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An Investigation of the HOT DOCS Guide for Weekly Early Intervention Sessions: A Multiple Baseline Design

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by

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Dedication

I'd like to dedicate this work to my parents, Cecily McFadden and Casey Holyfield, grandparents Henry and Gwen McFadden, uncles Kendall McFadden and Kelsey McFadden, my siblings, and a host of other family members who have been rooting for me since I began graduate school; I love each and every one of you, this degree is ours! You all are truly unmatched and there are not enough pages or words I could ever write to express the sincere gratitude I have for each of you. This work is also dedicated to my great-grandmother Conyers McFadden and "Grannie" Annie Ruth Matheny. You both would have been so proud of me. Rest in peace.

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Abstract

Many parents of young children across the United States are increasingly impacted by their children's display of early childhood challenging behavior. Common examples of these behaviors include feeding difficulties, tantrums, whining, crying, and noncompliance (Barbarian, 2007; Hemmeter et al., 2014; Spencer & Coe, 2003). Though the relationship between early childhood behavior problems and future outcomes may not be causal, researchers have consistently concluded that if left unaddressed, children who demonstrate early challenging behavior are likely to experience some difficulties in academic achievement, sociability, school readiness, and mental health (American Academy of Pediatrics, 2002; Turney & McLanahan, 2015). Behavioral parent training (BPT) is the primary intervention recommended to address challenging behavior (Maughan et al., 2005). Existing research suggests that caregivers who receive parent training have reported decreases in their children's problem behavior and increases in the competence and ability to meaningfully handle their children's behavior (Gross et al., 1995; Sanders et al., 2008). Yet, although there are several types of parenting programs and evidence to support their utility, very few programs are delivered one-on-one in the caregivers' household. As such, this study utilized a sample of three caregivers in west-central Florida to examine the effectiveness of the HOT DOCS Guide for Weekly Early Intervention Sessions (i.e., HOT DOCS EI) BPT program. Because this intervention program is newly developed, there is currently no evidence to support its effectiveness. Thus, this study utilized a multiple baseline design to assess changes in child behavior and caregiver stress over time to

determine whether or not the program was effective as decreasing challenging behavior and caregiver stress. Caregiver reports of their parenting skills and positive parent child relationships also were also assessed. Finally, information regarding caregivers' overall perceptions of the effectiveness of the program were evaluated. Visual analyses, effect sizes, and descriptive statistics were conducted to answer the research questions. Findings did not demonstrate replicated treatment effects regarding the effectiveness of the HOT DOCS EI program at decreasing child challenging behavior and caregiver stress. However, therapeutic treatment effects were indicated given that childhood challenging behavior and parental stress decreased by the end of the program. Results also indicate that parents were highly satisfied with the HOT DOCS EI program overall. Information obtained from study findings and implementation of the program can be used to assist program developers with refinement and improvement of the program measures, tools, and procedures. Additionally, future research should utilize additional participants and more rigorous research methods in order to provide in-depth and higher quality data regarding treatment effects.

Chapter I: Introduction

Early childhood behavioral problems represent a challenge many parents and caregivers across the United States struggle to understand, manage, and effectively address. Examples of such behaviors include feeding and sleep difficulties, tantrums, whining, crying, and noncompliance (Barbarian, 2007; Hemmeter et al., 2014; Spencer & Coe, 2003). These issues, however, are no longer surprising to clinic practitioners and other professionals given the increasing prevalence rates over the past thirty years, and the fact that childhood behavioral problems have consistently been identified as the most common reason for referral to early childhood mental health services (Gleason, Goldson & Yohman, 2016; Kazdin,1995). Current estimates suggest that nearly 25% of otherwise healthy and typically developing young children have mild to moderate levels of chronic behavior problems (Knapp et al., 2007; Weitzman & Wegner, 2015). The prevalence increases to approximately 35% for typically developing children who come from families of lower income or of minority group membership (Gleason et al., 2016; Gross et al., 1999). Children with developmental delays and other neurodevelopmental concerns (e.g., Autism) are also at greater risk than their typically developing peers to display significant levels of early challenging behavior (Emerson and Einfeld, 2010; Hartley et al., 2008). Additionally, approximately 10% of children five years of age and under experience behavioral concerns that are clinically significant, and approximately 10% of children under the age of one-year score within the significant range for emotional and behavioral issues (Beernink et al., 2007; Egger & Arnold, 2006). If left unaddressed, early childhood behavior problems can

negatively affect healthy child development including social and emotional development, academics, and school readiness (Powell et al., 2006; Weitzman & Wegner, 2015).

Outcomes and Trajectories Associated with Challenging Behavior

The trajectories associated with early childhood behavior problems demonstrate less than ideal outcomes during the school age years, and even into adulthood. Keane and Calkins (2004) found that toddlers who display early aggressive and externalizing behaviors tend to continue to display those behaviors during preschool and kindergarten. Additional reports suggest that preschool aged children who display challenging behaviors are more likely to be expelled from school (Mead & Bouyer-Hargrove, n.d.). The negative effects of problem behaviors on academic outcomes also have been examined. Turney and McLanahan (2015) conducted a longitudinal study following children throughout school. Findings from the study indicated that children who displayed externalizing behavior problems during early childhood tended to demonstrate lower test scores at nine years of age compared to children without early behavioral problems. Additionally, Kremer et al. (2016) also conducted a longitudinal study which examined the association between externalizing behavior and academic achievement in children ages three to 17. Findings indicated that children with early externalizing behavior performed lower on the Letter-Word identification and Passage Comprehension subtests of the Woodcock Johnson-Revised over time. The researchers concluded that behavior and academics are related, and that the relationship can have lasting effects.

Outside of the above school related outcomes, preschoolers with behavioral issues also are more likely to experience problems such as loneliness, risky behavior, unemployment, and criminal convictions (e.g., theft) (Kassing et al., 2019; Olweus, 1991; Reef et al., 2011; Thompson et al., 2011; Tremblay et al., 2004). For example, Reid (1993) reports that early

aggressive behavior is the best predictor of future gang membership and violence. Additionally, Kassing et al. (2019) conducted a study to determine whether or not externalizing behavior during kindergarten and first grade predicted the presence of adult convictions by age 25. The sample consisted of 342 children, and at the end of kindergarten and first grade, parents and teachers completed screeners that provided home and school-based behavior ratings of the children. The screeners utilized in the study were the Teacher Observation of Classroom Adaptation-Revised (TOCA-R) and Child Problem Behavior Scale. Conviction records were obtained though publicly shared information from national databases, and court documentations. Results indicated that early elementary screeners of problem behavior predicted adulthood convictions with predictions being the most accurate when parent and teacher ratings of behavior were combined. Results further indicated that approximately 8% of the children who screened positive for early childhood behavior problems obtained a conviction prior to age 19 (i.e., during adolescence), 17% obtained a conviction after age 18 (i.e., during adulthood), and 20% of the sample of children had at least one conviction during adolescence and at least one during adulthood.

Interventions for Early Childhood Challenging Behavior

In consideration of research illustrating the prevalence rates of early childhood problem behavior and their associated negative outcomes, professionals have developed several interventions and treatments to help address these behaviors. Although in some cases counseling and consultation with parents may be useful, as well as medication to treat particular diagnoses, the extant literature suggests that behavioral parent training (BPT) is the most effective treatment for early childhood behavior problems (Maughan et al., 2005; Mayo Clinic, 2019; Nixon et al., 2003). BPT is most commonly implemented in group formats, but also can be implemented

individually. Although training programs may vary in style, duration, and intensity, a common goal of BPT is to address children's referral concern or behaviors by adjusting parent behavior. As part of these programs, parents are typically taught skills such as providing clear expectations, positive reinforcement, and ignoring which all can be used to help them address their children's behavioral difficulties. It is particularly important to work with parents and caregivers when providing support for challenging behavior given that children with behavior problems and their families often experience distress, and can suffer substantially because of these problems (Gleason et al., 2016).

Outcomes associated with various parent training programs such as the Triple P Parenting Program, Incredible Years, and Parent Child Interaction Therapy (PCIT) have shown positive effects and have strong evidence-based support. Broadly, parents who have been involved in BPT programs have reported improvements in their knowledge of behavioral strategies, positive interactions with their child, and use of positive parenting skills. Parents also have reported decreases in their children's displays of problem behavior and in their own personal stress (Gross et al., 1995; Morpeth et al., 2017; Sanders et al., 2008; Williams, 2007). For example, in one study which examined the Stepping Stones Triple P (SSTP) program with parents of young children with developmental delays, parents reported a significant decrease in both internalizing child behavior problems and total behavior problems post intervention.

Although clinic and community-based group parent training programs are often effective and cost efficient, problems related to attendance and attrition can arise due to caregiver difficulties with scheduling, transportation, and/or lack of childcare. Therefore, despite the above findings featuring positive outcomes, there is a need to consider and empirically evaluate the benefits and potential positive outcomes of offering parent training programs that can be

delivered one-on-one in the household setting. For example, Parent-Child Interaction Therapy (PCIT) is one BPT that has been implemented in the home setting. One study which examined PCIT compared the effectiveness of PCIT when provided in clinics and when adapted for use in a home setting. Result of the study indicated that although implementation in both settings was found effective, caregivers receiving home-based support were less likely to drop out (Fowles et al., 2018). It is necessary to empirically investigate home-based parent training programs given evidence that less than approximately 50% of young children with emotional, behavioral, or relationship disturbances, receive any form of treatment (Horwitz et al., 2003; Lavigne et al., 1998).

Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS) Guide for Weekly Early Intervention Sessions intervention program (HOT DOCS EI) is a newly developed form of BPT that is an extension of the group based HOT DOCS program (Childres & Agazzi, 2019). HOT DOCS utilizes behavioral and ecological perspectives in its theoretical framework while teaching parents to utilize a problem-solving approach to understand and address their children's challenging behaviors. The group-based implementation of HOT DOCS occurs over the course of six weeks and data have shown several positive results including decreases in parent stress and child behavioral problems, and increases in parental knowledge, skill usage and competence (Childres et al., 2010; Williams, 2007). The newly developed HOT DOCS EI which is delivered one-on-one in caregivers' homes is implemented across approximately 13 sessions, and covers the same content as the group based HOT DOCS program. However, HOT DOCS EI has not yet been investigated to determine its effectiveness.

Theoretical Framework

Skinner's (1953) theory of behaviorism represents a foundational and historic understanding of human behavior. This theory suggests that all behavior is observable and functional, and places great emphasis on rewards and punishments. Essentially, the theory of behaviorism suggests that children's behavior can be meaningfully shaped or changed through the manipulation of events that occur before a behavior (antecedents), those that occur after a behavior (consequences), and use of explicit rewards and punishments. However, when children exhibit challenging behaviors that evoke negative responses from their parents, parental responses in turn can continue to provoke children's display of challenging behaviors (Sonuga-Barke et al., 2005). Patterson's Theory of Coercion (1982) maintains that coercive cycles occur given negative parent-child interactions in which caregivers inadvertently reinforce challenging behavior. When coercive styles dominate the family dynamic, children learn a pattern of relating within the family that then carries over into interactions with others outside the family, such as peers and teachers in the school setting. If left unaddressed, child conduct and behavior problems can emerge and then stabilize throughout development (Granic & Patterson, 2006). For this reason, early intervention is necessary to help parents learn strategies that can be used to disrupt coercive behavioral cycles and help them develop or maintain positive relationships with their children (Patterson, 1982).

Additionally, because the theory of behaviorism also highlights the role the environment has in shaping child behavior, it is necessary to view children's problems and difficulties through an ecological framework (Bronfenbrenner, 1979). An ecological perspective provides an opportunity to look at the "whole child" by viewing the child in all their roles (e.g., older sibling) and in all areas of the environment, while also considering the complex interactions between the

child and their environments. Thus, from an ecological perspective, manipulation of a child's environment, including the behavior of parents and caretakers, can produce direct effects on the child's behavior (Bronfenbrenner, 1979).

Purpose of Study and Research Questions

Currently, there are several group-based parent training programs that are effective at decreasing problem behavior in young children. However, extensive research examining BPT in the household setting is limited. Furthermore, there is currently no research conducted that provides evidence of the effectiveness of the HOT DOCS EI. Therefore, the primary purpose of this study was to provide initial evidence regarding the effectiveness of the HOT DOCS EI. The study evaluated decreases in caregivers' reports of child behavior problems and personal stress over time. The study also examined caregiver reported changes in their parenting skills and positive parent child relationships. Finally, information regarding parents' overall perceptions of program was assessed. Specific research questions investigated included:

1. What is the effectiveness of the HOT DOCS EI at decreasing the following:
    a. Caregiver reports of child problem behavior as measured by *T* scores on the ECBI.
    b. Caregiver perceived stress associated with their ability to handle their child's behavior problems as measured by total score on the HOT DOCS Stress Measure.
2. To what extent do caregivers perceive the HOT DOCS EI as effective for the following:
    a. Increasing their parenting skills as measured by items 1, 2, and 4 on the Therapy Attitude Inventory.
    b. Increasing their positive relationship with their child as measured by items 3 and 6 on the Therapy Attitude Inventory.

c. Supporting relationships and family related concerns within the household as measured by item 8 on the Therapy Attitude Inventory.

3. What are caregivers' overall perceptions of the effectiveness of the HOT DOCS EI training program as measured by total score on the Therapy Attitude Inventory?

Significance of Study

Given that challenging behavior in young children is an issue impacting approximately 25% of young children and their families, and the fact that some parents may not have the ability to attend community-based group parent training programs due to various factors (e.g., transportation, child care), valid information regarding the effectiveness of home-based one-on-one parent training interventions is necessary. Thus, because this study was the first to empirically examine the new program, results of this study can be used to provide initial support and insight regarding implementation of the HOT DOCS EI. Additionally, findings from this study may be used to provide practitioners and program developers with a better understanding of the utility of HOT DOCS EI and the associated outcomes regarding child behavior, parental stress, and caregiver skills. Results shared with the program developers can help facilitate the process of modifying and/or improving the processes and procedures of the HOT DOCS EI. Essentially, because early intervention provides the best opportunity to alter the negative short-term and long-term trajectories associated with early childhood behavior problems, it is critical for parents and caregivers to have access to programs that have been found efficacious and evidence-based.

Definition of Key Terms

Behavioral Parent Training (BPT). Behavioral parent training refers to an intervention technique in which professionals provide parents and caregivers with comprehensive training related to specific behavioral principles, strategies, and parenting skills to help them manage their children's challenging behavior. BPT programs typically incorporate four common elements: 1) operant models of behavior, 2) detailed information on appropriate and effective parenting strategies (e.g., labeled praise, ignoring, etc.), 3) control of antecedents instead of punitive consequences, and 4) generalization across settings (e.g., home, school, community) (Center for Disease Control & Prevention, 2019; Fienfield & Baker, 2004).

Caregivers. For the purposes of this study, caregivers is an inclusive term used throughout that refers to all parents (i.e., mothers) who participate in the HOT DOCS EI program. The terms parents and caregivers are sometimes used interchangeably.

Challenging/problem behavior. Challenging and/or problem behavior refers to a pattern of repeated and consistent behaviors that interfere with the life of the child and those around them (e.g., parents, peers). Challenging behavior is therefore defined on the basis of the effects it produces (Dunst, Trivett, & Cutspec, 2002). For the purposes of this study, challenging behavior and problem behavior are used interchangeably.

Early Childhood. Early Childhood refers to the range of years between birth to age 8, and represents a time for extensive growth, development and learning (National Association for the Education of Young Children, 2009).

Parenting Stress. Parenting stress is the "aversive psychological and physiological reactions arising from attempts to adapt to the demands of parenthood" (Deater-Deckard, 2004, p.6) Parenting stress occurs when the demands of parenthood exceed the perception of available

resources needed to meet those demands or cope with the demands that arise from the parenting role.

Preventions. Preventions are strategies that act to preclude challenging behavior by toning down triggers (Agazzi, Childres & Armstrong, 2008).

Trainers. Trainers is used to refer to professionals who provide leadership and teaching of content for HOT DOCS parent training classes.

Young children. For the purposes of this study, the term young children refers to children between birth to 5 years of age.

Chapter II: Literature Review

This section gives a broad overview of the literature relevant to this topic. The review begins with an introduction to challenging behaviors in young children including prevalence rates of young children with challenging behavior problems and student trajectories associated with early behavioral problems. This section then addresses the role of caregivers with regard to early childhood behavioral problems and provides an overview of the most common treatment options for children with challenging behavior, and outcomes associated with parent training programs. The remaining sections of this chapter provide information on the HOT DOCS parent training program including the purpose of the program and relevant research. Critical assessments of the methods used to study parent training programs also are included throughout the literature review. This section concludes with a brief summary of the extant research and the gaps in the literature that need further investigation.

Prevalence of Young Children with Challenging Behavior

Within the United States, challenging behavior problems has been an increased concern amongst parents of young children with Center for Disease Control and Prevention (CDC, 2018) estimates suggesting that one out of seven children ages two to eight years has a diagnosable mental, behavioral, or developmental disorder. To date, several studies consistently demonstrate that challenging behaviors in young children represent the most common reason for referral to early childhood mental health services (Jolivette et al., 2008; Kazdin,1995; Keenan & Wakschlag, 2002;). Essentially, broad estimates suggest that approximately 25% of otherwise healthy and typically developing young children (e.g., ages 18 month to 7) have mild to

moderate levels of chronic behavior problems (Gross et al., 1999; Knapp et al., 2007). Research also reports that preschool aged children with challenging behaviors are three times more likely to be expelled from school, and approximately 10% of students enter kindergarten with problematic behaviors (Mead & Bouyer-Hargrove, n.d.; West et al., 2000). Thus, the need for early intervention for these children is of paramount importance.

Research examining prevalence rates of challenging behavior reports that the rates vary given students' mental health and socioeconomic status (SES). For example, Lavigne et al. (1996) found that over 20% of young children met criteria for DSM diagnoses with just under 10% of those students being classified as having a severe disorder. Additionally, with regard to SES, research has shown that in comparison to students in the general population, children who live in poverty may be even more vulnerable to challenging behaviors and may display these behaviors at higher rates (Barbarian, 2007; Gross et al., 2003; Holtz et al., 2015; Qi & Kaiser, 2003).

Qi and Kaiser (2003) conducted a systematic review of 30 research reports conducted between 1991 and 2002 that examined problem behaviors of young children from low income families. Essentially, the researchers aimed to determine prevalence rates and identify risk factors for children's problem behaviors. Results of the study found that children who were of lower SES demonstrated more behavior problems than students who were not of lower SES. Thus, whereas older research has illustrated behavior problems in 3-6% of children in the general population (Achenbach & Edelbrock, 1981), Qi and Kaiers's (2003) findings are consistent with several studies that have illustrated behavior challenges in 30% of children living in poverty (Feil et al., 2000; Gross et al., 1999). Barbarian (2007) utilized the Attention, Behavior, Language, Emotions (ABLE) screening tool to examine prevalence and severity of behavioral concerns.

