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Parent Perceptions of Treatment Effectiveness and Attendance Rates in a Behavioral Parent Training Program: Do They Predict Treatment Outcomes for Children?

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Parent Perceptions of Treatment Effectiveness and Attendance Rates in a Behavioral Parent
Training Program: Do They Predict Treatment Outcomes for Children?

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Education Specialist in School Psychology
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Keywords: challenging behavior, parent training, early intervention, attrition, *HOT DOCS*

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ABSTRACT

Young children who display disruptive behaviors are at risk for negative outcomes in later development such as school dropout, early pregnancy, and unemployment (Bradshaw, Schaeffer, Petras, & Ialongo, 2010). For this reason, it is imperative parents of children with disruptive behaviors seek early intervention to reduce problem behaviors and prevent negative effects (Breitenstein, Hill, & Gross, 2009). Parent behavioral training interventions are effective for reducing problem behaviors in young children. Attrition from parent training interventions, however, is a common problem that reduces positive outcomes for children with challenging behaviors (Kazdin, Holland, & Crowley, 1997; Prinz & Miller, 1994). Barriers to treatment, such as negative perceptions toward treatment, can influence parents' attendance (Kazdin, Holland, & Crowley, 1997) and behavioral outcomes for children (Brestan, Jacobs, Rayfield, & Eyberg, 1999). This study ($N = 139$) examined relationships of parents' attendance and perceptions of a behavioral parent training intervention, the empirically supported *Helping Our Toddlers Developing Our Children's Skills*, or HOT DOCS (Armstrong, Lilly, & Curtiss, 2006). Regression analyses were conducted to test relationships between parent perceptions of treatment effectiveness, attendance, and child behavior ratings, and whether attendance mediated the relationship between parent perceptions of treatment and ratings of child behavior. No significant relationships were found between these variables, and no mediating relationship of attendance between parent perceptions and child behavior ratings was found. Results for this study may indicate factors other than parent perceptions are important to predict attendance or change in behavior ratings. Ethical considerations and limitations of this study are also discussed.

CHAPTER ONE: INTRODUCTION

Statement of the Problem

Disruptive behaviors in children can strain families and alter children's developmental trajectories in a variety of adverse ways. Disruptive behaviors include acts of aggression such as property destruction, tantrums, and defiant behaviors. Disruptive behaviors can emerge as early as preschool-age (Breitenstein et al., 2009). These are associated with negative effects on academics, social relationships, and family, as well as later high school dropout, substance abuse, and early sexual activity (Bradshaw et al., 2010; Moilanen, Shaw, & Maxwell, 2010). Early intervention is critical in helping reduce negative long-term outcomes associated with behavior disorders (Tremblay et al., 2004). One of the most effective empirically-based interventions available for young children with disruptive behaviors is behavioral parent training (Childres, Agazzi, & Armstrong, 2011; Kaminski, Valle, Filene, & Boyle, 2008).

Behavioral parent training is a psychoeducational approach to service delivery in which parents are taught positive behavioral strategies to implement with their children (Shriver & Allen, 2010). Evidence supports behavioral parent training as an effective intervention for improving children's behavior as well as parent-child relationships (Comer, Chow, Chan, Cooper-Vince, & Wilson, 2013; Feinfield & Baker, 2004; Kaminski et al., 2008). It is most commonly used for young children, ages 3-10, who display disruptive or oppositional behaviors. Many empirically supported parent training programs are delivered individually with parents and

children, though some are group-based sessions that are typically offered weekly and last for several weeks (Shriver & Allen, 2010).

Theoretical Framework

In research related to therapy for young children who exhibit challenging behaviors, such as behavioral parent training, researchers have explored factors that contribute treatment outcomes (Kazdin, Holland, & Crowley, 1997; Reyno & McGrath, 2006). Common problems in psychotherapeutic treatments are poor attendance and early drop-out, or attrition (Kazdin, Holland, & Crowley, 1997). Poor attendance can hinder the effectiveness of these programs and prevents families from receiving full benefits of treatment (Kazdin, Holland, & Crowley, 1997), as it is similar. Attrition and noncompliance with treatment have also been linked to reduced child behavioral outcomes (Kazdin, Holland, & Crowley, 1997; Prinz & Miller, 1994). Participants may face practical or perceived barriers to treatment that can prevent them from attending treatment sessions (Kazdin, Holland, & Crowley, 1997).

Kazdin, Holland, and Crowley (1997) defined a barriers-to-treatment model that describes the influence of treatment barriers on treatment attendance. These barriers to treatment include (1) stressors and obstacles that compete with treatment (e.g., conflict with partner or children about attending treatment, transportation, treatment adding to stressors); (2) treatment demands and issues (e.g., time, effort, and cost demands); (3) perceived relevance of treatment (e.g., parent views of importance of treatment and fit with parent expectations); and (4) relationship with therapist (e.g., parent bond with therapist and perceived level of support). Practical obstacles to treatment, such as transportation, childcare, and other logistical problems or stressors can present obstacles to treatment attendance and can influence parents' perceptions of past and current treatment programs (Kazdin, Holland, & Crowley, 1997). Treatment cost and

time demands may create barriers for parent attendance if they feel it is too demanding (Kazdin, Holland, & Crowley, 1997). In a study of mothers who dropped out of parent-child interaction therapy by Fernandez and Eyberg (2009), a common reason for drop out in a study on parent-child interaction therapy was “being too busy” to attend treatment (13%), logistical issues preventing attendance (13%), or additional impeding stressors (13%). Family and parent demographic factors like socioeconomic status may also predict treatment attendance because of associated stressors (Fernandez & Eyberg, 2009; Kazdin et al., 1997; Nock & Kazdin, 2001).

While previously described barriers to treatment can hinder parent treatment attendance, the focus of this study includes parent perceptions of treatment effectiveness or, more specifically, parents’ satisfaction with treatment fitting their needs. This is an important variable to consider because it could be amenable to intervention and has been shown to be an important factor associated with attrition. Parents involved in therapy for their children with challenging behaviors who had negative perceptions toward treatment, or did not find treatment relevant to their needs or perceived it to be demanding, were likely to drop out of treatment prematurely (Kazdin et al., 1997). In a sample of mothers who dropped out of parent-child interaction therapy, the most common reason for dropping out of treatment (26%) was because they disagreed with the approach of therapy (Fernandez & Eyberg, 2009). In studies building upon the barriers to treatment described in Kazdin, Holland, and Crowley (1997), parents’ expectancies of treatment, or their anticipatory perceptions of treatment effectiveness, can also influence subsequent barriers to treatment, attendance, and attrition (Nock & Kazdin, 2001).

Treatment attendance and engagement has been a large focus of research on psychosocial or therapeutic treatments (Kazdin, Holland, & Crowley, 1997; Lindsey et al., 2014; Nock & Kazdin, 2005), but little research has examined its relationship with treatment outcomes directly.

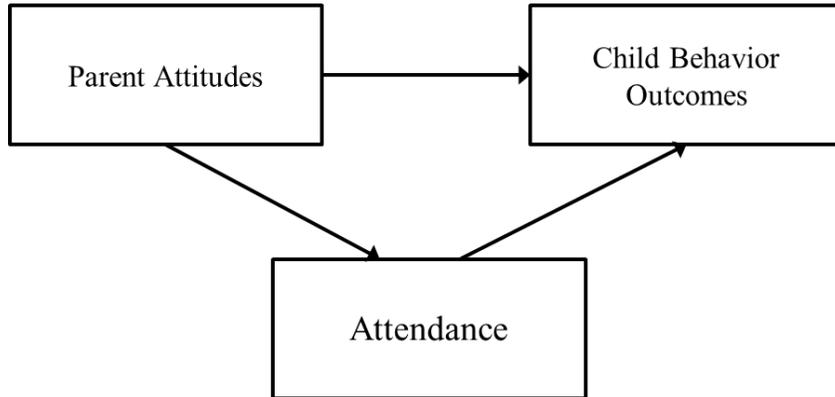
Treatment attendance is considered to be a component of treatment engagement, and in studies measuring barriers to treatment, attendance is frequently used as an indicator of treatment engagement (Gearing, Townsend, Elkins, El-Bassel, & Osterberg, 2014). Attendance is considered to be similar to treatment dose, so if parents are not attending treatment, it is thought they are less likely to benefit from its effects (Gearing et al., 2014). Studies on treatment engagement have resulted in mixed findings about the relationship between treatment attendance and treatment outcomes (Brestan et al., 1999; Nix, Bierman, & McMahon, 2009; Parent, Forehand, Merchant, Long, & Jones, 2011; Prinz & Miller, 1994). Some researchers have found a relationship between treatment attendance and treatment outcomes like improved child behavior (Prinz & Miller, 1994; Reyno & McGrath, 2006). Researchers have also found parent perceptions toward treatment influence behavioral outcomes for their children (Brestan et al., 1999; Fernandez & Eyberg, 2009).

Given the relationship between parent perceptions of treatment effectiveness and attendance and the relationship between attendance and behavioral outcomes of treatment, attendance could potentially serve as a mediator between parent perceptions and child behavioral outcomes. The aim of this study is to investigate the influence of parent perceptions about a behavioral parent training intervention on treatment outcomes such as child behaviors and treatment attendance. The proposed model (Figure 1, page 5) illustrates the relationship between parents' perceptions toward treatment and treatment outcomes that include child behavioral outcomes and treatment attendance which is the premise for this study.

Rationale and Purpose of Study

Prior research has established relationships between parent perceptions toward treatment and attendance (Kazdin et al., 1997; Nock & Kazdin, 2001), attendance and behavioral outcomes

Figure 1



Theoretical Framework of Proposed Study

(Kazdin et al., 1997), and parent perceptions toward treatment and behavioral outcomes in various psychotherapeutic parent interventions (Brestan et al., 1999). The purpose of this study is to investigate how parents' perceptions toward behavioral parent training relate to outcomes of a particular program, *Helping Our Toddlers Developing Our Children's Skills* (HOT DOCS®, Armstrong, Lilly, & Curtiss, 2006). Researchers have not yet investigated the relationship of parent perceptions toward treatment with treatment outcomes in HOT DOCS. This research is an exploratory study of how parent perceptions relate to treatment outcomes of HOT DOCS. Additionally, research on the influence of attendance on treatment outcomes of similar programs is emerging and in need of further study (Nix et al., 2009). Outcomes measured in this study include parent treatment attendance and children's behaviors.

Research questions

1. To what extent do parent perceptions of treatment effectiveness predict therapy attendance?
2. To what extent do parent perceptions of treatment effectiveness predict change in ratings of child externalizing behavior outcomes from pre-intervention to post-intervention?

3. To what extent is the relationship between parent perceptions of treatment effectiveness and child behavior outcomes mediated by treatment attendance?

Hypotheses

Regarding research Question 1, it was hypothesized positive parent perceptions toward treatment were predictive of high therapy attendance and low attrition (Kazdin, 1996; Nordstrom, Dumas, & Gitter, 2008). In this study, positive parent perceptions refer to satisfaction with treatment and relevance to participant concerns. In other studies, lack of perceived fit with treatment or disagreement with treatment approach has been related to high rates of attrition (Fernandez & Eyberg, 2009; Kazdin, 1996).

It was also hypothesized positive parent perceptions will predict reduced child externalizing behavior outcomes (Question 2). In other studies, high ratings of parent satisfaction with treatment have been related to improvements in child behavioral outcomes (Brestan et al., 1999; Reyno & McGrath, 2006). This could be influenced by a restricted range of parent satisfaction reported at the conclusion of treatment because of generally high ratings of satisfaction (Feinfield & Baker, 2004; Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998; Williams, Armstrong, Agazzi, & Bradley-Klug, 2010). It is probable there is a relationship between participants who remain in treatment (because of high perceived fit with treatment or satisfaction) and those who exhibit positive outcomes.

A third hypothesis is treatment attendance will mediate the relationship between parent perceptions toward treatment and child behavior outcomes (Question 3). Given the relationship between parent perceptions and attendance (Fernandez & Eyberg, 2009; Kazdin, 1996) and the relationship between treatment attendance and child behavioral outcomes (Kazdin, Holland, & Crowley, 1997; Prinz & Miller, 1994), it is possible attendance serves as a mediator. If

participants do not view treatment as fitting with their needs (poor perceptions), they may not attend treatment and forego positive changes in their children's behaviors as a result. On the other hand, if parents have positive perceptions toward treatment and perceive it to be a good fit with their needs, they were more likely to attend treatment and therefore benefit from it, resulting in improved child behaviors.

Significance

Research about parent perceptions and treatment outcomes should benefit practitioners of behavioral parent training programs and HOT DOCS as well as families participating in these interventions (Nock & Kazdin, 2001; Werba, Eyberg, Boggs, & Algina, 2006). Parent attendance is crucial for children's challenging behavior to improve, yet attrition is a common problem (Kazdin et al., 1997; Nock & Kazdin, 2001). Researchers have established parent perceptions toward treatment influence attendance (Kazdin et al., 1997; Nock & Kazdin, 2001) and attendance influences behavioral outcomes of treatment (Kazdin et al., 1997; Prinz & Miller, 1994). However, no study has yet been done to determine the relationship between parent perceptions toward treatment and attendance for HOT DOCS, specifically. HOT DOCS is unique from other behavior parent training programs because of the instruction participants receive about addressing functions of behaviors and focusing on antecedents of behavior versus consequences alone (Williams et al., 2010). Parents learn problem-solving skills to determine the function of behaviors and inform intervention. The focus of instruction is recognizing that children misbehave when they lack skills to behave more appropriately. Therefore, no diagnosis for a behavior disorder is required for participation in treatment. Determining how parent perceptions toward treatment relate to outcomes of treatment could provide insight into identifying and intervening with parents at risk for attrition.

