sup>	124	-0.11	0.10	-1.13 (122)	.258	.011 (.572)
Quintile of Household Income (By Site)	159	-0.07	0.11	-0.59 (157)	.556	.004 (.768)
Parent Anxiety Severity (STAI-T) <sup>b</sup>	165	0.09	0.10	0.92 (164)	.360	.008 (.647)
Parent Depression Severity (CESD) <sup>b</sup>	166	0.11	0.07	1.46 (164)	.144	.011(.465)

\*  $p < .10$  ; \*\*  $p < .05$ ; \*\*\* $p < .01$  \*\*\*\*  $p < .001$  <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup>Coded with non-Latinx youth as reference group; <sup>d</sup> Beta values reflect STDYX Standardization in MPlus; <sup>e</sup> Coded using families with multiple caregivers as reference group; <sup>f</sup>Coded with non-completion as reference group; <sup>g</sup> Coded with male as reference group

**Table 8.** Baseline Sociodemographic and Clinical Characteristics of Treated Sample Associated with Experienced Treatment Demands at Week 16

Youth Characteristics	Bivariate Linear Regression Analyses with Baseline Sample Characteristics					
	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t(df)</i>	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Age <sup>b</sup>	166	-0.02	0.08	-0.26 (164)	.793	.000 (.896)
Sex <sup>g</sup>	123	-0.07	0.09	-0.73 (121)	.468	.004 (.717)
Minority Status <sup>a</sup>	123	0.04	0.10	0.45 (121)	.654	.002 (.823)
Latinx Status <sup>c</sup>	123	0.13	0.10	1.31 (121)	.190	.018 (.512)
Anxiety Severity (PARS) <sup>b</sup>	166	0.05	0.10	0.49 (164)	.627	.002 (.808)
Depression Severity (CDRS-R) <sup>b</sup>	166	0.07	0.09	0.77 (164)	.443	.005 (.701)
Global Functioning (CGAS) <sup>b</sup>	166	-0.17**	0.08	-2.03 (164)	.042	.029 (.310)
Parent and Family Characteristics	<i>n</i>	$\beta^d$	<i>SE</i>	<i>t(df)</i>	<i>p</i>	<i>R</i> <sup>2</sup> ( <i>p</i> )
Parent Age <sup>b</sup>	165	0.28***	0.08	3.38 (163)	.001	.080 (.091)
Single Parent <sup>e</sup>	121	0.13	0.10	1.31 (119)	.191	.017 (.513)
Parent Completion of College <sup>f</sup>	120	-0.08	0.09	-0.81 (118)	.418	.006 (.685)
Quintile of Household Income (By Site)	159	-0.04	0.11	-0.32 (157)	.746	.001 (.872)
Parent Anxiety Severity (STAI-T) <sup>b</sup>	165	0.14	0.10	1.43 (163)	.154	.019 (.476)
Parent Depression Severity (CESD) <sup>b</sup>	166	0.14	0.09	1.57 (164)	.116	.018 (.432)

\*  $p < .10$  ; \*\*  $p < .05$ ; \*\*\*  $p < .01$  \*\*\*\*  $p < .001$  <sup>a</sup> Coded using non-minority youth as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group; <sup>d</sup> Beta values reflect STDYX Standardization in MPlus; <sup>e</sup> Coded using families with multiple caregivers as reference group; <sup>f</sup> Coded with non-completion as reference group; <sup>g</sup> Coded with male as reference group



**Table 9.** Aim 1 Final Multivariate Model Associated with Total Anticipated Barriers

Variables in Model ( $n = 185$ )	$\beta$	<i>S.E.</i>	$t(183)$	$p$
Overall Model $R^2 = .108$ $p = .020$				
Parent Anxiety Severity (STAI-T) <sup>b</sup>	0.33***	0.07	4.64	<.001

\*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; <sup>b</sup> Natural log transformed

**Table 10.** Aim 1 Final Multivariate Model Associated with Anticipated Stressors

Variables in Model ( $n = 185$ )	$\beta$	<i>S.E.</i>	$t(183)$	$p$
Overall Model $R^2 = .106$ $p = .019$				
Parent Anxiety Severity (STAI-T) <sup>b</sup>	0.33***	0.07	4.70	<.001

\*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; <sup>b</sup> Natural log transformed

**Table 11.** Aim 1 Final Multivariate Model Associated with Anticipated Treatment Demands

Variables in Model ( $n = 185$ )	$\beta$	<i>S.E.</i>	$t(182)$	$p$
Overall Model $R^2 = .086$ $p = .022$				
Youth Depression Severity (CDRS) <sup>b</sup>	-0.16*	0.08	-2.12	.034
Parent Depression Severity (CES-D) <sup>b</sup>	0.25***	0.06	4.55	<.001

\*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; <sup>b</sup> Natural log transformed

**Table 12.** Aim 2c Moderation Analyses of Total Anticipated Barriers Associated with Total Experienced Barriers in Treated Sample