The sample consisted of 415 preschool students across six states within the U.S. Parents reported severe problems in approximately 20% of young children. Specifically, difficulty with attention, obedience and aggressive behaviors were the most common concerns reported by parents of preschool aged children. Comorbidity also was examined and revealed that children that had at least one behavior problem (e.g., noncompliance) were also likely to have another problem (e.g., bad temper). Further analyses of all parents of children who reported at least one severe behavior concern indicated that 31% of those parents actually reported two concerns and 15% reported three or more concerns.

More recently, Holtz, et al. (2015) examined the incidence of challenging behaviors in toddlers and preschool children from families who live in poverty. A total of 357 young children aged 1-5 years were included in the study with a relatively equal distribution between boys and girls. The majority of the sample (i.e., 90%) was obtained from students receiving services at an urban health clinic that primarily served low income families. The remaining participants were obtained from early childhood centers (i.e., 8%) and other outside agencies (i.e., 2%). Approximately 75% of children were from ethnic minority groups. Parents of the children completed a demographic questionnaire and the Early Childhood Behavior Screen (ECBS). Researchers calculated means, standard deviations, and chi-square analyses to identify associations across various domains (e.g., race, gender, etc.). Results indicated that more than 60% of parents reported displays of child challenging behaviors such as tantrums, hitting, and bothering others, but researchers did not report whether these were clinically significant. Results also suggested that boys were more likely to exhibit challenging behavior than girls.

Children with developmental delays are also at a greater risk for challenging behavior. For example, research conducted by Baker et al., (2002) found that 26% of children who were

developmentally delayed were reported to have challenging behavior in comparison to eight percent of typically developing children. Children with developmental delays were also 3 times more likely to be in the clinical range for challenging behaviors as early as age 3 years of age. At follow up one year later, children who were delayed were still found to display significantly more challenging behavior at 4 years of age than typically developing children (Baker et al., 2003). More recent research conducted by Emerson and Einfeld (2010) demonstrates similar findings with children ages two and three with developmental delays demonstrating significantly higher emotional and behavioral challenges than their peers. Parents of toddlers who have Autism are also more likely to report increased challenging behavior problems with research suggesting that approximately 30% of children with ASD experience clinically significant externalizing behavior (Cibralic et al., 2021; Hartley et al., 2008).

Examples of challenging behavior. Challenging behavior has been frequently understood in terms of its effects on others. Although parental thoughts about children's challenging behaviors can differ by culture and child development overall, there are several behaviors that have been consistently considered problematic among parents and caregivers of infants, toddlers, and preschool aged children (Division for Early Childhood, 1999; Dunlap et al., 2006).

Although not exhaustive or in any particular order, examples of persistently challenging behaviors mentioned throughout the literature include (1) *physical aggression* such as punching, hitting, pushing and/or biting (2) *tantrums* including kicking, screaming, stomping feet or self-injury (e.g., head banging), (3) *noncompliance* such as clear verbal or physical refusal to comply with given directives, (4) *destruction* including destruction of toys or property either belonging to the child or others, (5) *difficulty with sharing* including forcefully snatching or taking toys

away from others, (6) *verbal aggression* including threats, yelling unkind words (e.g., curse words), (7) *persistent and prolonged crying* that is ongoing and disruptive to events or others, (8) *inappropriate use of materials* such as throwing objects, jumping off of objects, (9) *inappropriate touching* which can be hurtful to self or others, (10) *attachment* including problems with separation from parents, (11) *feeding* difficulties such as refusal to eat certain foods, and (12*) sleeping* including problems going to sleep or remaining sleep (Barbarian, 2007; Hemmeter et al., 2014; Powell et al., 2006; Shaw et al., 2000; Smith & Fox, 2003; Yousefi, 2016). Non-examples of challenging behavior include yelling or shouting when appropriate (e.g., while playing a game outside); kicking or hitting a ball or toy in the context of a game; and refraining to complete a task due to lack of prerequisite knowledge (Roskam, 2019).

Research conducted by Spencer and Coe (2003) illustrates parental reports of several challenging behaviors mentioned above. As part of this study, the researchers followed a cohort of children in order to examine parent reports of challenging behavior at 8 months, 18 months, and 3 years old. Data were collected through use of the Warwick Child Health and Morbidity Profile (Spencer & Coe, 1996). Parental reports from a total of 775 young children were analyzed using descriptive statistics and logistic regressions. Results indicated that across the time points, 168 children were reported to have behavioral challenges during at least one of the three time points, 46 on two of the three time points, and 7 at all three time points. Additionally, sleep problems and tantrums/aggression/defiance were reported by parents as the most dominant problems across all three ages. Although sleep problems were the most problematic at 8 months, tantrums/defiance/aggression became prevalent at 18 months and beyond.

Trajectories and Outcomes Associated with Early Challenging Behavior

Early childhood can be a very stressful time particularly for those parents, caregivers and teachers of young children who have challenging or disruptive behaviors and/or developmental difficulties. Although several challenging behaviors (e.g., short tantrums) of young children are considered developmentally appropriate and may resolve without outside help from clinicians, in some cases if left unaddressed, these behaviors can lead to unfortunate outcomes and worse behavior in the future (Caspi et al., 2003; Hawkins-Walsh, 2001). Thus, given the increased prevalence of challenging behaviors in young children, the potential impact of these behaviors on future outcomes should be cause for concern.

Academic outcomes. Turney and McLanahan (2015) conducted a study in which they examined whether or not the age at which young children display problem behaviors is associated with cognitive development at age 9. In this study, researchers considered externalizing, internalizing, and attention difficulties under the umbrella term of problem behaviors. Data were taken from the Fragile Families and Child Wellbeing study of students born between 1998 and 2000 (Reichman et al., 2001). Parents were interviewed via telephone when their children were ages 1, 3, 5, and 9 years. Additionally, a small subset of parents also participated in a survey delivered in the home setting when their children were 3, 5, and 9. During the home visits the children also were administered the Woodcock Johnson III (WJ-III) passage comprehension and applied problems subtests. The Child Behavior Checklist (CBCL) was used to measure problem behaviors. Turney and McLanahan (2015) utilized a subsample of 2,302 observations from the data that were collected. Statistical analyses included t-tests and ordinary least squares regression models. Results demonstrated that children with internalizing, externalizing, and attention problems at ages 3 and 5 years tended to demonstrate lower passage

comprehension and applied problems test scores at age 9 than children who did not show problem behavior during early childhood. Externalizing and attention problems were found to lead to the most negative academic outcomes. Thus, researchers suggested that both the presence and persistence of problem behaviors can have adverse effects on young children.

Brennan et al. (2012) also examined academic related outcomes by conducting a longitudinal study of parental ratings of challenging behavior (i.e., aggression, hyperactivity-impulsiveness, inattention, and oppositionality) at toddler-age and at school age. The sample consisted of 556 children and families recruited from the Women's, Infants and Children Nutrition Program (WIC) between 2002 and 2003. Several measures were utilized in the study including the Fluharty-2, CBCL, Eyberg Child Behavior Inventory (ECBI), and WJ-III Letter Word Identification, Math Calculations, and Spelling subtests. Data were collected every year from ages 2-5 and then again at age 7.5. Results of the study illustrated the greatest association between aggressive behaviors at ages 2-3 years and academic achievement at age 7.5. Specifically, aggression was found to be a significant predictor of letter word identification and spelling difficulties during school age. Researchers of the study concluded that aggression during early childhood may be more indicative of an emerging behavioral style that has the potential for more deleterious effects. Results of this research also found hyperactivity to be only moderately related to academic achievement at age 7.5.

Social/emotional & behavioral outcomes. In addition to academic difficulties, young children with problem behaviors also are likely to experience long-term social challenges including peer avoidance, difficulty connecting with others including parents, and difficulty regulating emotions (Calkins & Dedmon, 2000; Hill et al., 2006). Early behavioral problems can even have implications once children become adults. For example, research has shown that

preschoolers with early challenging behavior are more likely to experience loneliness, violence, risky behavior, divorce, and unemployment in adulthood (Lipsey & Derzon, 1998; Olweus, 1991; Thompson et al., 2011; Tremblay et al., 2004; Reef et al., 2011; Walker et al., 1995).

Foundational longitudinal research conducted by Campbell and Ewing (1990) looked into the stability of problem behaviors that were identified during preschool. The sample consisted of 52 parents of three-year old children. Data were collected at ages 3, 6 and 9 years using a variety of methods including interviews, rating scales, and observations. The researchers aimed to compare 29 students who were identified as being "hard to manage" and to 22 students in a control group who were considered developmentally appropriate. Findings from the study illustrated that in comparison to children without problem behaviors, children with displays of clinically significant problem behavior at age 3 were more likely to continue to exhibit those behaviors at ages 6 and 9. Additional findings from this study indicated that over 65% of children with clinically significant problem behaviors at age 6 met criteria for externalizing disorders three years later (i.e., age 9) according to Diagnostic and Statistical Manual-3rd Edition (DSM-III) criteria (American Psychiatric Association, 1987).