Definition of Key Terms

- *Behavioral parent training* is a psychoeducational model of service delivery in which parents receive training from a professional about positive behavior strategies for parenting their children (Shriver & Allen, 2010).
- *Challenging, disruptive, or problem behaviors* are defined as externalizing behaviors exhibited in early childhood that include noncompliance, aggression, poor impulse control, and tantrums (Campbell, 1995).
- *Barriers to treatment* is a conceptual model to describe risk factors associated with incompleteness or attendance of a mental health service. These barriers include practical obstacles to parents attending treatment, parent's perceptions toward treatment as being irrelevant to their children's behavior problems and demanding, and poor therapeutic relationship (Kazdin, Holland, & Crowley, 1997).
- *Perceptions of treatment effectiveness* are parents' or caregivers' perceptions that a mental health service is meaningful and relevant to improving their children's behavioral problems, or their satisfaction with treatment. This can be a barrier to treatment if caregivers perceive treatment to be demanding or of little relevance to their children's behavior problems (Kazdin, Holland, & Crowley, 1997).
- *Attendance* is defined as the number of treatment sessions participants attend through treatment completion (Kazdin, Holland, & Crowley, 1997). This is a commonly used measure of treatment engagement and adherence to psychosocial treatments (Becker et al., 2015; Gearing et al., 2014).
- *Helping Our Toddlers Developing Our Children's Skills, or HOT DOCS* (Armstrong, Lilly, & Curtiss, 2006), is a behavioral parent training program that emphasizes positive

behavior supports and trains parents to implement parenting strategies to reduce their children's disruptive behaviors. This program lasts for six to seven weeks and can be conducted in a variety of settings, including community centers such as churches or in schools. Parents learn behavioral management skills in training classes and then practice at home with their children as weekly homework.

CHAPTER TWO: LITERATURE REVIEW

In the following chapter, research related to disruptive behaviors in early childhood were reviewed including prevalence, outcomes, and evidence-based interventions to address these behaviors. This review of intervention options for disruptive behaviors will focus on parent-training programs, and more specifically, *Helping Our Toddlers Developing Our Children's Skills*, or HOT DOCS (Armstrong, Lilly, et al., 2006). Following a discussion of parent training interventions, factors that influence the efficacy of these programs were discussed. In particular, relevant research related to barriers to treatment and perceptions toward treatment were discussed.

Disruptive behaviors are oppositional, aggressive, and impulsive in nature, including aggressive actions toward others or destruction of objects and rule-breaking (Kaminski et al., 2008). Disruptive behaviors have been identified in preschool-aged children as young as and even younger than two years old (Breitenstein et al., 2009; Tremblay et al., 2004; Wakschlag, Tolan, & Leventhal, 2010). Some disruptive behaviors are common among toddlers and young children, but extreme cases may be diagnosable disorders and result in future negative outcomes.

Prevalence of Young Children with Challenging Behaviors

Prevalence rates for challenging behaviors in young children is 10%-15% for mild to moderate behavior problems (Campbell, 1995). In a random population sample of 504 children who were 5-months old, 72% of the children engaged in some form of physical aggression (Tremblay et al., 2004). About 14% of this sample displayed increasing physical aggression

based on parent ratings obtained at 17, 30, and 42 months (Tremblay et al., 2004) A sample of 254 parents completed the Ages and Stages Questionnaire: Social-Emotional for their three- and four-year-old children as a primary care screener, excluding children with severe developmental delays or who did not match characteristics of the norm sample for this measure (Brown, Copeland, Sucharew, & Kahn, 2012). Of this sample, 24% of children screened positive for social-emotional problems (Brown et al., 2012). In a sample of 918 children (ages 2-5) from a primary care clinic in North Carolina who completed a screening of externalizing behaviors with the Child Behavior Checklist, 80.8% exhibited severe tantrums, and 17.7% exhibited these tantrums three or more times per week (Copeland, Angold, Costello, & Egger, 2013).

High rates of physical aggression and challenging behaviors are characteristics for diagnosable disruptive behavior disorders. Specific disorders that fall under the category of disruptive behavior disorders include attention-deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder (CD). Though these are often not diagnosed until school age, some disorders can be diagnosed in early childhood (Egger & Angold, 2006). The average prevalence rate for these disorders in school-age children is approximately 5% for ADHD (American Psychiatric Association, 2013; Polanczyk & Rohde, 2007), 3.3% for ODD (American Psychiatric Association, 2013) and 3.3% for CD (Canino, Polanczyk, Bauermeister, Rohde, & Frick, 2010). In addition to these behaviors being common in the population, they also represent a significant source of referrals to mental health professionals. Researchers have reported 75% of all psychology referrals for children are related to disruptive and noncompliant behavior (Feinfield & Baker, 2004).

Outcomes Associated with Early Emerging Behavior Problems

Behavior problems in early childhood are associated with negative outcomes that persist over time in key domains and can result in delinquency (Broidy et al., 2003). Disruptive behaviors in early childhood are negatively related to later academic achievement (Bradshaw et al., 2010; Burt & Roisman, 2010; Moilanen et al., 2010), interpersonal functioning (Vaughn, Hogan, Lancelotta, Shapiro, & Walker, 1992), and child-caregiver relationships (Smith et al., 2014). Once in adolescence, the influence of intervention for disruptive behaviors is diminished by life choices resulting in negative peer influences and delinquency (Breitenstein et al., 2009; Broidy et al., 2003). For this reason, it is imperative to intervene early to avoid and change this typically negative trajectory. This section contains a summary of research related to negative outcomes associated with early-onset disruptive behaviors in academics, interpersonal relationships, and relationships with caregivers.

Early Behavior Problems and Academics. Disruptive behaviors in early childhood are associated with several negative outcomes related to academic achievement. In the short term, early disruptive behaviors in kindergarten are related to low reading achievement (Vaughn et al., 1992). In a kindergarten sample of 372 students from three schools, behavior problems were associated with low scores in reading achievement assessed with the Stanford Early School Achievement Test in the spring of that year (Vaughn et al., 1992). In a sample of 325 racially and economically diverse kindergarten students, problem behavior was related to academic achievement and standardized test scores in math and early literacy (Graziano, Reavis, Keane, & Calkins, 2007). Behavior problems were rated by parents using the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992). Teachers rated children's academic competence using the Academic Performance Rating Scale (APRS; Dupaul, Rapport, &

Perriello, 1991). Children with behavior/ emotional regulation problems were not as productive and accurate in completing class assignments compared to other children, though this relationship was mediated by student-teacher relationship (Graziano et al., 2007).

Disruptive behaviors in early childhood also have long-term effects on academic achievement (Bradshaw et al., 2010; Burt & Roisman, 2010; Moilanen et al., 2010). In a study of 291 ethnically diverse, behaviorally at -risk boys, externalizing behaviors exhibited at ages 6 and 8 were related to reduced academic competence (assessed with a Social Skills Rating Scale and Teacher Report Form) at ages 8 and 10, respectively (Moilanen et al., 2010). In the NICHD Study of Child Care and Youth Development, 1,160 parents completed measures assessing level of disruptive behaviors, academic competence, and social competence over the course of five time points spanning from their children's age of 54 months to 15 years (Burt & Roisman, 2010). Burt and Roisman (2010) found cascading influences of externalizing behavior in early childhood to later academic achievement in first grade and later internalizing problems in later third grade. In a longitudinal study of 1,137 African American urban youth, disruptive behaviors exhibited in first and second grade were related to later school failure, high school dropout, and later unemployment (Bradshaw et al., 2010). As evidenced by this research, challenging behaviors in early childhood can have lasting effects on a variety of academic domains such as academic skills and achievement in reading and math (Burt & Roisman, 2010; Graziano et al., 2007; Vaughn et al., 1992); academic competence and social skills (Moilanen et al., 2010); and educational attainment (Bradshaw et al., 2010).

Early Behavior Problems and Interpersonal Functioning. Disruptive behaviors in early childhood are also associated with reduced interpersonal functioning. In a kindergarten sample of 325 children who completed rating scales and peer nominations, children who

exhibited challenging behaviors were unpopular among peers and experienced more rejection compared to other children (Vaughn et al., 1992). Additionally, in a sample of 325 children in kindergarten who struggled to regulate their emotions displayed more behavior problems did not have as positive a relationship with their teachers compared to peers (Graziano et al., 2007). The effects of disruptive behaviors on interpersonal functioning can have lasting effects (Burt & Roisman, 2010). Early externalizing behaviors related to reduced social competence in early grade school and later internalizing problems in fifth grade (Burt & Roisman, 2010). A study by van Lier and colleagues (2012) of 1,558 Canadian children from 6-8 years old yielded similar findings, in which cascading developmental effects linked early externalizing behaviors to academic achievement, peer victimization, and internalizing problems. Unlike the study by Burt and Roisman (2010), this study included self-reported peer victimization as a measure of social competence (van Lier et al., 2012). After testing longitudinal pathways between ages 6 to 8, van Lier and colleagues (2012) found a transactional relationship between externalizing behaviors and perceived peer victimization (and perpetuated internalizing problems). In sum, disruptive behaviors in early childhood are related to reduced social skills and increased peer rejection (Burt & Roisman, 2010; Vaughn et al., 1992), negatively impacted relationships with teachers (Graziano et al., 2007), and the development of internalizing problems (Burt & Roisman, 2010; van Lier et al., 2012).

Early Behavior Problems and Caregiver Relationships. Challenging behaviors in early childhood are also associated with stressful, coercive interactions between children and parents. Family dysfunction and coercive parenting predict high physical aggression in later childhood and adolescence (Tremblay et al., 2004). Researchers have found a transactional relationship between parenting stress and child behaviors (Mackler et al., 2015; Smith et al.,

2014). Child behaviors are related to high levels of parent stress which, in turn, influences parent reactions to children (Mackler et al., 2015). This relationship between parenting practices and children's oppositional behaviors can be cyclical, with coercive parent interactions related to escalating oppositional and aggressive behaviors in children from preschool age to later childhood (Smith et al., 2014). In a sample of 731 mother-child dyads from a randomized, multisite prevention study of Early Steps, children's noncompliant behaviors and coercive interactions with parents were assessed yearly from age 2 to age 5. To assess oppositional/aggressive behaviors, parents completed a measure derived from the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001). Parent-child interactions were assessed via observation during structured play and learning activities in home visits. At ages 7.5 and 8.5, teachers completed ratings of classroom oppositional behaviors from the Oppositional Defiant Problems Scale from the CBCL Teacher Report Form (Achenbach & Rescorla, 2001; Smith et al., 2014). Children with high aggressive/ oppositional behaviors in preschool were likely to continue these behaviors in elementary school, and coercive interactions between children and caregivers at age 2 were related to conduct problems in elementary school (Smith et al., 2014).

Outcomes related to academics, social competence, and family relationships play significant roles in multiple aspects of development (Burt & Roisman, 2010; Moilanen et al., 2010; Smith et al., 2014; van Lier et al., 2012). Challenging behaviors in early childhood influence these significant developmental domains as well as children's future behaviors (Burt & Roisman, 2010; van Lier et al., 2012). For these reasons, negative effects resulting from early disruptive behaviors are worrisome.

Importance of Early Intervention

Given the negative outcomes associated with early disruptive behaviors, it is important to intervene early before behavior problems become too great. Early intervention for aggressive behaviors during preschool are thought to prevent aggressive habits from forming later in life, as maladaptive behaviors can become habit (Burns et al., 1999; Tremblay, 2006). Parent behaviors may influence these developmental cascades, as suggested in a longitudinal, multi-method, multi-informant randomized intervention study of early parental positive behavior support using yearly Family Check-Ups (Dishion et al., 2014; Waller et al., 2014). In a sample of 731 children and families recruited from Women, Infants, and Children Nutrition Programs (WIC) with children ages 2 years, 0 months to 2 years, 11 months, researchers observed parent-child interactions in structured and unstructured tasks in 2-3 hour home visits (Dishion et al., 2014; Waller et al., 2014). Families in the Family Check-Up group at ages 2, 3, and 4 experienced a significantly greater reduction in problem behaviors beyond what is developmentally typical between ages 2 and 5 compared to the randomly assigned control group (Dishion et al., 2014). Using structural equation modeling, researchers found parent use of positive behavior support at age 2 predicted reduced externalizing behavior ($\beta = -.23, p < .05$), academic skills ($\beta = .34, p < .001$), effortful control ($\beta = .24, p < .05$), and social competencies ($\beta = .30, p < .01$) reported by teachers and at age 7.5 years (Waller et al., 2014).