Total Experienced Barriers Association with:				
Variables in Model ( $n = 166$ )				
	$\beta$	<i>S.E.</i>	$t(159)$	$p$
Overall Model $R^2 = .394, p < .001$				
Total Anticipated Barriers <sup>b</sup>	0.65***	0.11	5.90	<.001
Youth Latinx Status <sup>c</sup> (Y/N)	0.15*	0.07	2.16	.031
Global Youth Functioning (CGAS) <sup>b</sup>	-0.28***	0.07	-3.88	<.001
Parent Age <sup>b</sup>	0.21**	0.07	3.09	.002
Treatment Assignment <sup>a</sup>	-0.07	0.07	-1.00	.315
Interaction Treatment & Anticipated Barriers	-0.27*	0.12	-2.34	.020
Simple Main Effects of Anticipated Barriers on Experienced Barriers				
	$\beta$	<i>S.E.</i>	$t(163)$	$p$
ARC Treatment Assignment	.652***	.111	5.902	<.001
BBT Treatment Assignment	.271**	.103	2.643	.008

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ; <sup>a</sup> Coded with ARC as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group

**Table 13.** Aim 2c Moderation Analyses of Anticipated Stressors Associated with Total Experienced Barriers in Treated Sample

Total Experienced Barriers Association with:				
Variables in Model ( $n = 166$ )				
	$\beta$	<i>S.E.</i>	$t(159)$	$p$
Overall Model $R^2 = .381, p < .001$				
Anticipated Stressors <sup>b</sup>	0.63***	.101	6.204	<.001
Youth Latinx Status <sup>c</sup> (Y/N)	0.18**	0.07	2.61	.009
Global Youth Functioning (CGAS) <sup>b</sup>	-0.25**	0.07	-3.45	.001
Parent Age <sup>b</sup>	0.23**	0.07	3.30	.001
Treatment Assignment <sup>a</sup>	-0.07	0.08	-0.99	.323
Interaction Treatment & Anticipated Barriers	-0.28*	0.12	-2.40	.016
Simple Main Effects Anticipated Stressors on Experienced Barriers				
	$\beta$	<i>S.E.</i>	$t(163)$	$p$
ARC Treatment Assignment	0.62***	0.10	6.20	<.001
BBT Treatment Assignment	0.25*	0.11	2.32	.021

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ; <sup>a</sup> Coded with ARC as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group

**Table 14.** Aim 2c Moderation Analyses of Anticipated Treatment Demands Associated with Total Experienced Barriers in Treated Sample

Total Experienced Barriers Association with:				
Variables in Model ( $n = 166$ )	$\beta$	<i>S.E.</i>	$t(159)$	$p$
Overall Model $R^2 = .303$ , $p = .003$				
Anticipated Tx Demands <sup>b</sup>	0.52***	0.14	3.57	<.001
Youth Latinx Status <sup>c</sup> (Y/N)	0.13	0.08	1.68	.094
Global Youth Functioning (CGAS) <sup>b</sup>	-0.29***	0.08	-3.76	<.001
Parent Age <sup>b</sup>	0.19**	0.07	2.72	.006
Treatment Assignment <sup>a</sup>	-0.10	0.08	-1.29	.197
Interaction Treatment & Anticipated Barriers	-0.20	0.14	-1.44	.151

\*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; <sup>a</sup> Coded with ARC as reference group; <sup>b</sup> Natural log transformed; <sup>c</sup> Coded with non-Latinx youth as reference group

**Table 15.** Aim 2c Moderation Analyses of Anticipated Stressors Associated with Experienced Stressors in Treated Sample

Experienced Stressors Association with:				
Variables in Model ( $n = 166$ )				
	$\beta$	<i>S.E.</i>	<i>t</i> (161)	<i>p</i>
Overall Model $R^2 = .324$ , $p = .001$				
Anticipated Stressors <sup>b</sup>	.733***	.110	6.683	<.001
Parent Age <sup>b</sup>	.181*	.071	2.557	.011
Treatment Assignment <sup>a</sup>	-.032	.074	-.429	.668
Interaction Treatment & Anticipated Stressors	-.365**	.115	-3.183	.001
Simple Main Effects Anticipated Stressors on Experienced Barriers				
	$\beta$	<i>S.E.</i>	<i>t</i> (163)	<i>p</i>
ARC Treatment Assignment	.733***	.110	6.683	<.001
BBT Treatment Assignment	.236*	.095	2.477	.013

\*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; <sup>a</sup> Coded with ARC as reference group; <sup>b</sup> Natural log transformed

**Table 16.** Aim 2c Moderation Analyses of Anticipated Treatment Demands Associated with Experienced Treatment Demands in Treated Sample

Experienced Tx Demands Association with:				
Variables in Model 1 ( $n = 166$ )				
	$\beta$	<i>S.E.</i>	<i>t</i> (161)	<i>p</i>
Overall Model $R^2 = .285$ , $p = .006$				
Anticipated Tx Demands <sup>b</sup>	.504**	.169	2.988	.003
Parent Age <sup>b</sup>	.255***	.068	3.732	<.001
Treatment assignment <sup>a</sup>	-.200*	.080	-2.495	.013
Interaction Treatment & Anticipated Tx Demands	-.178	.156	-1.140	.254

\*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; <sup>a</sup> Coded with ARC as reference group; <sup>b</sup> Natural log transformed;

**Table 17.** Aim 3b Treatment Assignment Associated with Adequate Dose of Treatment

Adequate Dose Association with: ( <i>n</i> =166)	<i>OR</i>	<i>S.E.</i>	<i>t</i> (164)	<i>p</i>	<i>95% CI</i>	<i>logit β</i>	<i>SE</i>	<i>p</i>
Treatment Assignment <sup>a</sup>	22.42*	10.37	2.07	.039	9.06- 55.50	3.11***	.46	<.001

Model  $R^2 = .421$ ,  $p < .001$

\*  $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$ ; <sup>a</sup> Coded with ARC as reference group

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