Keane and Calkins (2004) conducted a study to examine predictors of peer preference amongst toddlers and preschoolers. A longitudinal design was used for the study in which children were assessed at age 2 years, during preschool, and during kindergarten via parent, teacher, and peer report. Various measures were utilized throughout the duration of the study including the CBLC, Behavior Assessment System for Children (BASC) Preschool version, Emotion Regulation Checklist, Preschool Play Behavior Scale (PPBS), Social Skills Rating System (SSRS), and peer interviews. A total of 105 of the original 154 families remained in the study across all three years of data collection. Results of the study indicated several findings

including differences across gender and age. For young boys, parental reports of challenging behavior at age 2 was not a significant predictor of teacher reports of problem behaviors at age 4. However, for girls, parental report of problem behavior at age 2 was related to teacher reports of problem behavior at age 4. Parent report of problem behavior also predicted classroom social behaviors amongst both boys and girls. Additional findings from the study indicated that teacher reports of externalizing behavior and poor social skills amongst children at age 4 predicted peer reports of "aggressive", "bossy", "sneaky", and "wild" behaviors. Essentially, the researchers concluded that toddlers who display aggressive or other externalizing behaviors at home tend to continue to display these behaviors while in the preschool and kindergarten settings with both peers and teachers able to recognize the problematic behaviors (Keane & Calkins (2004).

More recent longitudinal research by Beyer et al. (2012) utilized a sample of 814 children to examine the whether there were changes or continuity of emotional and behavioral problems in young children. Participants were assessed during preschool and again while in grade 4 of primary school. Given that the research was conducted in Germany, parents and caregivers completed the German version of the CBLC. Two-factor repeated measures ANOVAs and Chi-Squares were used to analyze the data. Findings from the study indicated continuity of problems given that children who experienced emotional or behavioral issues during preschool were found significantly more likely to have mental health problems at the four year follow up. Findings also indicated a slight shift from externalizing problems at time point 1 to more internalizing problems at time point 2 (i.e., grade 4). Additionally, in comparison to time point 1, higher scores were reported in the Attention Deficit Problems and Social Problems domains at follow up. Results of the study, however, should be interpreted with caution given that the

participants were from Germany, and the age of preschool in Germany is slightly higher (i.e., 5/6 years) than what is typically considered preschool age within the U.S.

Olson et al. (2017) aimed to identify trajectories of childhood externalizing behavior in children ages 3-10 years. The sample consisted of 218 three-year-old children who were assessed at initial baseline (i.e., age 3), in kindergarten, and again at age 10. Participants were recruited through either individual referral from teachers and pediatricians, or by ads placed in local and regional newspapers and childcare centers across the United States. Measures and assessment procedures included interviews, parenting rating scales such as the Parenting Dimensions Inventory (PDI), and Harshness of Discipline Scale and child rating scales such as the CBCL, Children's Behavior Questionnaire, IQ tests and series of false-belief and prediction tasks. Descriptive statistics logistic regressions and structural equation modeling procedures were used to analyze the data. Results of this study illustrated an overall decline in aggressive and disruptive behaviors across childhood development among children with elevated, but normative displays of problem behaviors during early childhood. However, low effortful control, which refers to children's ability to inhibit a dominant response (e.g., taking a toy from a classmate or friend) and utilize a subdominant response (e.g., request a turn to share or play with the toy), at age 3 was associated with consistent patterns of externalizing problems over time. Thus, although it is sometimes common for young children to display aggressive or disruptive behaviors, the researchers concluded that children who learn to regulate their feelings of control tend to demonstrate decreases in behavior across time, whereas children who have increased difficulty with effortful control tend to demonstrate behaviors that worsen across school-age years.

Role of Caregiver Parenting and Early Childhood Challenging Behavior

Early childhood also represents a critical time in which young children begin to learn the difference between which behaviors are acceptable and which behaviors unacceptable. Research examining the etiology of challenging behaviors in young children have found parenting style and parent-child relationships to be major factors that contribute to children's display of challenging behavior (Bradley & Corwyn, 2002; Flouri& Midouhas, 2017; Gershoff, 2002; Jolivette et al., 2008; Magee & Roy, 2008; Pettit et al., 1993). For example, Magee and Roy (2008) found that young children were approximately 40% more likely to display challenging behaviors upon entering school if they had a mother with poor parenting ability. Furthermore, in addition to parental harsh discipline and negative parent child interaction styles, other factors such as parental stress, parental relationships with others (e.g., spouse) and competency in regard to parents' thoughts about their ability to effectively manage their children's behavior also influence childhood problem behaviors (Jones et al., 2017). Research has shown that parents who lack good parenting skills elicit negativity from children which in turn causes parents to develop more negative feelings and attitudes towards their children (Shaw et al., 1994; Smith et al., 2014). Thus, given the aforementioned etiology, challenging behavior in early childhood is often unintentionally exacerbated or maintained by negative or inconsistent parenting practices that reinforce the problem behavior (Patterson, 1982; Schulz et al., 2018).

Parenting practices. The parenting practices of adults who have children with challenging or problem behaviors has been shown to have varying effects on child behavior. Whereas positive parenting practices such as warmth and clear directives have been shown to help alleviate behavioral challenges, there is much research demonstrating that poor parenting practices (e.g., yelling, threats, etc.) create weaker relationships and increased child behavior

problems (Hebbler et al., 2001; Nicholson et al., 2005; Stormshak et al., 2000). Research conducted by Nicholson et al. (2005) utilized a sample of 60 parents of young children ages 2-5 years to examine the relationship between parenting behaviors and displays of early childhood externalizing behaviors. Half of the participants included in the study were recruited through teacher referral of students with externalizing behaviors. The remaining 30 participants did not have children with externalizing problems and were included in the study to generate comparisons between groups. The majority of mothers included in the study identified as White, and the majority of the children with behavior problems came from families of lower socioeconomic status. Participants in the study completed the Parent Behavior Checklist (PBC), Child Behavior Scale (CBS), and ECBI. Multiple analyses of covariance were used to analyze the data. Results of the study indicated a difference between the way parents of children with externalizing behaviors acted toward their children in comparison to the parental behaviors of parents who did not have children with externalizing behaviors. For example, parents of children with behavioral problems reported using harsher disciplinary practices such as verbal and corporal punishment than parents in the control group. Parents who used poor practices (e.g., threats, yelling at children, etc.) also reported increased behavioral problems in the home setting. However, despite the above differences, parents in the control group and parents of children with challenging behaviors did not differ with regard to their use of nurturing practices or developmentally appropriate expectations. Overall, findings from this study provides insight regarding differences in parenting practices among parents of children with both typical and challenging behaviors. However, results of the study should be interpreted with caution given the lack of diversity in the sample and lack or direct observations of behavior.

Kerr et al. (2004) examined the relationship between parental discipline and early childhood externalizing behavior problems. Participants included 238 children who were approximately 3 ½ years old and their parents. Families across the United States were recruited through a variety of methods including local and regional preschool centers, pediatrician referrals, and newspaper ads. Just over 20% of children included in the study scored in the clinical range for externalizing behaviors according to results from the CBCL. Additionally, 189 preschool teachers agreed to contribute to the study by completing ratings of the children's behavior. The majority of the participants identified as white with 5% identifying as African American and 8% identifying as biracial. Parents were interviewed individually in the home setting and also competed a packet of questionnaires and rating scales including the CBCL, Moral Vigilance/Regulation scale, the My Child questionnaire, Harshness of Discipline Scale, and Parenting Dimensions Inventory. Participating teachers completed the Caregiver Teacher Report Form (CTRF/2-5), and the children were administered a series of self-regulatory and cognitive assessments. Findings from the study indicated that parents who frequently used corporal punishment as their disciplinary strategy along with less warmth were more likely to have children with high rates of externalizing behaviors and poor regulation skills. Although this finding was only significant for boys, it provides additional evidence regarding the possible negative effects of discipline practices.

Mendez et al. (2016) examined the predictive effects of corporal punishment at age two and externalizing behavior of young children at age three. Participants included 218 couples and their first born child. Children were rated by their parents at time point 1 when the children were age 2, and again at time point 2 which occurred at age 3 (n=186 children at time point 2). Participating parents were visited in their home by a trained interviewer. During the home visit,

parents completed questionnaires and participated in family interaction tasks with their first born child. The researchers used the CBCL to assess child externalizing behavior across both time points, and the use of corporal punishment was assessed by a single 1= never to 5=always Likert-scale question which asked parents how often they slapped or spanked their child when he/she did something wrong. Parenting practices were measured through observations conducted during the family interaction puzzle completion task. Observers coded the quality of the interaction using the Iowa Family Interaction Scale. Multiple regression analyses were used to analyze the data. Findings from the study indicated that the majority of parents included in the study reported spanking or slapping their child in response to the child doing something wrong at age two. Results further suggested that children who experienced spanking or slapping at age two were more likely to show signs of aggression and inattention at ages two and three. Additional findings from the study indicated that child externalizing behavior tended to decrease when mothers engaged in high levels of harsh parenting (e.g., hostility, antisocial behavior, anger, coerciveness etc.) and corporal punishment. Fathers' use of spanking at age 2 alongside mothers' use of harsh parenting was found to increase children's displays of externalizing behavior at age 3. However, findings further indicated that mothers' use of positive parenting practices (e.g., responsiveness, clear directives) weakened the relationship between fathers' use of corporal punishment and children's displays of externalizing behavior after receiving corporal punishment. Thus, the researchers concluded that fathers' use of corporal punishment was found to serve as a primary contributor to child behavior problems which either increase with mothers' use of harsh parenting practices or decrease with mothers' use of positive parenting practices.