Early intervention serves as an opportunity to not only reduce later symptoms, but also prevent this escalation of negative outcomes from occurring. In studies of behavioral parent training programs, child behaviors and parent practices endured up to year after these programs concluded (Abikoff et al., 2015; Webster-Stratton & Hammond, 1997). A few intervention studies have found early interventions altered children's later externalizing behavior (Dishion et

al., 2014). Researchers have speculated that if symptoms of behavior disorders remain consistent over time, they will impact children's development in ways that can worsen as they enter school, continuing into adolescence (Breitenstein et al., 2009; Broidy et al., 2003). For these reasons, early intervention for children who exhibit disruptive behaviors early on can help prevent a perpetual chain of poor outcomes from occurring.

Treatment Options for Preschool Children who Exhibit Challenging Behaviors

Multiple interventions for behavioral disorders and disruptive behaviors are available, though they have varying empirical support (Rajwan, Chacko, & Moeller, 2012). Evidence-based interventions include medication and psychosocial treatments, such as behavioral child training or parent training (Kaminski et al., 2008; Rajwan et al., 2012). Although medication is a first-line treatment for school-age children who exhibit disruptive behaviors, the effects of medication on young children remain controversial and understudied (American Academy of Pediatrics, 2011; Greenhill et al., 2006; Kollins et al., 2006; Rajwan et al., 2012). For this reason psychosocial treatments are recommended as first line treatment for young children with disruptive behaviors (Comer et al., 2013). In particular for children of preschool age, behavioral parent training is an intervention with extensive empirical support with lasting effects on children's behaviors and parent-child relationships (Comer et al., 2013; Feinfield & Baker, 2004; Jones, Daley, Hutchings, Bywater, & Eames, 2008; Kaminski et al., 2008).

Behavioral parent training. Behavioral parent training is based on the premise that interactions between parents and children can influence the creation and maintenance of children's behavior problems (Kaminski et al., 2008; Lundahl, Risser, & Lovejoy, 2006). It addresses coercive parenting practices by instructing caregivers to use more positive parenting approaches in dealing with their children's behaviors. In behavioral parent training, adult

caregivers learn behavior modification techniques that utilize positive reinforcements for desired behaviors from children. In many cases, these interventions have resulted in lasting effects (Feinfield & Baker, 2004; Rajwan et al., 2012; Webster-Stratton & Hammond, 1997). Behavioral parent training has been demonstrated to be a viable first-line intervention for young children at least three years old with disruptive behaviors (Comer et al., 2013; Jones et al., 2008; Kaminski et al., 2008). Evidence-based behavioral parent training interventions that are most frequently studied include the Incredible Years Parenting Program, Parent-Child Interaction Therapy, Helping the Noncompliant Child, and the Triple P-Positive Parenting Program (Comer et al., 2013).

Incredible Years Parenting Program. The Incredible Years® (IYP) Series was developed as an ecological, early intervention for children with conduct disorder (CD) or oppositional defiant disorder (ODD; Webster-Stratton & Hammond, 1997; Webster-Stratton et al., 2001). This series includes comprehensive training programs for parents, teachers, and children. The parent, teacher, and child components of training each include videotape modeling, role play, practice, and feedback (Webster-Stratton et al., 2001). The original IYP program included three parenting programs (BASIC, ADVANCE, SCHOOL), a teacher training program, and a child training program, the Dina Dinosaur Social Skills and Problem-Solving Curriculum (Webster-Stratton et al., 2001). Now IYP includes multiple parent programs (School Readiness, Attentive Parenting Universal Program, Autism Spectrum and Language Delays) that include subcategories of programs (Baby Parent Program/ Well-Baby Prevention Program, Toddler Basic Parent Program, Preschool BASIC Parent Program, School Age BASIC Parent Program, and Advance Parent Program), a Teacher Classroom Management Program, and two child training programs that use the *Dinosaur School Social, Emotional Skills and Problem Solving*

Curriculum (Child Dinosaur Treatment Program and Child Dinosaur Prevention Program; Incredible Years, 2013). The Incredible Years Training Series has been well-supported empirically by studies conducted by the program developers and other researchers (Jones, Daley, Hutchings, Bywater, & Eames, 2007; Jones et al., 2008; Pidano & Allen, 2014; Reid, Webster-Stratton, & Hammond, 2003; Webster-Stratton & Hammond, 1997).

In a study of preschool children with challenging behaviors, Webster-Stratton and Hammond (1997) compared child training (CT), parent training (PT), and a combination of child and parent training (CT + PT) versions of the Incredible Years versus a waitlist control in a randomized trial. The sample included children ages 4-7 (72 boys and 25 girls) whose primary referral concerns were misconduct and met criteria for ODD and CD (DSM-III-R) and their parents. Each treatment group met for 18-22 weeks. Overall, all three treatment conditions resulted in improved child behavior with few differences between treatments. Parent-training was superior to child-training for parent-rated behavior improvements, observed parent behaviors, and consumer satisfaction, but child-training was superior to parent training regarding child social problem-solving and conflict management skills. These effects were maintained at one-year follow-up, and furthermore, child behaviors at home continued to lessen during this time period (Webster-Stratton & Hammond, 1997).

In another study of young children with challenging behaviors, Jones and colleagues (2007; 2008) examined effects of IYP on preschoolers (36-48 months old) with ADHD or Conduct Disorder (CD) symptoms. Jones and colleagues (2008) tested effects of IYP to see if it improved ADHD symptoms long-term (measured in 6-, 12-, and 18-month follow up assessments). Researchers recruited families with children (N = 79) who were between 36 and 48 months old and met eligibility for ADHD or CD symptoms. Families were randomly assigned to

IYP intervention or a waitlist. Families in IYP attended a two-hour session each week for 12 weeks. Parents reported symptoms at each checkpoint. Overall, children's behavioral symptoms decreased and were maintained for at least 12 months after treatment (Jones et al., 2008). In sum, the IYP parenting program has been demonstrated to be effective for reducing children's behavioral symptoms associated with ADHD and disruptive behavior disorders with lasting effects up to a year after treatment (Jones et al., 2008; Webster-Stratton & Hammond, 1997). This behavioral early intervention is effective for children with clinical diagnoses and delivered in a variety of formats targeted for parents, teachers, and children (Pidano & Allen, 2014; Webster-Stratton, 2001; Webster-Stratton & Hammond, 1997).

Parent-Child Interaction Therapy. Parent-Child Interaction Therapy (PCIT) is an intensive program for parents of children ages 3-6 years old with behavioral diagnoses such as CD, ODD, or ADHD (Eyberg, 1988). This treatment encourages positive interactions between parents and their children intended to reduce problem behaviors associated with conduct disorders (Matos, Bauermeister, & Bernal, 2009; Schuhmann et al., 1998). PCIT involves intensive one-on-one training with a therapist, in which parents learn positive communication skills with their child in a play setting in the clinic. This therapy occurs in one-hour, weekly sessions across approximately 12-16 sessions, though duration can span 8-20 or more sessions, depending on parents' mastery of trained skills (Eyberg, Nelson, & Boggs, 2008).

Parents are taught behavior management strategies in phases based on skill mastery. In the first phase, child-directed interaction (CDI), parents are taught to play with their child in an accepting, positive way. In the second phase, parent-directed interaction (PDI), parents implement behavioral strategies to make requests of child during play, utilizing time-outs as needed. During sessions, parents are observed interacting with their child by clinicians in a lab

setting, through a one-way mirror, using a bug-in-ear technique by which clinicians can provide parents guidance and feedback (Eyberg, 1988).

This treatment has resulted in improved parent interactions with their children (e.g., more praise and less criticism), less parental stress (Werba et al., 2006) and increased compliance from children toward parents (Schuhmann et al., 1998). Several studies with families of preschool children with disruptive behavior disorders have found PCIT to be effective. In a study of 64 families of 3- to 6-year-old children who were referred for clinically significant disruptive behaviors who participated in PCIT, children's behaviors were clinically and significantly improved after treatment (Schuhmann et al., 1998). Further research supports lasting effects of PCIT. Hood and Eyberg (2003) followed up with 23 mothers who completed Shuhmann and colleagues' (1998) study between 1993 and 1996. During their treatment, children's disruptive behaviors improved and continued to improve. Mothers' self-efficacy also improved. This evidence supports maintenance of PCIT outcomes up to six years post-treatment (Hood & Eyberg, 2003). PCIT has also been demonstrated to be effective when translated to Spanish. A study with Puerto Rican preschoolers ages 3-6 with ADHD resulted in positive social skills development in favor of PCIT and found significant differences in parent ratings between the treatment and waitlist conditions (Matos et al., 2009). These studies support the lasting effectiveness of PCIT for a variety of families with preschool children who have ADHD or disruptive behavior disorders.

Helping the Noncompliant Child. Another empirically supported intervention individually implemented based on needs and skill mastery is Helping the Noncompliant Child (HNC; McMahon & Forehand, 2003). This intervention is designed for parents of children ages 3 to 8 who are “excessively noncompliant.” The premise of this intervention is to change

maladaptive family interactions in order to improve children's compliant behaviors. This intervention occurs in 75-90 minute individual sessions, typically for 8-10 sessions, though duration can span 5-14 sessions depending on mastery of skills. Training focuses on use of punishment as well as increasing positive interactions. Parents must learn five skills that each must be mastered and meet certain criteria before the next skill is learned. These skills are: attending, rewarding, actively ignoring, giving clear instructions, and implementing time-out (McMahon & Forehand, 2003).

The program developers have also demonstrated efficacy of this intervention as well as social validity and generalizability of treatment outcomes (McMahon & Forehand, 2003). In a recent study of HNC, Honeycutt and colleagues (2015) studied low-income families with children 3 to 8 years old who displayed clinically significant disruptive behaviors based on scores from the Eyberg Child Behavior Inventory (ECBI) Severity or Intensity Subscales (Eyberg & Pincus, 1999). These families were randomly assigned to receive this treatment as part of a pilot study. A sample of eight families who completed the program in this pilot study were included in analysis. Half of the children were boys with a mean age of 5.75 years, and all caretakers were women with an average age of 38 years. Child behavior intensity scores (ECBI) were reduced at an average of 39.88 points post-treatment (Honeycutt, Khavjou, Jones, Cuellar, & Forehand, 2015).

A randomized controlled trial comparing HNC to another parent-training program (The New Forest Parenting Package; NFPP) and a waitlist control group included a sample of 164 children (ages 3-4, 73.8% male) meeting diagnostic criteria for ADHD and ODD (Abikoff et al., 2015). Assessments were conducted pre- and post-treatment and in the next year as follow-up that included parent and teacher ratings of ADHD, oppositional, and defiant symptoms;

observations of attention and ability to delay gratification with edible and non-edible rewards; parenting practices in a semi-structured play interaction; and parent ratings of stress and treatment satisfaction. At post-treatment, parent and teacher ratings of inattention and hyperactivity/impulsivity were significantly better compared to those in the waitlist control condition, and improvements in attention were maintained at follow-up. Parent ratings of defiance and physical aggression also improved for children in HNC compared to the waitlist control group and remained stable at follow-up. Parent practices and observed parenting for the HNC condition improved post-treatment compared to the control condition. Parent stress in the HNC group was significantly improved compared to that of the NFPP and control groups post-treatment (Abikoff et al., 2015). This research indicates Helping the Noncompliant Child may serve as an effective parent training intervention for young children with severe noncompliant behaviors.

Triple P-Positive Parenting Program. This program provides parenting support at multiple levels from a prevention orientation for children 0-16 years old (Nowak & Heinrichs, 2008; Sanders, 2008; "The system explained (Triple P)," 2015). Triple P started as an individually administered program to provide parent training at home (Sanders, 2008). The goal of this intervention is to increase parents' knowledge, skills, and self-efficacy in order to prevent behavioral, emotional, or developmental problems (Sanders, 2008). In order to change parenting behaviors, a central goal of the program is to promote self-regulation in participants, parents and providers. Self-regulation includes five aspects: self-sufficiency, self-efficacy, self-management tools, personal agency, and problem solving (Sanders, 2008). Lessons are provided in a series of levels that can be flexibly implemented to teach parenting principles ("The system explained (Triple P)," 2015). Core parenting principles of the program include safe and engaging

environment; positive learning environment, assertive discipline, realistic expectations; and parental self-care (Sanders, 2008)

Triple P is offered in several formats that can be selected to best suit participant qualities. Most sessions in which a practitioner meets with parents lasts 1-2 hours, and there are no more than 12 sessions. Standard Triple P is a ten-session program (up to 90 minutes each) that teaches skills through modeling, rehearsal, feedback, and homework tasks (Sanders, 1999). Sessions can also occur at home in order to promote generalization of learned skills. Group Triple P is an eight session program that includes four two-hour group sessions (with modeling, practice, feedback, and discussion) and four 15- to 30-minute telephone sessions for additional support during practice (Sanders, 1999). Ideally, 10-12 parents participate in each group. Self-Directed Triple P is provided via a parenting self-help workbook that contains a 10-week program with assigned reading and homework tasks for parents to complete. Parents also have an option of 15- to 30-minute weekly telephone consultations if they require additional support (Sanders, 1999). Since these programs were created, several changes have been made regarding additional parenting principles and a series to accommodate teens ("The system explained (Triple P)," 2015).

Nowak and Heinrichs (2008) conducted a meta-analysis of all studies evaluating the Triple P-Positive Parenting Program ($N = 55$ studies) conducted in multiple countries and found support for positive change in child problem behavior, parenting skills, and parents' well-being. This meta-analysis included studies of children with a mean age of 5.5 years and range of 2.2–12.5 years. Overall controlled effect sizes ranged between 0.17 and 0.48. These findings are considered reliable indicators of Triple P's effectiveness (Nowak & Heinrichs, 2008).

A variety of parenting programs, as previously discussed, can be used to treat families of preschool-aged children who exhibit disruptive behaviors as well as for prevention of these

behaviors. For the most part, these parenting programs work by shaping parent behaviors to promote consistency and positive parenting practices that influences children's behaviors (Comer et al., 2013). IYP, HNC, and PCIT are all behaviorally-oriented programs targeted for parents of children with severe behavior problems or diagnoses that employ behavioral strategies and have been evaluated to be effective.

Helping Our Toddlers, Developing Our Children's Skills. An additional parent training intervention that shares commonality with these programs is Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS; Armstrong, Lilly, & Curtiss, 2006). Like IYP, HNC, and PCIT, HOT DOCS trains parents to use behavioral techniques to manage challenging behaviors in young children. In these programs, parents are the primary target of intervention, and the behavioral skills they learn enable them to influence their children's behaviors. HOT DOCS is a parent training program that emphasizes positive behavior supports and trains parents to implement parenting strategies to reduce disruptive behaviors of children ages 18-60 months. Behavior disorders are not a requirement for participation, as strategies taught in the program apply to general positive parenting behavioral strategies. HOT DOCS instructors teach parents to use a problem-solving framework to determine the function of their children's misbehaviors . Parents are then taught how to intervene and prevent these behaviors from occurring by focusing on behavior functions. A core theme of instruction is that children misbehave when they lack skills to behave more appropriately, and therefore much misbehavior can be addressed and prevented by teaching children positive behaviors.

HOT DOCS is unique from other parent training programs because rather than delivering separate curricula for caregivers and teachers, the same HOT DOCS curriculum is used by caregivers, educators, and other professionals across settings (Childres et al., 2011).

Additionally, the focus of the intervention is to help participants understand the functions of behavior and use a problem-solving process to intervene accordingly. Participants learn behavioral management skills in two-hour training classes that they then practice as weekly homework. This program lasts for six weeks (shorter than most behavioral parent-training programs), and a seventh booster session is offered six to eight weeks later (Agazzi et al., 2010). HOT DOCS can be conducted in a variety of settings, including community centers such as churches or in schools. HOT DOCS trainers are credentialed to teach HOT DOCS courses either by completing a co-teacher training process with a master trainer or through a trainer workshop if they are early childhood providers with at least Masters level training in a related field. A strength of the program format is parent participants in HOT DOCS interact in ways similar to a support group, providing advice and encouragement to one another during class sessions, and sometimes forming relationships that extend beyond the class setting.

HOT DOCS has been empirically supported to be effective for many families of young children (Armstrong, Hornbeck, Beam, Mack, & Popkave, 2006; Childres et al., 2011; Williams et al., 2010). In a study by Williams and colleagues (2010), researchers evaluated 399 caregivers of children ages 18 months to 6 years and 11 months who had participated in HOT DOCS. Researchers assessed parent knowledge using the HOT DOCS Knowledge Test (Armstrong, Lilly, et al., 2006), and child behaviors using the Child Behavior Checklist (Achenbach, 2001). They found caregiver knowledge increased and their perceptions of child behavior severity decreased at the conclusion of treatment (Williams et al., 2010). In a study by Childres, Agazzi, and Armstrong (2011), researchers evaluated 47 caregivers (treatment group) and 53 caregivers (waitlist group) of children between 17 months and 8 years old with challenging behaviors. Participants in each condition were similar with regard to gender, age, education, marital status,

and relationship to child, but the treatment group contained significantly more Hispanic caregivers compared to the control group. Researchers assessed parent knowledge using the HOT DOCS Knowledge Test and the HOT DOCS Program Evaluation Survey (Armstrong, Lilly, et al., 2006), the Child Behavior Checklist (Achenbach, 2001), and the Perceived Stress Scale (Cohen & Williamson, 1988). Compared to the waitlist-control group, in the treatment group, caregivers' knowledge and ratings of their children's behaviors improved, though levels of parent stress post-treatment did not differ between groups (Childres et al., 2011). Consistent with previous research, parent training has been found to be an effective early intervention for emerging disruptive behaviors (Childres et al., 2011).

Summary of behavioral parent training programs. Table 1 summarizes key features of several parent behavioral training programs reviewed here. They each focus on age groups that include preschool and pertain to a range of behavior problems and group types for varying durations. A few notable features distinguish HOT DOCS from other programs: (1) it is offered in a group-format, (2) no diagnosis for behavior disorder is required for participation in treatment, (3) it is available for parents as well as other professionals (educators, healthcare providers), and (4) the number of sessions (six or seven) is significantly shorter than the closest comparable programs. It is hypothesized these features make this program particularly acceptable to treatment participants, which could result in better outcomes for attendance.

Table 1

Comparison of Parent Behavioral Training Interventions

Intervention	Ages	Program Focus	Tiers of Prevention	Session Type	Duration
Incredible Years	0–12 years	CD, ODD	Secondary	Group	120 minutes, 13-28 sessions
Parent-Child Interaction Therapy	3–6 years	CD, ODD, ADHD	Tertiary	Individual	60 minutes, 8-20+ sessions

Table 1 (Continued)

Intervention	Ages	Program Focus	Tiers of Prevention	Session Type	Duration
Helping Noncompliant Children	3–8 years	Excessive noncompliance	Tertiary	Individual)	75-90 minutes, 5-14 sessions
Triple P	0–16 years	Healthy family environment	Multi-tier	Group/ Individual	60-120 minutes, 1-12 sessions
HOT DOCS	1.5–5 years	Positive parenting	Secondary	Group	120 minutes, 6-7 sessions

Factors Influencing Treatment Outcomes

Although behavioral parent training is an effective treatment for challenging behavior, there is still information to be learned about how these programs exert their effect. One possibility is that parents' perceptions of treatment effectiveness impacts treatment success. Parent perceptions toward treatment effectiveness are parents' views of treatment being meaningful and relevant to improving their children's behavioral problems, or their satisfaction with treatment (Kazdin, Holland, & Crowley, 1997). Consumer satisfaction, or parent satisfaction with treatment, is treatment participants' agreement with the format, content, and outcomes of treatment (Brestan et al., 1999; Eyberg & Johnson, 1974). If parents perceive treatment to be demanding or of little relevance to their children's behavior problems, this can become a barrier to treatment attendance (Kazdin, Holland, & Crowley, 1997). In their barriers to treatment model, Kazdin and colleagues (1997) described three barriers to treatment that can influence treatment attendance: (1) stressors and practical obstacles to treatment, (2) perceptions of treatment demands and issues related to cost, time, or effort or of treatment being unhelpful or irrelevant to behavior concerns; and (3) poor therapeutic relationship. Practical barriers to treatment include logistical factors related to parents attending treatment, such as transportation

or child care (Kazdin, Holland, & Crowley, 1997). Parents may perceive treatments to be demanding of time and effort, presenting a barrier to their attendance. Therapeutic relationship pertains to the bond or alliance between parents and therapists. Perceptions about treatment can relate to parents' thoughts about treatment being relevant to their needs and fitting with their expectations, or their satisfaction with treatment (Kazdin, Holland, & Crowley, 1997; Kazdin, Holland, Crowley, & Breton, 1997).

Perceptions toward treatment, such as satisfaction with treatment or perceived fit with needs, can influence participant engagement in treatment (Kazdin, Holland, & Crowley, 1997). Treatment attendance is a common measure of treatment engagement (Becker et al., 2015; Gearing et al., 2014), and drop-out from treatment, or attrition, has been a frequent topic of study (Armbruster & Kazdin, 1994; Kazdin, 1996; Kazdin, Holland, & Crowley, 1997; Nock & Ferriter, 2005). While direct links between attendance and treatment outcomes could benefit from further research (Nix et al., 2009; Parent et al., 2011), attendance has been theoretically connected to treatment dose and adherence in medical and health psychology fields (Gearing et al., 2014). Attendance is considered to be a component of treatment engagement (Gearing et al., 2014), and factors of engagement, like treatment participation, have been demonstrated to influence treatment outcomes (Nix et al., 2009). Many interventions have focused on increasing treatment attendance in psychotherapy and psychosocial treatments for this reason (Becker et al., 2015; Gearing et al., 2014; Nock & Ferriter, 2005).

It is possible treatment attendance could serve as a mediator between parent perceptions and child behavioral outcomes of treatment because of its connection to treatment engagement. As evidenced by Kazdin and colleagues (1997), parent perceptions toward treatment can influence treatment adherence and attendance. Parents who do not perceive a treatment to fit well

with their needs are less likely to attend and participate in treatment (Kazdin, Holland, & Crowley, 1997). Attendance has some relationship with behavioral outcomes of treatment (Reyno & McGrath, 2006), and has been the focus of recent research (Nix et al., 2009; Parent et al., 2011). In this section, research on the relationship between parent perceptions, or satisfaction, treatment attendance, and child behavior outcomes were reviewed.

Parent perceptions predict attendance. Research supports a link between barriers and perceptions toward treatment and attendance (Kazdin et al., 1997; Nock & Kazdin, 2001). Nock and Kazdin (2001) found a curvilinear relationship between parent perceptions toward treatment and attendance. Parents with very low and very high expectancies, or perceptions toward treatment, attended the greatest number of sessions and were least likely to drop out prematurely. Kazdin and colleagues (1997) found that barriers to treatment (practical obstacles, perceptions toward treatment, and poor therapeutic alliance) related to attrition. Parents' perception of few barriers to treatment served as a protective factor that boosted attendance (Kazdin et al., 1997). In a study of 99 families who participated in parent-child interaction therapy for preschoolers, the rate of attrition was 36% (Fernandez & Eyberg, 2009). Families who responded with reasons for dropping out (86%) listed disagreement with treatment approach (26%), being too busy (13%), logistical problems (13%), or other stressors (13%) as being top reasons for their dropping out (Fernandez & Eyberg, 2009). In a meta-analysis by Reyno and McGrath (2006) there was a moderate relationship between ratings of barriers to treatment (which includes perceptions toward treatment) and treatment attendance or attrition ($r = .29$). Other studies have not found this link, citing a restriction of range in parent satisfaction as a possible reason (Fernandez & Eyberg, 2009). Fernandez and Eyberg (2009) conducted a study with 99 families involved in parent-child interaction therapy (PCIT) for preschoolers (ages 3-6) with disruptive

behavior disorders. While SES was a strong predictor of attrition, maternal distress and treatment satisfaction were unrelated to attrition (Fernandez & Eyberg, 2009). Authors suggest the restricted range of satisfaction scores may have influenced this finding (Fernandez & Eyberg, 2009).

Kazdin and colleagues (1997) found effects of parent perceptions toward (current) treatment influenced attendance, and additionally, parent (prospective) expectancies of treatment effectiveness and relevance can also influence participants' subsequent barriers to treatment. Subsequent barriers can include stressors and obstacles, perceptions of treatment demands and issues, perceived relevance of treatment, and therapeutic relationship (Nock & Kazdin, 2001). In a sample of 405 children ages 2-15 (313 boys, 264 European American) referred for oppositional, aggressive, and antisocial behavior, Nock and Kazdin (2001) found a linear relationship between parent expectancies and barriers to treatment. Parents who did not believe the treatment would be effective or had inaccurate views of treatment experienced the most barriers to participation. Parents reporting low expectancies perceived treatment as less relevant to their needs, requiring more work of them, and had a poorer relationship with the therapist. Studies of the relationship between parents' expectancies for treatment predicting subsequent barriers to treatment, treatment attendance, and attrition include several parent interventions, but research related to HOT DOCS, specifically, is lacking.

Parent perceptions predict child disruptive behaviors. Researchers have found a link between parent perceptions toward behavioral parent training programs and outcomes associated with child behaviors. In study of 57 mothers who participated in PCIT for their children with disruptive behavior disorders, mothers' ratings of satisfaction with treatment were related to behavioral improvements in their children measured with parent ratings (Eyberg Child Behavior

Inventory; ECBI) and behavioral observations (Dyadic Parent-Child Interaction Coding System; DPICS-II; Brestan et al., 1999). Scores on the Therapy Attitude Inventory (TAI; Eyberg, 1993) were correlated with ECBI difference scores ($r = .46, p < .01$) and DPICS-II difference scores ($r = .36, p < .01$; Brestan et al., 1999). These results support a link between parent ratings of satisfaction or perceptions toward treatment and improved child behaviors (Brestan et al., 1999). A meta-analysis by Reyno and McGrath (2006) yielded a moderate relationship between ratings of barriers to treatment (which includes perceptions toward treatment) and behavioral outcomes of treatment ($r = .33$).