Stress and relationships. In addition to parenting practices, parental stress also may impact children's behavior, and child behavior problems may affect parents' stress, relationships,

and attitudes towards one another. Schulz et al. (2018) utilized an experimental design to investigate the relationship between challenging behavior and parental stress and self-efficacy. Specifically, the researchers were interested in perceived stress and arousal in response to situations in which parents were faced with challenging parenting situations, and parents' use of direct commands and positive affect following stress in response to challenging behavior. Participants were obtained through a database from the University of Amsterdam and consisted of 110 parents and their toddlers. The majority of the children were two years old, with the average age being 30 months. Additionally, the majority of the parents included in the study were mothers who lived with a partner and spoke Dutch (~81%) or English (~7%) to their children. Prior to attending a laboratory visit, participants completed a survey which assessed their stress and self-efficacy. Participants were then randomly assigned to either the challenging (n = 56) or control conditions (n = 54). The experiment included four unique tasks that required participants in the challenging group to engage in free play, remove toys, clean up, and recover. After removing toys parents were required to complete an extensive questionnaire that would require more time to complete than was allotted. In the control condition, participants did not remove toys, rather they engaged in free play until clean up time occurred; all other tasks were the same. To assess self-efficacy, the researchers utilized a 6-item questionnaire developed by the project to assess parental self-efficacy (e.g., "I managed the task well"), and the Parenting Sense of Competence (PSOC). Parental stress was measured through self-report and physiological arousal using a brief questionnaire developed by the project including items such as "I felt stressed", skin conductance levels (SLC), and the Depression Anxiety Stress Scale (DASS). The Dyadic Parent–Child Interaction Coding System (DPICS) was used to assess use of direct or indirect commands and positive affect. Several statistical analyses including

correlations and ANOVAs were used to analyze the data. Results of the study indicated that in comparison to parents in the control condition, parents in the challenging condition reported more stress, less self-efficacy, and more physiological arousal. Additionally, parental stress and self-efficacy following challenging behavior was not found to significantly predict parents' use of direct commands or their displays of positive affect. Nevertheless, the findings from this study provided some evidence regarding how children's disruptive behavior might influence parents' sense of self-efficacy and feelings of stress. Researchers suggested that challenging situations that elicit problem behavior in children may cause parents to feel stressed and unequipped due to prior experiences of failure when trying to address the behavior problems.

Neece et al. (2012) empirically investigated the relationship between parenting stress and behavior problems over the course of 6 years. Participants included a total of 327 families who were recruited from a prior longitudinal study. Data were collected across early childhood (i.e., 3 years old) to middle childhood (i.e., 9 years old). Within this study, children included were either typically developing or developmentally delayed. Measures utilized in the study included the Family Impact Questionnaire (FIQ), Stanford-Binet IV, and CBCL. Throughout the duration of the study, participating families attended university-based research centers in either southern California or central Pennsylvania to complete assessments that were conducted when their children were ages 3, 5, and 9 years. Home visits were conducted at ages 3,4,6,7, and 8 years. Parents were asked to complete the stress questionnaire prior to either the Center or home visits, whereas the behavioral assessment was completed in vivo (i.e., during the home or center visit). The Stanford-Binet was administered to children at the research center once they turned 5 years of age. Using hierarchical linear modeling, results of this study indicated evidence of a transactional relationship between parenting stress and child behavior. Specifically, the

researchers found that although parenting stress can serve as either an antecedent or consequence of child behavior difficulties, child behavior difficulties can likewise serve as either an antecedent or consequence of parenting stress. The above findings were consistent regardless of whether or not the parent had a child who was typically developing or a child who was developmentally delayed. Additional findings indicated that child behavior problems tended to decrease with age with the most noticeable decrease in behavior being demonstrated between ages 5 and 6. Results of this study also indicated that parent-reported stress of typically developing children tended to decrease across time whereas the stress of parents of developmentally delayed children did not significantly decrease across time. The researchers suggested that although the problem behavior of children with developmental delays decreased, parents of these children could be faced with unique or increased demands and situations that might maintain their feelings of stress. Overall, the results of this study found that parenting stress and behavior problems covary despite unclear insight regarding the direction of the effects.

A similar study conducted by Cherry et al. (2019) examined bidirectional relationships between parenting stress and childhood behavior problems. Additionally, the researchers aimed to determine whether or not familial conflict and parental support could serve as potential mediators. Participants of this study included 835 parent-child Dyads of lower income households. Data were collected across three time points (i.e., age 1, 2, and 3 years of children) through interviews and questionnaires administered to caregivers via telephone. Data regarding parental support and neighborhood environment were collected during in-home observations. Measures included in the study were the Parenting Stress Index- Short Form (PSI-SF), Parent-Child Interaction Rating Scale, Family Environment Scale (FES), Brief Infant-Toddler Social and Emotional Assessment (BITSEA), and the external environment subscale of the Home

Observation for Measurement of the Environment (HOME). Structural equation modeling procedures were used to analyze the data. Results of the study indicated that parental stress was related to lower supportiveness at age 2 which was then related to increased child behavior problems and family conflict at age 3. However, parental supportiveness also was found to serve as a potential protective factor against negative parent-child interactions. Additional findings from the study indicated that parenting stress and child behavior problems have a bidirectional relationship that is relatively stable across time. Thus, this finding illustrates that without early intervention, negative relationships between parents and children may become more entrenched.

In consideration of the impact children's behavior can have on parental relationships, Zemp et al. (2016) conducted a randomized control trial study to determine the effects of improved child behavior on parent relationship quality one year following implementation of the Triple P (Positive Parenting Program) intervention. Data were taken from a larger study of the Triple P program. The current study randomized 50 couples to the control group and 50 couples to the intervention group. Couples included in the study had children who were between the ages of two and 12 years old. In order to be included in the study, parents had to be in a committed relationship and cohabitating with their partner for at least one year. German versions of the Dyadic Adjustment Scale, Parenting Scale, and ECBI were used to measure relationship quality, parenting, and problem behavior, respectively. Results from this study indicated differences between mothers and father. Specifically, mothers' reports of improved child behavior positively predicted their relationship quality one year following intervention, whereas fathers' reports of improved parenting skills positively predicted relationship quality one year following the intervention. These findings were not apparent in the control group.

Goldberg and Carlson (2014) considered a different angle of effects by examining how supportiveness in couples' relationships relates to challenging behavior throughout early childhood. Researchers used longitudinal archival data from the Fragile Families and Child Wellbeing Study. Data from the study were collected 48 hours after the birth of the target child and again at ages 1, 3, 5, and 9 years. Problem behavior was assessed though use of the CBCL, and couple supportiveness was measured though five survey items including how often their partner "is fair and willing to compromise" and "express love and affection". A total of 773 families were included in the current study. Latent growth curve models were used to analyze the data. Results of the study showed evidence of a significant relationship between couples' relationship quality and the level of children's behavioral challenges. Specifically, couples who were involved in supportive relationships tended to have children who displayed fewer behavior problems. Additional findings indicated that parental supportiveness was predictive of children's behavior between ages 3 and 5, whereas children's behavior was predictive of parents' subsequent supportiveness between ages 5 and 9. Researchers suggest that all children benefit from parents' ability to show love, care, and support towards one another.

Intervention Options for Children with Challenging Behavior

Typically, medication is not used to treat young children who display challenging or problematic behavior given that it can be difficult to determine normative behaviors from those that are atypical, and some children grow out of their challenging behaviors. Thus, medication is often not prescribed unless children have some other concern (e.g., ADHD) that might warrant pharmacological treatment. Therefore, the most common and effective treatment used to support children with challenging behavior and their families as evidenced throughout the literature is BPT (Kazdin,1995; Knitzer, 2007).

Behavioral parent training. Parent training is a well-established form of intervention support in which professionals teach parents and caregivers basic behavioral principles and techniques that can be used with their children to help alleviate problem behaviors (Mayo Clinic, 2019; Tiano & McNeil, 2005). BPT can be implemented in groups, individually to parents, or in parent-child Dyads. Parent training has been found effective at reducing coercive parenting styles and problem behavior in children, while increasing parent-child relationships. Parent training has been shown to be most effective for children ages 3-10 (Armstrong & Hornbeck, 2005; Maughan et al., 2005; Nixon et al., 2003; Webster-Stratton & Taylor, 2001). In a foundational study of parent training efficacy conducted by Gross et al. (1995), parents of 2-year-old children who participated in a 10-week parent-training program reported significant increases in self efficacy, decreases in maternal stress, and improved quality of overall mother-child interactions and relationships.

Although there are several types of behavioral parent programs, the majority of those that are empirically supported share the following common skill components: a) praise and positive reinforcement, b) consistent consequences for inappropriate or unacceptable behavior, c) use of ignoring, and d) problem-solving (Arky, 2019). Additional common characteristics of parent training program service delivery models include use of a) a specific curriculum or manual, b) modeling, c) homework, d) rehearsal, role play, or practice, e) separate child instruction and f) ancillary services (Center for Disease Control and Prevention, 2009).

Treatment outcomes of empirically supported programs. Parent training programs have been shown have high consumer satisfaction and often share similar goals and theories (MTA Cooperative Group, 1999). Over the past two decades, various researchers have examined the effectiveness of several parent training programs including Parent-Child Interaction Therapy

(Eyberg, 1998), The Incredible Years (Webster-Stratton, 2001), and The Triple P Positive Parenting Program (Sanders, 1999). Research has also examined the effectiveness of supports such as the Family Check-Up model. For example, in an examination of the Family Check-up model implemented in home with families of children ages 2 and 3, results demonstrated parent reported decreases in challenging behavior problems and improvements in positive behavior when compared with a control group (Dishon et al., 2008). As part of this model, parents participated in home visits which consisted of assessment (baseline), initial interview, feedback, and tentative follow-up sessions. Results from the study suggest that even a brief, individually tailored intervention that typically involves limited opportunity for effective skills training can help facilitate positive behavior change.

Parent-Child Interaction Therapy (PCIT) is a program used with parents and their young children who display behavior concerns. Specifically, PCIT was designed to decrease problem behaviors in children identified as having Oppositional Defiant Disorder (ODD) and/or Conduct Disorder (CD). However, it is important to note that PCIT can be used with children who do not have official diagnoses, but display problematic and noncompliant behaviors. PCIT involves two phases, child directed interaction (CDI)and parent directed interaction (PDI). During the first phase of treatment (CDI), parents learn the PRIDE (i.e., Praise, Reflect, Imitate, Describe & Enthusiasm) skills which are used to help them strengthen their relationship with their child. Once phase 1 is mastered, parents move to phase 2, PDI in which they learn to how to give effective commands to their child and to implement a consistent time out procedure (Eyberg, 1988).

In one examination of PCIT, Bjorseth and Wichstrom (2016) conducted a randomized controlled study to investigate the effectiveness of PCIT at decreasing early childhood problem

behavior. The researchers compared PCIT to treatment as usual (TAU) and randomly assigned 81 participating families from Norway to one of the two groups. Children included in the study were between the ages 2 and 7 years. In order to be included in the study, parents had to rate their children's behavior in the clinical range (i.e., 120 or above) as evidenced by the ECBI. Families were assessed 6 and 18 months following the start of treatment. Measures included in the study were the ECBI, CBCL, DPICS, and Preschool Age Psychiatric Assessment. Results of the study indicated that in comparison to families receiving TAU, those receiving PCIT showed greater decreases in child problem behavior and greater improvements in parenting skills. Specifically, parents engaged in more "do" skills (e.g., labeled praise) then "don't" skills (e.g., questioning). These findings were consistent at both the 6 and 18 month follow ups.

Another study of PCIT conducted by Fowles et al. (2018) examined the effectiveness of a home-based adaption of PCIT to the traditional clinic based PCIT. Participants in the clinic-based services group were recruited through parent initiated self- referrals, whereas participants in the home-based delivery group were involved in an intake process and contacted by a clinical case coordinator who assessed the families' need for more intensive services. A total of 314 families were included in the study, with 181 involved in clinic-based PCIT and 133 involved in intensive home-based PCIT. The majority of the young children included were male, and between 2 and 6 years old. In regard to implementation of the services, clinic-based PCIT was implemented following the typical method (e.g., 1 one-hour session per week), home-based implementation was provided to families two times per week, and families receiving home-based supports also were provided wraparound services from a case manager. Measures utilized in the study included an Enrollment and Demographic Form (EDIF), ECBI, and Dyadic Parent-child Interaction Coding System (DPICS). Descriptive statistics and multilevel growth models using

hierarchical liner modeling software were used to analyze the data. Findings from the study indicated that home-based implementation of PCIT was a successful adaption of PCIT that encouraged lower dropout rates, and produced overall behavioral results consistent with those of clinic-based PCIT. Specifically, 65% of families receiving home-based services completed the therapy in comparison to the 35% completion rate at the clinic. Both home-based and clinic-based treatments were found effective at decreasing children's problem behaviors and increasing parents' use of good parenting skills.

Outside of the above research, PCIT has been effective at increasing the overall positive interactions demonstrated between parents and children and also has demonstrated effectiveness at improving child compliance and increasing parents' sense of control regarding their parenting practices. Notable decreases in parents' perceived stress also has been evidenced by PCIT (Schuchmann et al., 1998).

The New Forest Parenting Package (NFPP; Sonuga-Barke et al., 2006)

NFPP is a newly developed program designed for preschool aged children with Attention Deficit Hyperactivity Disorder (ADHD). NFFP is an eight-week home visiting program aimed at helping parents to manage difficult child behaviors. Although the NFFP is in need of additional evaluation, research that has been conducted thus far shows supports for its use. For example, in the first evaluative study of the program, 78 three-year-old children exhibiting ADHD symptoms were randomly assigned to NFPP (n-30), parent counseling (n-28), or a control group (n=20) (Sonuga-Barke et al., 2001). Caregivers in the parent counseling group did not actually receive any behavioral strategies to help them better manage their child's challenging behavior, whereas parents in the NFFP group received weekly one-on-one behavioral coaching from therapists. Sessions of NFPP were delivered in the household for one hour with the therapist working with

both the parent and the child. Results indicated that children of parents who participated in NFPP had significantly lower ADHD rating scores and improved behavior demonstrated during a play observation task, than children in the two other groups immediately following treatment and after 15 weeks. A more recent examination of the NFFP intervention program was conducted with 41 children between the ages of 30 and 77 months. The families of these children were randomized to receive either the NFPP intervention or treatment as usual (Thompson et al., 2009). Results of the study indicated that ADHD related behaviors (e.g., fidgeting with body or objects) significantly decreased and the effects were maintained 9-weeks post intervention implementation. Parents included in the study did not demonstrate improved mental health or parenting behavior during parent-child interactions overall, but did increase in the number of positive comments made to their child during a 5-minute observation. Essentially, findings from both studies provide some support for the NFPP home-based intervention for children with behavioral concerns while also highlighting the need for early intervention services.

The Triple P Positive Parenting Program is a parent training designed to prevent and treat behavioral and emotional problems in children. A goal of the program is to equip parents with skills and confidence to successfully manage their child's behaviors. The general program is delivered to parents of children up to 12 years of age, however, there is an adaption of the Triple P program known "Stepping Stones Triple P (SSTP)" which is designed for parents of children birth to age 5 with disabilities. Stepping Stones Triple P is often delivered in the home environment and provides parents with strategies and specific instruction to help promote children's competencies across several areas including social and language skills, emotional skills, independence, and problem solving. Primary Care Stepping Stones (Level 3), provides

parents with four individual consultations sessions lasting 15 to 30 minutes each, and Standard Stepping Stones (Level 4) provides parents with 10 one-hour sessions.

Shapiro et al. (2014) conducted two small, randomized control trials to examine SSTP. Study one sought to examine whether the program along with IDEA Part C treatment as usual improved parent and child functioning and parent-child relationships. Participants included in the study consisted of 49 parents of children 24 months or younger; parents included in the study had to have a child who would be eligible for early intervention services in their state (i.e., Part C of IDEA). Majority of the children included in the study (i.e., 65%) were identified as having global developmental delay(s), and the other portion of children were eligible due to them having an unspecified diagnosis or condition that increased risk for future delays. Level 4 SSTP was delivered in-home and provided by eight providers. Several measures were utilized in the study including the CBCL, Toddler Care Questionnaire (TCQ), and Parenting Scale (PS). Parents who received the SSTP intervention reported a significant decrease in internalizing child behavior problems, total child behavior problems, and parent reported symptoms of depression. Parents in the intervention group also displayed less problematic parenting styles. Regarding treatment acceptability, parents reported positive relationships with their intervention provider and high levels of satisfaction with the SSTP program. Findings from this study suggest that the SSTP program demonstrates some positive effects when implemented with families of young children with developmental delays. However, because several of the participants included in the study dropped out of the study or had children who did not display challenging behavior that was considered clinically significant, results should be interpreted in light of this information.

Lowell et al. (2011) examined the effectiveness of a home-based parent-child intervention referred to as Child FIRST (Child and Family Interagency, Resource, Support, and

Training). Participants consisted of mothers and their children between the ages of 6 and 36 months. Participants were randomized to either the intervention group (n = 78) or usual care (n = 79). Participants in the intervention condition engaged in weekly sessions lasting between 45-90 minutes and received highly individualized supports given issues that were considered most salient to the parents. The CHILD first intervention was not implemented as part of a set curriculum that providers were required to follow, but materials that could be used were shared amongst all providers and an assessment and intervention fidelity checklist which focused on the core elements of the intervention was utilized. Example core elements of treatment included observation of the child's development, parent–child interaction and play, psychoeducation (e.g., typical behavior, developmental stages, etc.), behavioral function, alternate perspectives of child behavior and new parental responses, and positive reinforcement. Several measures were utilized in the study including the Infant-Toddler Social and Emotional Assessment, Parenting Stress Index (PSI). Data were analyzed ANCOVA analyses. Results of the study indicate that the CHILD First program had a strong effect on parents' access to additional services required for their child. Specifically, children in the treatment group received more services and resources than those in the usual care group. Findings from the study also demonstrate improvements in child language and social-emotional behavior. By the 12-month follow-up, children in Child FIRST displayed fewer externalizing problems than those receiving usual care (i.e., 28% clinical ratings of externalizing behavior in the treatment group in comparison to 64% in the usual care group). Furthermore, parent reported stress was significantly lower in the treatment group than in the usual care group. Findings from this study support the use of individualized home-based services.

Weatherbee et al., (2014) aimed to compare the effectiveness of an individualized version of the Early Social Interaction (ESI) intervention to a group based version of the ESI. A total of 82 caregivers of children with ASD were included in the study. All children included in this study received an ASD diagnosis between ages 16 and 20 months. The Social Communication, Emotional Regulation, and Transactional Supports (SCERTS) curriculum was used in both the individualized and home-base conditions, and each focused on teaching parents the importance of intensive early intervention and ways to facilitate engagement in the home environment. The primary difference between the two groups was the way in which the content was taught. For example, participants in the individualized condition met with providers 3 times per week (i.e., 2 home visits, 1 clinic) with guided practice and feedback, whereas those in the group condition met in small groups of 4-5 in clinic once per week with initial sessions focused on different topics and the remaining sessions focused on discussion and practice with other parents. Findings from the study indicate that individual ESI was superior to group based ESI with those receiving individualized supports exhibiting grater improvements in their child's communication abilities, daily living skills, and challenging behavior in comparison to those receiving group treatment.

In summary, research and evidence provided through a review of various programs further support BPT as an effective intervention for addressing early and emerging challenging behaviors in young children. BPT has also been found effective at increasing the quality of parent-child relationships, as well as parents' positive parenting practices. Helping Our Toddlers, Developing our Children's Skills (HOT DOCS) represents another BPT program that has been shown effective in groups, but would benefit from increased research including research regarding different methods of implementation.