While many interventions studies result in improved behavioral outcomes, many studies also have high rates of parent satisfaction (Feinfield & Baker, 2004; Schuhmann et al., 1998; Williams et al., 2010). It is possible there is a restricted range of satisfaction reported at the conclusion of treatment. This could make it challenging to discriminate differences in behavioral outcomes between those satisfied and unsatisfied with treatment. More research on this topic would be helpful to determine this relationship between different parent perceptions toward treatment and behavioral outcomes of treatment.

Attendance as a mediator between parent perceptions and behavior. It is possible that treatment attendance serves as a mediator between parent perceptions and child behavioral outcomes. Researchers have found a relationship between parent perceptions toward treatment and treatment attendance (Kazdin et al., 1997). In a meta-analysis, the mean weighted effect size for the relationship between scores on the Barriers to Treatment Participation Scale (Kazdin, Holland, Crowley, et al., 1997) and treatment attendance was $r = .29$ (Reyno & McGrath, 2006). Poor attendance hinders the effectiveness of parent training programs and prevents families from receiving full benefits of treatment. Attrition and noncompliance with treatment have been linked

to reduced child behavioral outcomes (Kazdin, Holland, & Crowley, 1997; Prinz & Miller, 1994). Based on Kazdin and colleagues' (1997) study of barriers to treatment, as well as research supporting the relationship between treatment attendance and child behavioral outcomes, it is likely there is a mediating relationship between parent perceptions toward treatment and child behavior outcomes.

Many studies are focused on interventions to improve attendance because of its theoretical relationship to treatment dose and engagement with treatment (Becker et al., 2015; Gearing et al., 2014; Lindsey et al., 2014). Participation and attendance are aspects of engagement that can be difficult to disentangle because attendance often seems to be a prerequisite to participation. Some studies comparing treatment participation and treatment attendance have not found a unique effect of attendance on treatment outcomes, but have found a relationship between treatment participation and behavioral outcomes of treatment (Nix et al., 2009; Parent et al., 2011). While a unique relationship between attendance and behavioral outcomes has not always been established empirically, researchers agree it is an important factor of engagement and suggest further study of attendance and its relationship with outcome variables (Nix et al., 2009; Parent et al., 2011). This proposed study will contribute to researchers' and practitioners' understanding of the potential mediating influence of attendance between parent perceptions toward treatment and behavioral outcomes.

Summary

Disruptive behaviors can begin in toddlerhood and result in negative outcomes that influence the rest of children's lives (Bradshaw et al., 2010; Broidy et al., 2003; Tremblay et al., 2004). Early intervention serves as an opportunity to not only reduce current symptoms, but also prevent escalation of negative outcomes from occurring (Breitenstein et al., 2009; Broidy et al.,

2003). Behavioral parent training interventions have clear empirical support for their ability to reduce a variety of disruptive behavior symptoms over time. They have been found to reduce children's externalizing behaviors and improve parent-child relationships (Kaminski et al., 2008). In particular, HOT DOCS has been demonstrated to be an effective intervention with positive effects on children's externalizing behavior (Agazzi et al., 2010; Armstrong, Hornbeck, et al., 2006; Childres et al., 2011; Williams et al., 2010).

A major component of behavioral interventions is parents' role in serving as an agent of change; therefore, it is important to examine what factors influence the effectiveness of these interventions. Parents' perceptions toward treatment or agreement with treatment can predict other perceived barriers to treatment, treatment attendance and attrition (Brestan et al., 1999; Kazdin, Holland, & Crowley, 1997; Nock & Kazdin, 2001), as well as child behavioral outcomes (Prinz & Miller, 1994; Reyno & McGrath, 2006). Generally, for such psychotherapeutic treatments to be effective, participants must attend treatment sessions consistently (Kazdin et al., 1997), though research examining the unique link between attendance and treatment outcomes is limited (Nix et al., 2009; Parent et al., 2011). Treatment attendance influences behavioral outcomes for children of participants (Prinz & Miller, 1994). Additionally, parents' perceptions toward treatment relate to child behavior outcomes (Brestan et al., 1999). Given the relationship between parent perceptions toward and attendance (Fernandez & Eyberg, 2009; Kazdin, 1996) and the relationship between treatment attendance and child behavioral outcomes (Kazdin, Holland, & Crowley, 1997; Prinz & Miller, 1994), it is possible attendance serves as a mediator between these variables (see Figure 1, page 5).

Purpose of Research Study

The purpose of this proposed study is to examine whether there is a relationship between parents' perceptions toward *Helping Our Toddlers Developing Our Children's Skills* (HOT DOCS©, Armstrong et al., 2006) and outcomes of treatment (child externalizing behavior and treatment attendance). Research on factors that influence treatment attendance and outcomes of behavioral parent training programs is an emerging area (Nix et al., 2009). Relationships between perceptions toward treatment, behavioral outcomes, and attendance have not been well researched, particularly the mediating influence of attendance between parent perceptions of treatment effectiveness and child behavior outcomes. These factors related to HOT DOCS, in particular, will contribute to understanding influences of treatment outcomes in behavioral parent training programs.

HOT DOCS is unique from other behavioral parent training programs because of its inclusive group format that allows parents, other caregivers, and childcare professionals (e.g., educators, healthcare providers) to participate together. No diagnosis for behavior disorder is required for participation in HOT DOCS, and the focus of instruction is on addressing antecedents of behavior and the understanding that child misbehaviors can be addressed by teaching children more appropriate skills. Additionally, the number of sessions (six or seven) is significantly shorter than the closest comparable parent training programs, making this an appealing and cost-effective option for program participants. Potential implications for this study could pertain to finding ways to make this program, and other similar programs, more satisfactory to parents by meeting their needs and effectively reducing their children's challenging behaviors.

CHAPTER THREE:

METHOD

The purpose of this study was to investigate the relationship between caregivers' perceptions toward a behavioral parent training program, caregiver attendance, and their ratings of behavioral outcomes for their children. This chapter includes the research methods proposed in this study, descriptions of participants as well as inclusion and exclusion criteria, measures used to assess variables of interest, data collection, the research design, and data analyses.

Research Questions

1. To what extent do parent perceptions of treatment effectiveness relate to therapy attendance?
2. To what extent do parent perceptions of treatment effectiveness relate to change in ratings of child externalizing behavior outcomes from Time 1 to Time 3?
3. To what extent is the relationship between parent perceptions of treatment effectiveness and child behavior outcomes mediated by treatment attendance?

Participants and Setting

This study included data from a sample of participants who completed the HOT DOCS program between August 2011 and August 2012 and met the inclusion/exclusion criteria listed below. The full sample of data available from the HOT DOCS database included different outcome measures at various time points; therefore data for this study were confined to the selected timeframe for consistency of outcome measures. The studied sample included 139

participants who completed all relevant outcome measures (i.e., TAI, ECBI Problem and Intensity Scales at Time 1 and Time 2).

The HOT DOCS parent training program took place in the Department of Pediatrics at the University of South Florida College of Medicine. Parents/caregivers participated in this program voluntarily, and completed progress-monitoring measures over the course of the program. During the time these data were collected, participation in HOT DOCS was provided at no cost to parents, making it accessible to families of various income-levels.

Inclusion criteria for the proposed study were as follows:

- (a) Participation in HOT DOCS program.
- (b) This included mothers or father caregivers or other caregivers/guardians (e.g., grandparents) of toddlers and young children ages 1 to 7 years old.

Exclusion Criteria

- (a) Professionals (e.g., speech and language pathologists) who participated in the HOT DOCS program related to their professional role (not as a parent).
- (b) Participants who did not complete the Therapy Attitude Inventory (TAI) or the Eyberg Child Behavior Inventory (ECBI) at both time one and two were excluded from analyses.

Measures and Indicators

Data were collected via surveys completed by caregiver participants as part of a study on the HOT DOCS Program led by Dr. Kathleen Armstrong. Data regarding perceptions toward treatment and child externalizing behaviors were collected at the conclusion of treatment.

Attendance was recorded throughout treatment by the number of treatment sessions participants attended.

Eyberg Child Behavior Inventory (ECBI). Ratings of parent perceptions of child behaviors before and after treatment were assessed using the Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999). The Eyberg Child Behavior Inventory (ECBI) is a parent-reported survey of child conduct problems (ages 2-16) which is commonly used in HOT DOCS and other behavioral parent training programs (measure available upon request). Parents report the existence of 36 specific disruptive behaviors (e.g., breaking objects) and whether they consider it a problem (yes/no, Problem scale). Parents rate each behavior with their perceived problem intensity, or how often each behavior occurs (Intensity scale) on a 1 to 7 scale. The clinical cutoff scores are 132 (Intensity) and 15 (Problem) (Calzada et al., 2004; Shuhmann et al., 1998). This scale has been frequently used in research (Calzada et al., 2004; Feinfield & Baker, 2004; Shuhmann et al., 1998). In a sample of 2,527 parents of children and adolescents ages 2-17 years old (86% Caucasian, 8% Asian, 3% Black, 2% Hispanic, and 1% American Indian), from pediatric clinics in several northwestern states, the internal consistency alphas for the Problem Score were .91 for boys and .92 for girls, and for Intensity Scores, .94 for boys and .93 for girls (Burns & Patterson, 2001). For the total sample, the correlation between the Problem Score and Intensity Score was .74 (Burns & Patterson, 2001). Scores on the ECBI were correlated with Preschool Behavior Questionnaire – Parent Completed (PBQ-P; Behar & Stringfield, 1974) total score (ECBI Intensity score: $r = .53, p < .001$; ECBI Problem score: $r = .34, p < .01$), supporting convergent validity in a sample of 88 children ages 2 to 6 years (Funderburk, Eyberg, Rich, & Behar, 2003). Scores on the ECBI also correlated with scores on the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) for externalizing behaviors on the problem scale ($r = .67, p < .001$) and intensity scale ($r = .75, p < .001$) with a sample of 159 children ages 4-16 years (Boggs, Eyberg, & Reynolds, 1990). Test-retest reliability over a 10-month

period with 32 of these children was stable for the both Intensity and Problem scores ($r = .75$, $p < .001$; Funderburk et al., 2003). In this study sample, internal consistency for the ECBI pre-intervention total score alpha was high ($\alpha = .95$); the ECBI post-intervention total score alpha was also high ($\alpha = .93$). Cronbach's alphas for the Problem and Intensity scales ranged between .91 and .94. For a more detailed description of ECBI alpha reliabilities for the study sample, see table below.

Table 2

Sample Cronbach's Alphas for ECBI Total, Problem, and Intensity Scores

	Pre-intervention	Post-intervention
ECBI Total Score	.95	.93
Problem Score	.92	.91
Intensity Score	.94	.91

For this study, in order to assess the change in child behavior pre-intervention to post-intervention, difference scores were calculated using ECBI T-scores. ECBI scores collected at the end of treatment (Time 2/post-intervention) were subtracted from ECBI scores collected in the first session (Time 1/pre-intervention). A more positive difference score signified improved ratings of behavior, whereas negative difference scores signified worsened ratings of behavior. Separate difference scores were calculated for the ECBI intensity and problem scales. Difference scores for the ECBI problem scale and intensity scale correlated moderately ($r = .50$, $p < .001$).

Therapy Attitude Inventory (TAI). Parent perceptions toward treatment effectiveness were assessed using the Therapy Attitude Inventory (Eyberg, 1993; Eyberg & Johnson, 1974). The TAI is a 10-item measure of consumer satisfaction used to measure parents' perceptions of self-efficacy, parent-child relationship, child behavior, family adjustment, and satisfaction with program type and outcomes (measure available upon request). Parents respond using a five-point scale from 1 (dissatisfaction with treatment or weakening of problems) to 5 (satisfaction with

treatment or improvement of problems). One item, for example, is “My general feeling about the program I participated in is” with response options ranging from 1 (*I disliked it very much*) to 5 (*I liked it very much*). Cronbach’s alphas for the TAI have ranged from .88 to .91 (Brestan et al., 1999; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993). Factor analysis by Brestan and colleagues (1999) yielded two factors: satisfaction with outcomes of child behavior changes (alpha .93) and satisfaction with process, or treatment components (alpha .76). In this sample of 62 mothers participating in parent-child interaction therapy for their children with disruptive behavior disorders, test-retest reliability after four months was .85 (Brestan et al., 1999). The TAI is considered a measure of parental perception “states” rather than “traits” related to treatment effects and therapeutic alliance (Brestan et al., 1999). Brestan and colleagues (1999) explain their interpretation of the TAI as being a measure sensitive to change (“states”), and the stability of these scores reflecting stability of treatment satisfaction and therapeutic alliance. Researchers have found support for convergent validity with scores on the TAI with parent report (ECBI) and observational measures of child behaviors (Dyadic Parent-Child Interaction Coding System-II; DPICS-II; Eyberg & Robinson, 1983) as an outcome measure for treatment (Brestan et al., 1999). Additionally, in this same sample, scores on the TAI are distinct from these outcome measures such that it is not another measure of behavior (Brestan et al., 1999). Specifically, the satisfaction with outcomes factor demonstrated a moderate correlation with the ECBI parent rating scale (Intensity difference score .49, $p < .004$; Problem difference score .46, $p < .004$). The satisfaction with outcomes factor demonstrated a small correlation with the DPICS-II observational compliance difference score (.24, NS), however. The satisfaction with treatment process factor moderately correlated with the DPICS-II compliance difference score (.41, $p < .01$) and the ECBI parent rating scale (Intensity difference score .38, NS; Problem difference

score .41, NS; Brestan et al., 1999). In this study, internal reliability for the TAI was high ($\alpha = .83$).

The TAI was completed by parents in session 6. Parents who did not attend session 6 were mailed the TAI to complete and return. If parents attended less than 5/6 sessions, the TAI was not mailed to them.

Attendance. Participant attendance was recorded at each HOT DOCS training session for this sample by the class instructor. This variable was measured by counting the number of sessions participants attended based on an attendance roster. At the time the data that were used in this study were collected, the total number of HOT DOCS sessions was six (Childres et al., 2011; Williams et al., 2010), whereas current the most recent edition of the HOT DOCS program (Armstrong, Agazzi, Childres, & Lilly, 2010) include seven sessions.

HOT DOCS Caregiver Demographics Form. Developers of the HOT DOCS program created the HOT DOCS Caregiver Demographics Form to obtain demographic information about caregivers and their target children from participants (measure available upon request). This form contains 10 items that include information about participant age, gender, marital status, level of education, and relationship of participant to child. Items about children pertain to age of target child, pre-existing medical and/or psychological diagnosis, and ages of other children living in their home. This information was used to describe characteristics of the sample used in this study.

Intervention

Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS; Armstrong, Lilly, & Curtiss, 2006) is a manualized program emphasizing positive behavior supports for parents to implement positive parenting strategies to reduce disruptive behaviors of children ages 18-60

months. Strategies taught in the program apply to general positive parenting behavioral strategies. This curriculum can be used by caregivers, educators, and other professionals across settings (Childres et al., 2011). Participants learn behavioral management skills in two-hour training classes that they then practice as weekly homework. This program lasts for six to seven weeks (the seventh session was a booster session) and can be conducted in a variety of settings, including community centers such as churches or in schools. Sessions occur in a group, class-like setting with cohorts of caregivers, educators, and other providers. Each cohort consists of approximately 10-20 participants, though this amount varies per group. Table 3, below, contains the sequence of course topics.

Table 3

HOT DOCS Parent Training Curriculum

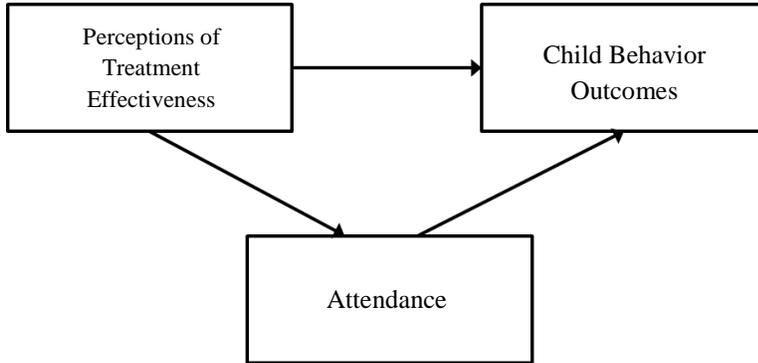
Session	Topic	Parenting tip
1	Early childhood development	Use positive words
2	Routines and rituals	Catch them being good
3	Behavior and development	Use a calm voice
4	Preventing problem behavior	Use preventions
5	Teaching new skills	Follow-through
6	Managing parent stress	Take time for yourself
Booster	Review previous sessions	Review 1-6

Research Design

This study involved secondary analysis of data. The present study utilized a non-experimental, descriptive research design to determine relationships between parent perceptions toward treatment effectiveness, child behavior outcomes, and attendance. In particular, the

potential mediating influence of attendance between parent perceptions toward treatment effectiveness and behavioral outcomes of treatment was determined (Figure 2, below).

Figure 2



Proposed Model

Procedures

The following section outlines characteristics of the sample used in this study and from where these data were obtained. Additionally, plans of analysis are discussed.

Sample. Data used in this study was from an existing dataset collected August 2011 through August 2012 from participants of HOT DOCS at Children’s Medical Services (CMS) at the University of South Florida. A variety of surveys were collected as part of this program. This included survey data regarding caregiver perceptions toward treatment (TAI) and child behaviors (ECBI), while attendance was recorded via a roster. Surveys were administered to caregivers in the HOT DOCS program during the last session of HOT DOCS to collect information about treatment perceptions and child behavior ratings. Demographics data about caregivers and children were also collected during the first session. As shown in Table 4, the measures of interest in this study were not administered during the entire HOT DOCS program. The reason for these differences is that certain cohorts of HOT DOCS participants were given different measures of child behavior (CBCL) or were not administered the TAI to complete. Table 4

provides an overview of measures completed by participants in this dataset (and number of participants) over various time frames. For the purposes of this study, ECBI scores from Time 1 to Time 2 were examined to calculate a difference score.

Table 4

Dataset Measures and Time Frame

Measure	N	Time Frame	Data Used
TAI	250	6/2011 – 6/2012	Post-treatment
ECBI	151	8/2011 – 6/2012	Change from pre- to post-treatment

Upon receiving IRB approval, the current Principle Investigator requested data containing the TAI, ECBI, attendance, and demographic data from the HOT DOCS data set. Data were reviewed to search for entries with missing data. After preliminary analysis, exclusion criteria were applied to eliminate entries of participants who did not complete the ECBI or TAI. Of the 327 participants in HOT DOCS between June 2011 and August 2012, 249 completed the TAI, 145 completed the ECBI at both data collection time points, and 233 included attendance data. After applying inclusion/exclusion criteria and eliminating participants from the sample with any missing data for key variables, data from a sample of 139 participants were kept for analysis in this study (from August 2011 to August 2012). Demographic data about HOT DOCS participant caregivers including sex, relationship to child, age of caregiver, level of education, race/ethnicity, marital status, and language is shown in Table 5. Table 5 also shows the demographic data for the total available dataset (percentages are based on available data and exclude missing data).

Table 5

Caregiver Demographic Characteristics of Study Sample and Total Sample

Variable	Included Study Sample (<i>n</i> = 139)		Total Sample (<i>N</i> = 327)
	<i>n</i>	%	%
Sex			
Male	39	31.5	31.8
Female	85	68.5	68.2
Relationship to Child			
Biological Parent	116	92.8	88.9
Adoptive Parent	1	0.8	5.6
Grandparent	2	1.6	2.5
Other	3	2.4	3.0
Age of Caregiver			
<19	0	0.0	1.3
20-29	18	15.3	17.9
30-39	69	58.5	51.3
40-49	29	24.6	25.0
50-59	2	1.7	3.6
60<	0	0.0	0.8
Level of Education			
Some High School	5	4.3	5.9
Completed High School	27	23.3	25.7
Technical School	15	12.9	11.7
Two-Year College Degree	13	11.2	15.3
Four-Year College Degree	38	32.8	26.6
Graduate Degree	18	15.5	14.9
Race/Ethnicity			
Black/African American	7	5.9	9.4
White	104	88.2	83.0
Hispanic/Latino	1	0.8	3.1
Asian	3	2.5	1.3
American Indian/Alaska Native	1	0.8	0.9
Other/Mixed	2	1.7	2.2
Marital Status			
Married	91	74.6	48.3
Single	22	18.0	13.5
Divorced	2	1.6	3.7
Separated	5	4.1	4.0
Other	2	1.6	1.2
Language			
English	103	81.1	77.8
Spanish	24	18.9	22.2

Demographic information about children of study participants was also compared to the composition of the available dataset of HOT DOCS participants ($n = 327$), presented in Table 6. In the studied sample, children of HOT DOCS participants were mostly male (76.3%) and between the ages of 3-5 years old (63.7%). Most target children in the sample did not have a diagnosis (36.7%), though a large number had speech/language disorders (21.6%), developmental delay (18.0%), ADHD (14.4%), or Autism Spectrum Disorder/Pervasive Developmental Disorder (13.7%).

Table 6

Child Demographic Characteristics of Study Sample and Total Sample

Variable	Included Study Sample ($n = 139$)		Total Sample ($N = 327$)
	n	%	%
Sex of Child			
Male	87	76.3	74.3
Female	27	23.7	25.7
Age of Child			
1 year (12-23 mo.)	8	7.3	7.7
2 years (24-35 mo.)	14	12.7	15.4
3 years (36-47 mo.)	33	30.0	26.4
4 years (48-59 mo.)	19	17.3	19.2
5 years (60-71 mo.)	18	16.4	16.8
6 years (72-83 mo.)	10	9.1	9.6
7 years (84-85 mo.)	8	7.3	4.8
Diagnosis of Child^a			
No Diagnosis	51	36.7	27.8
Autism Spectrum Disorder/ Pervasive Developmental Disorder	19	13.7	12.8
Behavior Disorder	4	2.9	4.5
ADHD	20	14.4	11.0
Speech/Language	30	21.6	19.6
Developmental Delay	25	18.0	12.8
Epilepsy	2	1.4	1.5
Cerebral Palsy	0	0.0	0.6
Hearing Impairment	2	1.4	9.4
Visual Impairment	0	0.0	1.3
Other Genetic Syndrome	3	2.2	1.2
Other Parent Reported Condition	2	1.4	4.0

“Children could have multiple conditions/diagnoses, therefore total percent exceeds 100% Percentages for the total sample are based on available data and exclude missing data.

Data Analysis

Preliminary analysis. Before analyzing data directly related to the proposed research questions, descriptive statistics for the TAI, ECBI, and attendance were calculated, including means, standard deviations, and range of scores. The dataset was screened for missing data. Correlations between demographics (e.g., child age, relationship to child, child diagnosis) and treatment outcomes (e.g., treatment attendance, child behaviors) were also examined. To measure child behavior outcomes, difference scores were calculated. ECBI T scores at Time 1 (collected at the first session participants attend) were subtracted from ECBI T scores at Time 2 (last session or via mail) to calculate difference scores for each participant.

Attendance rates were calculated by counting the number of sessions participants attended in total (ranging from 1-7). Participant membership in groups/cohorts (i.e., participants in a class cohort who took HOT DOCS together) were used to determine if there are significant group differences in attendance. Participants were grouped by the time frame (month and year) and class type (HOT DOCS English [61.2%], Spanish [19.4%], or DOCS for Success [19.4%]). In this sample, 14 groups from August 2011 to August 2012 were included with participant count in each group ranging from two to 23 ($M = 10$). Additionally, the data were examined to determine whether participants were parents of the same child, as each participant completed independent measures. Using a mixed effects model, parent ratings were nested within child participants. Analyses were conducted using IBM SPSS Statistics and R.

Regression analysis. Research questions one through three were examined via a mixed effects model to account for multiple parent ratings per child. Analyses were conducted using an approach to mediation discussed by Baron and Kenny (1986), James and Brett (1984), and Judd

and Kenny (1981). First, significance of the regression of child behavior (outcome) on parent perceptions (treatment) were tested using simple regression. If this relationship is significant, the second step of analysis was conducted. For step two, significance of the regression of attendance (mediator) on parent perceptions (treatment) was tested using simple regression. If this relationship was significant, analysis would continue with step three. The third step of analysis was to test significance of the regression of child behavior (outcome) on attendance (mediator), controlling for parent perceptions (treatment) using simple regression. If this relationship was significant, the final step of analysis was to test the extent of mediation among all three variables. In this fourth step, significance of the regression of child behavior (outcome) on parent perceptions (treatment) controlling for attendance (mediator) was determined using simultaneous multiple regression. A significant relationship here indicates partial mediation between attendance, parent perceptions, and child behavior outcomes. On the other hand, if this relationship is not significant, this indicates full mediation of attendance on child behavior outcomes.

These steps are represented in the following equations:

1. Child behavior = $\beta_1 + \beta_2 * \text{Parent Perceptions} + u_{i0} + \varepsilon$
2. Attendance = $\beta_1 + \beta_2 * \text{Parent Perceptions} + u_{i0} + \varepsilon$
3. Child behavior = $\beta_1 + \beta_2 * \text{Attendance} + u_{i0} + \varepsilon$
4. Child behavior = $\beta_1 + \beta_2 * \text{Parent Perceptions} + \beta_3 * \text{Attendance} + u_{i0} + \varepsilon$

CHAPTER FOUR:

RESULTS

This chapter includes findings related to the following three research questions:

1. To what extent do parent perceptions of treatment effectiveness relate to therapy attendance?
2. To what extent do parent perceptions of treatment effectiveness relate to change in ratings of child externalizing behavior outcomes from pre-intervention to post-intervention?
3. To what extent is the relationship between parent perceptions of treatment effectiveness and child behavior outcomes mediated by treatment attendance?

In this chapter, preliminary analyses were presented that evaluate trustworthiness of this dataset. Next, multiple regression analyses used to test the three research questions are described.