HOT DOCS Parent Training Program

Purpose and goals. HOT DOCS is a BPT program that evolved into a manualized curriculum following the success of the original Helping Our Toddler (HOT) program (Armstrong & Hornbeck, 2005). HOT DOCS is sponsored by a community organization and is founded in positive behavioral supports, applied behavioral analysis, social learning theories to support parents in a variety of areas related to child development and everyday behavioral concerns. HOT DOCS meets criteria for behavioral interventions as evidenced by its incorporation of 1) operant models of behavior, 2) specific details regarding strategies for effective coping, 3) control of antecedents instead of harsh consequences, and 4) generalization of skills across settings (Armstrong et al., 2006). A primary goal of HOT DOCS is to help parents learn to utilize a problem-solving approach to clearly identify the functions (e.g., escape, obtain access, avoid) of their child's behavior, and understand the needs of their child while emphasizing proactive behavioral principles and use of positive behavior supports. Thus, parents learn step-by-step procedures for identifying potential facilitators (e.g., environment, interpersonal interactions) and functions of behavior that may contribute to the stability or reinforcement of challenging behaviors either in the present or the future. By clearly identifying the function of the child's behavior, caregivers are able to consider and select appropriate replacement behaviors and teach new skills that are matched to that function. Thus, in comparison to other commonly used BPT programs, HOT DOCS is unique because it teaches parents to focus on replacement skills for problem behavior as opposed to primarily focusing on contingency management skills and strategies used to eliminate the behaviors. In other words, parents learn to consider a different approach when thinking about children's challenging

behavior by learning to recognize the knowledge or skills children may lack that are necessary to engage in desirable or appropriate behaviors.

Overview of session style and program curriculum. Group implementation of the HOT DOCS program occurs over the course of seven weeks. Each group session lasts approximately two hours and provides opportunities for parents to ask questions and learn from one another. The sessions are offered in both Spanish and English which provides greater opportunity for services to be delivered to diverse caregivers. In comparison to other programs' group format, a strength of HOT DOCS relates to the number of sessions caregivers are asked to attend. Specifically, whereas many other programs (e.g., Incredible Years) implement parent groups over the course of 13 or more weeks, HOT DOCS implements groups in half that time. Additionally, each participant is provided with their own HOT DOCS manual, and the program is available to all types of caregivers (e.g., parents, aunts/uncles, significant others, etc.) who are able to participate in the group sessions together.

Each HOT DOCS class typically beings by allowing parents time to review homework and reflect on content from the previous session prior to starting new content. Parents also are able to ask questions related to challenges or concerns that arose over the week. After parents' questions are addressed, the new content area for the session is introduced and taught. The content topics are presented using a combination of PowerPoint slides, role plays, video clips, and other engaging activities designed to keep the adult learner focused and involved throughout the duration of the session. Sessions conclude with the introduction of a new parenting tip (e.g., Calm Voice), assigned special play homework (e.g., coloring), and review of a problem-solving chart. Additionally, at the end of each session, a raffle is drawn in which parents win items (e.g., fun doh, bubbles, etc.) to use during special play. Topics discussed over the seven weeks include

1) early child development, 2) routines, rituals, and development, 3) development and behavior, 4) developing preventions, 5) teaching new skills, 6) planning new responses, and 7) reducing stress the HOT DOCS way.

Parent and child outcomes of HOT DOCS implementation. The HOT DOCS program has been evaluated across several studies and has a total of 9 peer reviewed published articles. Although the HOT DOCS program has experienced some changes over the years, it has maintained positive outcomes for children and their families. For example, one-hundred percent of caregivers of children less than 3 years of age with developmental delays, disabilities, and/or significant medical conditions reported improvement in both their own parenting skills and their child's behavior following the implementation of H.O.T strategies (now known as HOT DOCS) in their homes. Parents in this study also reported several benefits to understanding the function of their child's behaviors including increased awareness and use of effective responses, and opportunities to strengthen relationships (Armstrong et al., 2006). Studies examining HOT DOCS have also demonstrated significant decreases in caregiver's perceived severity of child problem behavior as evidenced by scores on the Child Behavior Check List (CBCL). For example, CBCL scores decreased from 58.93 (pre-test) to 55.22 (post-test) in one study (Williams et al., 2010), and 57.39 (pre-test) to 51.31(post-test) in another study which compared those receiving the HOT DOCS intervention to a waitlist control group (Childres et al., 2011). Significant decreases in behavior severity with notable decreases in aggressive and inattentive behaviors were also reported when the HOT DOCS program was implemented with caregivers of children with a diagnosis of ASD (Childres et al., 2012). Additionally, caregivers have reported increased knowledge of behavioral strategies to use with their children as a result of their participation in HOT DOCS classes (Salinas et al., 2011; Williams, 2007). Research

conducted on the HOT DOCS program has also demonstrated caregiver reported increases in their knowledge of child development and principles of behavior, not only when the program was implemented in the U.S, but also when adapted in an Australian context (Dunlop et al., 2020; Salinas et al., 2011; Williams, 2007). Finally, parenting stress has also been examined. Results of one study demonstrated an increase in parent reported stress with scores on the Perceived Stress Scale slightly increasing from 18.29 at pre-test to 18.91 at post-test (Childres et al., 2011). However, since this study was conducted, a seventh class has been added to the curriculum which primarily focuses on parenting stress. Although additional research is needed to better determine the effects of the HOT DOCS program on parental stress, more recent research demonstrated significant improvements in parents' perceived stress following implementation of the program (Dunlop et al., 2020). Caregivers involved in HOT DOCS across the aforementioned studies have also reported high treatment satisfaction with the program. High treatment satisfaction was also reported when adapted for Hispanic caregivers with over 97% of caregivers indicating that HOT DOCS was beneficial to their families or professional practice (Agazzi et al., 2010).

Overall, given the findings from the research conducted on the HOT DOCS program, it is evident that the community-based group implementation of the HOT DOCS program has provided many parents and caregivers with essential skills, strategies, and knowledge that has helped them better manage their children's challenging behavior. However, despite these findings and the fact that group parenting programs are often considered efficient, socially acceptable, and cost effective, there is existing evidence indicating some parents might benefit from, and prefer more, intensive and individualized supports (Wittkowski et al., 2016). For example, a study examining the treatment preference of parents of young children with severe

ADHD related behaviors found that approximately 60% of parents preferred individual parent training, whereas 20% preferred group training (Wymbs et al., 2016). Additionally, a prior study conducted by Hampson et al. (1983) examined the effectiveness of individual home-based parent training and traditional group-based parent training among a sample of foster parents. Results of the study indicated that although parents in both groups improved their knowledge, attitudes, and use of behavioral principles, parents receiving home-based training perceived their children as demonstrating greater improvements across several domains including overall behavior and parent-child relationships. Parents in the home-based group also felt more positive about their results and demonstrated greater maintenance of skills at the six month follow up. With the onset and continuation of the COVID-19 pandemic, it is possible that one-on-one parent training may become increasingly more preferred for some families.

Furthermore, findings from the Armstrong et al., (2006) study indicated that 5 out of 28 caregivers expressed a need for more intensive home-based services, and several other participants indicated that they wished the facilitators could observe them actually interacting with their child in their natural environment in order to receive feedback. Research conducted by Curtis et al. (2008) also provides foundational information regarding intervention implementation in the home environment. As part of this study, the researchers used Positive Behavior Supports to help the family of a young girl with diagnosed with Infant and Early Childhood Feeding Disorder. Functional assessment information and baseline data were obtained through interviews and behavioral observations which occurred in the home setting. After, the PBS team (which included the parents) utilized the information to develop a support plan comprised of prevention and intervention strategies. Although some problems persisted throughout majority of the intervention (e.g., vomiting), findings from the study indicated that

the child responded immediately to the feeding intervention as evidenced by a reduction of tube feedings and willingness to consume liquids. Furthermore, at the conclusion of the intervention the child consumed more foods willingly and was maintaining adequate growth and improved quality of life with removal of her G-tube. Essentially, findings from this study suggest that PBS strategies like those included in the HOT DOCS program can have positive effects on complex cases of child behavior relating to feeding difficulties. Therefore, in light of this general information and more, the HOT DOCS EI was created.

Benefits of home-based supports include providing a necessary option for many parents who have trouble with transportation or lack outside care for their children (e.g., babysitter), establishment of greater rapport between providers and caregivers which in turn could increase retention rates, and time to observe parent-child interactions in their natural environment (Sweet & Appelbaum, 2004). Furthermore, home-based intervention enables therapists to use everyday materials (e.g., toys) and situations to help demonstrate and apply behavioral parenting strategies. In so doing, parents learn to actively identify triggers and expose their child to various real-world situations that call for the use of skills and/or strategies being taught (i.e., teachable moments) (Thompson et al., 2009). Intervention in the home may also aid in generalization across situations over time. Additionally, due to the COVID-19 pandemic which began in 2020 and has continued into 2021, some parents who prefer in-person services or have children with greater needs may feel more comfortable with individualized home-based supports than in-person group based supports, when implemented in accordance with Center for Disease Control guidelines (e.g., masks, socially distanced) for safety.