Preliminary Analyses

Missing data. Before conducting analyses, the data were reviewed for missing data. Out of a potential total sample of 327 HOT DOCS participants, 188 were excluded from analyses because they did not include data for TAI scores, attendance, or ECBI scores (Time 1 and Time 2). Only participants with complete data who were caregivers were included in analyses ($n = 139$). Many participants who missed more than three of seven sessions did not have completed TAI or post-intervention ECBI data, creating a restricted range in attendance for participants included in this sample (min = 4, max = 7, $M = 6.37$, $SD = .78$).

Analysis of assumptions. Four assumptions of linear regression were assessed using visual analysis or statistical testing to evaluate normality, linear relationship, and homoscedasticity. The first assumption is independence of error which was tested by creating scatter plots of residuals versus predicted values of independent variables. Using visual analysis, it was determined that there was not any significant violation of this assumption. The second assumption is that residuals are normally distributed. Skewness of key variables (TAI, Attendance, ECBI Intensity, ECBI Problem scores) ranged between -1.09 and .52, and kurtosis of key variables ranged between .36 and 1.02, therefore residuals appear to be normally distributed. The range for attendance in this studied sample was 4-7 after inclusion/exclusion criteria were applied, and most participants who had complete data entries had attended at least six sessions with skewness of -1.09 and kurtosis of .61. While there was a restricted range of attendance data available in this sample, the distribution was relatively normal. The third assumption is that variance of error is equally distributed across predictor variables. Visual analysis of scatter plots confirmed this assumption is met. The fourth assumption is that relationships are not curvilinear. This was also visually assessed using scatter plots and found to be met.

Descriptive statistics. Descriptive analyses were conducted to examine mean, standard deviation, range, skewness, and kurtosis of key variables (TAI, ECBI, attendance). The mean for TAI score ($M = 45.25$) fell in the highly satisfied range (Brestan et al., 1999). Mean attendance was 6.37 of seven available sessions. Results of these analyses are presented in Table 7, page 51.

Correlations. Pearson product-moment correlations were calculated to examine the strength of association between variables of interest (Table 8, page 52). TAI scores were not

significantly correlated with attendance or the ECBI Problem difference score, but the correlation between TAI score and ECBI Intensity difference score was significant, though weak ($r = .17, p < .05$). Attendance was not significantly correlated with ECBI scores or TAI scores.

Table 7

Descriptive Statistics for Continuous Variables

	Mean	SD	Range	Min	Max	Skewness	Kurtosis
TAI Score	45.25	3.70	16	34	50	-.83	.36
Attendance	6.37	.78	3	4	7	-1.09	.61
ECBI Intensity Difference Score	6.95	7.45	47	-16	31	.48	.71
ECBI Problem Difference Score	7.45	9.25	56	-20	36	.52	1.02
ECBI Intensity (Time 1)	59.56	10.34	61	22	83	-0.28	0.62
ECBI Problem (Time 1)	60.71	10.92	47	41	88	0.08	-0.64
ECBI Intensity (Time 2)	52.41	7.60	39	37	76	0.46	0.01
ECBI Problem (Time 2)	53.16	9.77	40	41	81	0.71	-0.26

The difference scores for the ECBI problem and intensity scales were moderately correlated with one another ($r = .51, p < .01$). ECBI Intensity scores at Time 1 and Time 2 (approximately 6 weeks) were strongly correlated ($r = .68, p < .01$) as well as ECBI Problem scores at Time 1 and Time 2 ($r = .57, p < .01$). The ECBI Problem and Intensity scores at Time 1 were also strongly correlated with each other ($r = .78, p < .01$) as well as ECBI Problem and Intensity scores at Time 2 ($r = .65, p < .01$).

Multiple Linear Regression Analyses

Research Question 1. Mixed effects models were utilized to test the research questions of this study. Research question one tested the relationship of parent perceptions on their

treatment attendance using simple regression. The model was not significant ($t = 1.585, p = .115, R^2_{\text{marginal}} = .019, R^2_{\text{conditional}} = .631$) and parent perception was not a significant indicator of treatment

Table 8

Correlations between Predictor and Outcome Variables

	1	2	3	4	5	6	7	8
1. TAI Score	--							
2. Attendance	.08	--						
3. ECBI Intensity Difference	.17*	.10	--					
4. ECBI Problem Difference	.15	.13	.51**	--				
5. ECBI Intensity (Time 1)	.02	-.08	.66**	.35**	--			
6. ECBI Problem (Time 1)	.05	.04	.46**	.53**	.78**	--		
7. ECBI Intensity (Time 2)	-.11	-.14	-.07	-.02	.68**	.57**	--	
8. ECBI Problem (Time 2)	-.08	-.09	.07	-.37**	.53**	.57**	.65**	--

* $p < 0.05$; ** $p < 0.01$

attendance ($B = .029$ [standardized $\beta = .138$]. The conditional R^2 accounts for fixed and random effects in the model (i.e., nesting parent ratings into child participants), whereas marginal R^2 accounts for only fixed effects. In this sample, parent perceptions of treatment effectiveness explains 1.9% of the variance in attendance, which is not statistically significant. The percent of sample variance in attendance that can be explained by perception (the fixed effect) and knowing which child it was (the random effect) is 63%. Therefore, much of the variance in attendance is related to individual differences between children.

Research Question 2. Research question two tested the relationship of parent perceptions toward treatment effectiveness on change in ratings of child behavior. This was tested using the difference scores of ECBI sub-scales between pre-intervention and post-

intervention (Intensity score and Problem score). Regarding the Intensity score, the model was not significant ($t = 1.499$, $p = .136$, $R^2_{\text{marginal}} = .017$, $R^2_{\text{conditional}} = .587$) and parent perceptions was not a significant indicator of change in parent ratings of behavior intensity from pre-intervention to post-intervention ($B = .267$ [standardized $\beta = .132$]). Parent perception explains 1.7% of the sample variance in change in ECBI Intensity scores, which is not statistically significant. The percent of sample variance in change in ECBI Intensity scores that can be explained by parent perception toward treatment (the fixed effect) and knowing which child it was (the random effect) is 58%. Therefore, much of the variance in change in ECBI Intensity scores is related to individual differences between children. Regarding the Problem score, the model was not significant and parent perceptions were not a significant indicator of change in parent ratings of behavior being problematic from pre-intervention to post-intervention ($B = .374$ [standardized $\beta = .150$], $t = 1.772$, $p = .079$, $R^2_{\text{marginal}} = .022$, $R^2_{\text{conditional}} = .022$). Parent perception explains 2.2% of the sample variance in change in ECBI Problem scores, which is not statistically significant. The percent of sample variance in change in ECBI Problem scores that can be explained by parent perception toward treatment (the fixed effect) and knowing which child it was (the random effect) is 2.2%. Therefore, a small amount of variance in change in ECBI Intensity scores is related to parent perceptions toward treatment.

Research Questions 3. Next, the relationship of attendance on change in behavior ratings accounting for perceptions being in the model was tested. Attendance was not a significant indicator of change in ECBI Intensity Scores from pre-intervention to post-intervention accounting for perceptions ($B = .686$ [standardized $\beta = .072$], $t = 0.832$, $p = .407$, $R^2_{\text{marginal}} = .022$, $R^2_{\text{conditional}} = .583$). Attendance accounts for 2.2% of the sample variance in change in ECBI Intensity scores, which is not statistically significant. The percent of sample variance in change

in ECBI Intensity scores that can be explained by attendance (the fixed effect) and knowing which child it was (the random effect) is 58%. Therefore, much of the variance in change in ECBI Intensity scores is related to individual differences between children. Attendance was also not a significant indicator of change in ECBI Problem Scores from pre-intervention to post-intervention accounting for perceptions ($B = 1.432$ [standardized $\beta = .121$], $t = 1.434$, $p = .154$, $R^2_{\text{marginal}} = .036$, $R^2_{\text{conditional}} = .036$). Attendance accounts for 3.6% of the sample variance in change in ECBI Problem scores, which is not statistically significant. The percent of sample variance in change in ECBI Problem scores that can be explained by attendance (the fixed effect) and knowing which child it was (the random effect) is 3.6%. Therefore, little variance in change in ECBI Intensity scores is related to attendance.

Research question three investigated whether attendance mediated the relationship between perceptions and change in behavior ratings. Based on the established methods for analyzing mediating relationships (Baron & Kenny, 1986; James & Brett, 1984; Judd & Kenny, 1981), due to the lack of significance in the relationship between perceptions (predictor variable) and attendance (mediator variable), claims of mediation cannot be made.

Summary of Results

In sum, the proposed mediating relationship of attendance between parent perceptions toward treatment and child behavior outcomes was not significant. The relationship between parent perceptions toward treatment and treatment attendance was not significant. Parent perceptions did not relate to change in ECBI Intensity or Problem scores from pre- to post-intervention. Attendance did not relate to change in ECBI Intensity or Problem scores from pre- to post-intervention either.

CHAPTER FIVE:

DISCUSSION

The purpose of this study was to examine the relationships between parent perceptions toward a behavioral parent training program (HOT DOCS) and change in ratings of child behaviors from the beginning to end of treatment and whether this relationship was mediated by parent treatment attendance. In this chapter, findings of this study and contributions to the literature are reviewed, as well as limitations of this study. Finally, implications for practice and future research are discussed.

Findings

This study included a sample of caregivers who participated in the HOT DOCS parent training intervention program ($N = 139$). The sample was predominantly female, and mostly included biological parents between ages 30-39 who were married and white. The majority had at least a two-year college degree. Many had children who did not have a diagnosis, though many had speech/language delays, developmental delays, ADHD, and autism spectrum disorder/pervasive developmental disorder. Children of these participants were mostly male between ages 2-5.

Multilevel modeling was used to nest parent participants into the children they rated and then test the relationship between key variables. Mixed effects models were used to investigate research questions of this study:

1. To what extent do parent perceptions of treatment effectiveness relate to therapy attendance?
2. To what extent do parent perceptions of treatment effectiveness relate to change in ratings of child externalizing behavior outcomes from pre-intervention to post-intervention?
3. To what extent is the relationship between parent perceptions of treatment effectiveness and child behavior outcomes mediated by treatment attendance?

Parent perception was not a significant indicator of treatment attendance. In this particular sample, parent ratings of satisfaction were generally high; the mean TAI score was 45.25 which falls in the highly satisfied range (Brestan, 1999). Attendance for participants included in this study was also relatively high overall. Many participants who did not complete all measures of key variables were excluded from this study, and most participants who did complete necessary measures attended at least four sessions. The TAI was completed by parents in session 6 or mailed to them. This restriction in available data from participants who attended less than four sessions may have influenced results of this study. It is possible that surveying parent perceptions of treatment effectiveness for non-completers may provide more diversity in responses and alternative findings.

These findings may be explained by previous studies investigating links between parent perceptions toward treatment and their attendance (Kazdin et al., 1997; Nock & Kazdin, 2001). Kazdin and colleagues (1997) found that lack of perceived fit of treatment by parents was related to their attendance and participation in treatment. Parents who had very low or very high expectancies for treatment were more likely to attend treatment and less likely to drop out compared to participants with moderate expectancies (Nock & Kazdin, 2001). Parent ratings of

treatment satisfaction were generally high for participants in this study, and their treatment attendance was predominantly high as well. Other researchers have cited a restriction in range in parent satisfaction as a potential explanation for not finding a relationship maternal satisfaction and attrition in a study of PCIT (Fernandez & Eyberg, 2009). It is possible that other barriers to treatment besides perceived treatment fit, such as “being too busy” to attend treatment, logistical issues preventing attendance such as travel or childcare, or other hindering stressors, may be more important predictors of attendance. (Fernandez & Eyberg, 2009; Kazdin et al., 1997).

The relationship between parent perceptions toward treatment effectiveness and the change in child behavior ratings from pre- to post-intervention was not significant. This finding was consistent when considering parent ratings of child behavior intensity and perceptions of being problematic. Parent ratings of child behavior were diverse and changed overall from pre- to post-intervention. ECBI scores pre-intervention fell in the clinically significant range of a T-score of at least 60 (mean intensity T-score = 59.6, mean problem T-score = 60.7). Post-intervention ECBI scores fell in the average or non-clinical range (mean intensity T-score = 52.4, mean problem T-score = 53.2). As noted above, the average ratings of parent perceptions were relatively positive, which may have affected results of this study. There was a significant, albeit weak, correlation between TAI score and the ECBI Intensity difference score in this study ($r = .17, p < .05$). This may be related to overlap in ratings of behavior improvement noted by parents on the TAI and their ratings of behavior frequency on the ECBI Intensity scale. Parents may have reported more positive perceptions on the TAI related to improvements in behavior frequency (ECBI Intensity). When comparing the marginal R^2 and the conditional R^2 in relationships predicting child behavior rating outcomes, random effects accounted for more variance predicting change in ECBI Intensity scores compared to ECBI Problem scores. This

may be due to more variation between child rating scores on the ECBI Intensity score compared to the ECBI Problem score. The ECBI Intensity scale is a measure of behavior frequency and has wide variation in responses compared to the “yes/no” ratings of perceived problem behaviors measured by the ECBI Problem scale. It may also be that parent perceptions of whether behaviors are problematic may be more similar to one another (child to child comparisons) whereas the frequency of behavior occurrence can vary greatly.

Other researchers have investigated relationships between parent perceptions toward treatment and child behavior rating outcomes (Nock & Kazdin, 2001; Reyno & McGrath, 2006). In a study of 62 mothers and their children in PCIT, TAI ratings related to improvements in parents’ ratings of their children’s behaviors using the ECBI (Brestan et al., 1999). In a meta-analysis by Reyno & McGrath (2006), ratings of satisfaction with treatment as part of a measure of barriers to treatment moderately correlated with child behavior outcomes. While previous research corresponds with the small correlation found in this study between parent perceptions of treatment effectiveness and ratings of behavior intensity, differences in overall findings between this study and findings of previous research may be explained by a smaller sample size, lack of variability in parent perceptions, or other variables such as child diagnoses (many of these studies primarily included families with clinically significant behavioral concerns).

The relationship between parent perceptions toward treatment and child behavior outcomes was not mediated by treatment attendance. Due to the lack of relationship between each of these variables, attendance did not have a mediating influence. In a study by Nix and colleagues (2009), attendance did not have a mediating relationship between predictors (family characteristics such as demographic variables, ratings of parent stress, child home behaviors and child school behaviors) and outcomes (change in parental warmth, use of punishment, or school

involvement). Interviewers' ratings of parent engagement, however, did have a mediating relationship between predictor variables and outcome variables (Nix et al., 2009). Nix and colleagues (2009) suggest that other measures of engagement (such as family coordinators' ratings of participation and implementation of learned skills) may provide more information about parent involvement in treatment than measures of attendance alone.

Investigating each component of this model separately, such as using alternative measures of treatment engagement, and having a larger, more diverse sample, could provide more insight into these relationships.

Contribution to the Literature

A goal of this study was to extend research on the relationship between parent perceptions toward treatment, attendance, and whether these factors relate to treatment outcomes. Emerging research is focusing on factors that influence treatment engagement/attendance and possible links to treatment outcomes (Becker et al., 2015; Gearing et al., 2014; Lindsey et al., 2013). A potential mediating relationship of attendance on parent perceptions toward treatment and child behavior outcomes had not been previously studied in this way.

Engagement. Treatment attendance is part of a broader focus in research on treatment engagement in mental health and behavioral services (Becker et al., 2015; Gearing et al., 2014; Lindsey et al., 2013). Engagement in treatment has been categorized in extant literature into three domains: attendance, adherence, and cognitive preparation (readiness for treatment; Becker et al., 2015; Gearing et al., 2014). Engagement as a whole may be more useful to study than attendance alone because it also includes components of parent perceptions toward treatment and potential barriers to their participation in treatment (Gearing et al., 2014). Attendance, however, is a frequently studied outcome of engagement in reviews of randomized controlled trials

(Lindsey et al., 2013). Treatment adherence continues to be a focus of study in psychosocial interventions because of its linkage to treatment dose, yet remains in need of further research (Gearing et al., 2014). Other researchers of HOT DOCS have examined attendance and homework completion (adherence) as measures of engagement in treatment (Ogg et al., 2014). Perhaps using other measures of engagement would have resulted in finding a relationship between this engagement and parent perceptions toward treatment. Future research would likely benefit from utilizing multiple measures of engagement and barriers to treatment.

Barriers to treatment. Several factors can influence parent attendance and engagement in treatment. Barriers to treatment can be physical or logistical obstacles that prevent parents from attending treatment, perceptions that the cost/effort associated with treatment is too demanding, a low opinion of treatment relevance, or a weak relationship with the therapist (Kazdin et al., 1997). These barriers have been studied in parent training interventions, as well as interventions specific to assessing and modifying these barriers to improve treatment engagement (Lindsey et al., 2013). Parent perceptions of treatment can be a potential barrier to treatment if parents do not feel treatment is relevant to their concerns or is effective (Kazdin et al., 1997). While parent perceptions were assessed in this study, it is possible that results of this study were influenced by external barriers to treatment that were not measured (i.e., logistical barriers preventing travel or related obstacles such as work or childcare obligations). It would be beneficial for future research in this area to include multiple measures of barriers to treatment and engagement instead of primarily relying on attendance data.

An obstacle to studying treatment engagement and attendance observed in this study is obtaining data from participants who no longer wish to participate in treatment. Because follow-up with these participants was not often possible, their data was excluded from this study. These

reported findings are based on the subset of participants with complete data. Attendance was the only indicator of treatment engagement assessed in this study, therefore available data and measures of treatment engagement were limited. Other researchers have emphasized the need for research that extends beyond attendance and focuses on more inclusive methods for measuring treatment engagement (Lindsey et al., 2013).

Implications for Practice

Findings of this study could be useful for clinicians or educators working with families. While results of this particular study did not support initial hypothesized relationships between parent perceptions toward treatment, treatment attendance, and child behavior outcomes, interactions between these variables would be helpful to investigate further and clarify for clinical application. Other variables may influence whether or not parents attend treatment and resulting child behavior outcomes of treatment (whether that be change in parent ratings of behavior intensity or their perceptions of how problematic these behaviors are). Prior research on barriers to treatment support that variables such as having competing demands on time or resources, stressors, low perceived relevance of treatment, and a weak therapeutic relationship may influence treatment participation and attendance (Kazdin et al., 1997). Increased barriers to treatment or low anticipatory perceptions toward treatment can result in increased attrition (Kazdin et al., 1997; Nock & Kazdin, 2001).

Engagement in treatment attendance has been considered similar to treatment “dose,” and research on this topic is emerging as an important component of clinical interventions (Gearing et al., 2014). Much research has focused on studying and improving engagement in therapy and subsequent outcomes of treatment (Becker et al., 2015; Lindsey et al., 2013; Nix et al., 2009; Parent et al., 2011). This research has practical application for therapists and educators who wish

to improve treatment engagement and attendance. Based on results of this study, there may not be a direct link between parents' perceptions toward treatment and their attendance; other factors may influence this. Additionally, attendance is not the only indicator of engagement in treatment. Depending on desired outcomes for engagement, different interventions are recommended. In randomized controlled trials focused on improving treatment attendance for children's mental health services, assessment of barriers to treatment was a frequently successful intervention (Becker et al., 2015). This included measurement and discussion of practical obstacles to attending treatment or past negative experiences with treatment. When focusing on improving adherence to treatment, many studied interventions include homework assignment and accessibility promotion (Becker et al., 2015). Accessibility promotion reduces logistical barriers to treatment by providing services in a convenient location, or providing transportation or childcare for families (Becker et al., 2015). Interventions targeting cognitive preparation of treatment participants tended to utilize psychoeducation about services and assessment (Becker et al., 2015).

Limitations of Current Study and Future Directions

Because this study utilized archival data, a few related limitations should be considered. Data for parent perceptions toward treatment were collected at the conclusion of treatment so only parents who attended treatment to completion and responded to the survey are included in analyses. The TAI was completed by parents in session 6. Parents who did not attend session 6 were mailed the TAI to complete and return, but if parents dropped out, these data were not collected. In addition, parent perception data were not collected for parents who withdrew from treatment prematurely. It would be helpful in future studies to assess participants who dropped out of treatment and assess their perceptions of treatment effectiveness. When assessing parent

motivation and relationships with barriers to treatment and attendance, Nock and Photos (2006) assess parent motivation at beginning of treatment and again during the fifth of eight sessions. It may also be beneficial to collect TAI data (or a similar measure of perceptions of treatment effectiveness) at the end of each session and see how these perceptions relate to attendance patterns.

Additionally, it would be helpful to assess other barriers to treatment such as practical barriers and therapeutic relationship (Kazdin et al., 1997). A large component of behavioral parent training programs is building supportive relationships with trainers and other caregiver participants. It would be interesting to investigate how relationships with trainers or relationships with other participants in the program may be linked to treatment engagement or treatment outcomes. Furthermore, it would be interesting to examine trainers' perceptions of therapeutic alliance with participants or their perceptions of participants' barriers to treatment attendance or engagement.

Another potential limitation is that some researchers have described the TAI as measuring "states" of perceptions (temporary) rather than "traits" (enduring; Brestan et al., 1999). This indicates parent participants in the study may have changed their perceptions of treatment effectiveness from the beginning of treatment to the end of treatment. If this is the case, it seems perceptions at the beginning of treatment may be more important to analyze in predicting parent attendance than parent perceptions measured at the end of treatment, as done in this study. Because of the past-tense nature of questions included in the TAI, using this measure at the beginning of treatment may not be appropriate. Furthermore, the name of the Therapy Attitude Inventory may be considered a misnomer; items do not seem to measure parent "attitudes" so much as their perceptions of treatment effectiveness.

Because inclusion criteria for this study necessitated having data for these key variables available, there was a restricted range in attendance for participants included in this sample (min = 4, max = 7, $M = 6.37$, $SD = .78$). Other measures of parent engagement besides attendance are not available for this sample, though prior research has relied on attendance as a measure of this because of its ease, efficiency, and standardization (Gearing et al., 2014; Nix et al., 2009; Nock & Ferriter, 2005). It would benefit future research to consider other measures of engagement and include factors besides attendance, such as adherence and cognitive preparation (Gearing et al., 2014).

There may also be influence of child age on the effectiveness of the ECBI as a measure of children's behavior. The ECBI was designed for use with children ages 2 to 16 years old (Eyberg & Pincus, 1999; Funderburk et al., 2003). In this sample, a small number of participants (8) were between ages 12-24 months. Additionally, some ratings of behavior on the ECBI may not reliably assess children with language delays or disorders due to the nature of items, though other researchers have used it to assess children with speech deficits (Funderburk et al., 2003).

Data gathered from self-report measures can be susceptible to response biases (Furnham, 1986). Participants in this study may be more inclined to think their children's behaviors will improve because they are participating in treatment aimed at reducing problem behaviors or in attempts to answer in a socially desirable way. In addition, children with extreme manifestations of externalizing behavior may experience a natural decline over the course of this study either as a result of regressing to the mean or maturation (Galton, 1886).

Regarding external validity, possible limitations of this study might include a lack of generalizability of this sample to other parents and children. This sample is a convenience sample so effects of sample selection might influence findings compared to if random selection

was used. Data collected about demographic information should at least account for any individual differences within this study that could influence outcome differences. However, this program was also accessible to a wide variety of families of varying income-levels and behavioral severity.

It would also be beneficial to include more measures for variables of study in order to improve convergent validity. Other measures such as behavioral observations for child behaviors would not be feasible; however, given this is a pre-existing data set. These measures are considered to have strong empirical evidence of internal and external validity to other measures, as outlined above.

Conclusions

Early interventions such as behavioral parent training programs have the potential to largely influence childhood development and long-term behavioral health, but barriers to treatment may prevent parent participants from fully engaging in treatment (Dishion et al., 2014; Kazdin et al., 1997; Tremblay, 2006). Research on engagement and attendance in treatment is a growing, and important area for clinicians to better understand because of its connection to treatment dose (Gearing et al., 2014). Parents are susceptible to barriers to treatment such as practical conflicts or stressors, demands of attending treatment, perceptions of poor treatment fit, or poor relationship with therapists (Kazdin et al., 1997). These barriers can be addressed with various, targeted interventions that have been found to be effective in randomized controlled trials, such as assessing barriers to treatment and promoting accessibility (Becker et al., 2015; Lindsey et al., 2013). The link between treatment engagement and treatment outcomes has been supported in research, though inconsistent measurement of engagement in treatment has resulted in mixed findings (Gearing et al., 2014; Lindsey et al., 2013; Nix et al., 2009; Parent et al.,

2011). Future research would benefit from further investigation of factors related to treatment engagement and links to treatment outcomes. Continuing to research measures of engagement that extend beyond attendance and assess parent perceptions of treatment effectiveness and barriers to treatment would also contribute to developing this area of clinical significance.

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APPENDIX

Appendix A: IRB Approval



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC205 • Tampa, FL 33613-4999
(813) 974-5638 • FAX(813)974-0991

May 19, 2016

Natalie Hofmann
Educational and Psychological Studies
Tampa, FL 33612

RE: **Expedited Approval for Initial Review**

IRB#: Pro00025377

Title: Parent Attitudes and Treatment Outcomes for HOT DOCS Behavioral Parent Training Program

Study Approval Period: 5/19/2016 to 5/19/2017

Dear Dr. Hofmann:

On 5/19/2016, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents contained within, including those outlined below.

Approved Item(s):

Protocol Document(s):

[Protocol, Version #1, 5.16.16.docx](#)

Consent/Assent Document(s)*:

Waiver of process granted.

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110. The research proposed in this study is categorized under the following expedited review category:

(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

Your study qualifies for a waiver of the requirements for the informed consent process as outlined in the federal regulations at 45CFR46.116 (d) which states that an IRB may approve a consent procedure which does not include, or which alters, some or all of the elements of informed consent, or waive the requirements to obtain informed consent provided the IRB finds and documents that (1) the research involves no more than minimal risk to the subjects; (2) the waiver or alteration will not adversely affect the rights and welfare of the subjects; (3) the research could not practicably be carried out without the waiver or alteration; and (4) whenever appropriate, the subjects will be provided with additional pertinent information after participation. (Secondary data).

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) calendar days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,



John Schinka, Ph.D., Chairperson
USF Institutional Review Board