HOT DOCS EI

HOT DOCS EI was developed as an extension of the original HOT DOCS program described earlier in the document. The HOT DOCS EI version of HOT DOCS shares the same core goals, purpose, skills, content topics, as the traditional group-based implementation of HOT DOCS. However, whereas the group format is delivered in the community setting over the course of seven sessions lasting two hours each, the current version of HOT DOCS EI is intended to be delivered one-on-one in families' homes over the course of 8 to 16 weekly sessions lasting approximately 1 hour each. Additionally, unlike the sessions in the group format, sessions in the HOT DOCS EI version involve modeling of new skills during interactive play with the child, as well as live coaching that allows caregivers to learn and practice the new skills and strategies with their child. Although the group format of HOT DOCS has shown favorable results, the HOT DOCS EI represents a newly created method of service delivery that must be examined. Therefore, the proposed research is critical because it will represent the first empirical study to provide core insight regarding the effectiveness of the HOT DOCS EI. Furthermore, very few studies have examined parent trainings programs for challenging behavior that are delivered exclusively within the home environment.

Summary

Given the prevalence rates of young children with behavior problems across the U.S, and the growing body of research over the past three decades, there has been an increased need for evidence-based early intervention programs for parents and caregivers. Prevalence rates across the literature have consistently demonstrated rates between 15-25% in children ages 3-5 years with noncompliance, tantrums, sleep and feeding problems as common challenges (Barbarian, 2007; Gross et al., 1999; Hemmeter et al., 2014; Knapp et al., 2007). Additionally, the

trajectories associated with early childhood behavior problems have been cause for concern given that without treatment, many children's behaviors become entrenched, and their behaviors can impact them not only in the home environment but also within the school setting. Parenting stress and lack of strong parenting skills are variables that can reinforce or maintain children's problematic behavior. Thus, researchers and practitioners have developed multiple strategies and interventions to support parents and families who have children that struggle with challenging behavior. Of these, researchers have consistently agreed that behavior parent training provides the best and most effective treatment (Tiano & McNeil, 2005). Multiple behavior parent training programs also have been supported by rigorous research designs and have high rates of consumer satisfaction reported by families.

HOT DOCS is a BPT program often implemented in groups across community-based settings (Agazzi et al., 2008). Research conducted on the program has shown it to be effective and evidence-based. However, there is no evidence to support the newly developed HOT DOCS EI version of the HOT DOCS program which was designed for delivery in the home setting. Furthermore, to date, there are very few home-based intervention programs that have been studied at all. Thus, there was a great need for this new program to be empirically investigated not only to contribute to the extant literature surrounding evidence-based BPT programs delivered one-on-one, but also to provide concrete insight and evidence of changes in early child challenging behavior and parental stress across time points.

Chapter III: Methods

The current study utilized existing data that were collected as part of an investigation of HOT DOCS submitted for approval by a faculty member in the College of Medicine. This chapter provides a description of the participants in the study, followed by a discussion of recruitment procedures, inclusion/exclusion criteria, risks to participants, and protection of human subjects. Next, the intervention under study is described, followed by the study measures, research design, and procedures. This chapter concludes with a review of the data analyses used to address the research questions.

Participants

Participants included in the study consisted of caregiver-child Dyads and all data were collected from the caregivers. Children were included in the sessions in order to provide the caregivers with an opportunity to practice the skills they were taught with their child, and to receive immediate feedback from the HOT DOCS trainer. Because the study from which data were analyzed utilized a non-concurrent multiple baseline design, the sample consisted of a total of three caregivers. The sample size of three parent-child Dyads was selected because it met the minimal requirements of What Works Clearance house (WWC) criteria for experimental control in which attempts should be made to demonstrate at least three treatment effects and across three time points (Kratochwill et al., 2010). Furthermore, the researcher chose to complete a single case design given the small sample size, length of the intervention under study, and need to determine initial effectiveness of the program. The researcher utilized a relatively homogenous sample in order to further help determine the effectiveness of the program across similar

populations. Table 1 displays the demographic information for all three caregiver-child Dyads who participated in the study. The ages of the mothers included in the study were 33, 29, and 44 years. Child 1 was 36 months of age at baseline, Child 2 was 26 months old, and child 3 was 29 months. Two of the caregiver-child Dyads identified as White (non-Hispanic) and one Dyad identified as Hispanic (race not stated). The child from Dyad 1 reportedly had diagnoses of developmental delay and speech language delay, the children from Dyads 2 and 3 reportedly had a diagnosis of ASD and speech language delay. The child from Dyad-1 attended school at the onset of the study, but was taken out of school once COVID-19 pandemic rates increased. Children from Dyads 2 and 3 did not attend school. Dyads 1 and 2 received intervention implementation from the primary investigator of the current study and the intervention for Dyad 3 was implemented by an outside provider who was trained to deliver HOT DOCS services. All data for this study were collected between December 2019 and August 2020, which was during the first few months of the COVID-19 pandemic.

Table 1. Caregiver-Child Dyad Demographics

Dyad	Mom Age	Mom Race/Ethni-city	Mom Education	Marital Status	Child Age	Child Race/Ethni-city	Child Gender	# of Children in Home
Dyad 1	33	White	Bachelors	Married	3	White	Male	2
Dyad 2	29	Hispanic	Some College	Single	2	Hispanic	Male	3
Dyad 3	44	White	Bachelors	Married	2	White	Male	2

Recruitment procedures. A convenience sample was utilized which included caregivers who either inquired about child behavioral services and/or were referred by HOT DOCS master

trainers and other healthcare providers. Once the first caregiver was identified, the primary investigator of the larger HOT DOCS project called the caregiver via phone in order to model explanation of the consent and requirements for participation with the primary investigator of the current study present. During the call, the caregiver was provided with a broad overview of the HOT DOCS EI program as well as the expectations required to be part of the study including the number of weeks in baseline and completion of survey measures twice per week. After the caregiver gave a verbal confirmation of her willingness to participate, she was provided the consent and survey measures via a SurveyMonkey Link.

Moving forward, once potential caregivers who expressed interest in receiving the HOT DOCS EI were identified by the HOT DOCS master trainers, the trainers provided the primary investigator of the current study with the caregivers' contact information. Then, the PI of the current study contacted the caregivers via phone and followed the same process for explaining core points of participation and sharing of the SurveyMonkey link mentioned above.

Inclusion criteria. To be included in the study, caregivers must have had a child between the ages of birth to age five years given that the program was originally designed to meet the needs of caregivers of children within that specific age range. Additionally, caregivers had to report clinical behavioral issues as evidenced by a T-score of 60 or above on the Eyberg Children Behavior Index (ECBI) prior to being a part of the study. Caregivers who had children that displayed clinically significant behavioral problems were included in the study given that research suggests BPT is most effective for intense problems. Furthermore, the demonstration of significant behaviors prior to intervention implementation would help provide additional support for the effectiveness of the HOT DOCS EI if children's scores were in the nonclinical range at the end of treatment. Finally, to be included in the current study, caregivers needed to reside in a

residence (e.g., house, apartment, etc.) and approve of the HOT DOCS trainer to enter their home. Caregivers had to be comfortable with home-entry at the onset of treatment given that the HOT DOCS EI was intended to utilize a home-based approach to service delivery.

Exclusion criteria. Participants were not recruited for the study if they had been receiving a different form of behavioral parent therapy (e.g., PCIT) at the same time as the HOT DOCS treatment as it would be difficult to attribute any changes in behavior to a particular program. Participants who had previously attended the group delivery of the HOT DOCS program also were excluded given that much of the information taught during implementation of the HOT DOCS EI overlaps with information taught as part of the group delivery. Additionally, caregivers and children with extreme impairments (e.g., deafness or blindness) were unable to participate in the study due to lack of materials adapted for blind/deaf individuals and unavailability of a sign language interpreter.

Risk and costs to participants. Risk to participants were minimal. However, a potential risk to participants included the possibility of increased displays of problem behaviors in children in response to the new skills parents learned throughout the program to address their children's behaviors (i.e., rebound effect). Additional potential risks included increased parental stress associated with managing behaviors that may or may not have appeared to be changing immediately, and difficulty with use of skills (e.g., ignoring, time out). Parents who expressed or experienced the above risks were provided immediate support (e.g., empathy, praise where appropriate, reassurance of the purpose of the skill acquired as it relates to behavior change) from the trainer in session. The primary investigator of the current study also frequently consulted with two licensed psychologists and the HOT DOCS coordinator in order to best support families and triage care where appropriate. If a family had been in need of additional

supports beyond those provided in session, they would have been referred to community-based resources; however, such a referral was not needed for families who participated in the current study.

In regard to costs, parents were not required to pay for the early intervention sessions. The HOT DOCS program is currently sponsored by a community organization. Participants were not compensated for their participation.

Protection of human subjects. All participant data from the study were collected and entered into a password protected Excel document largely accessed by the primary investigator of the current study. Surveys and permission forms are stored in an electronic database on secured servers at USF by HOT DOCS lead investigators. The data will be kept for a total of five years after the conclusion of the study in accordance with the University of South Florida's Instructional Review Board (IRB) requirements.

Setting

The intervention was initially delivered in the homes of recruited caregivers across west-central Florida; however, due to a global pandemic, sessions were transferred to implementation via telehealth. Sessions that were held in the caregivers' homes prior to the pandemic were provided in the caregivers' living room. Location of service delivery within the household was decided on by the caregiver. Although the caregivers in the study sometimes had other children in the home during intervention implementation, efforts were made by the caregivers to remove distractions and keep their other children occupied with toys or electronic devices. Benefits to home-based delivery included flexibility for caregivers to receive the intervention without having to travel or coordinate care for children. Additionally, parents felt comfortable being in the environment in which the behaviors were most likely to occur. Home-based in-person care

also provided caregivers increased opportunities to receive individual and live guidance and feedback. Due to the COVID-19 pandemic, services were transitioned to telehealth in an effort to maintain safety in accordance with Center for Disease Control and University guidelines. Caregivers were informed of the need to transition services to telehealth via Zoom. Dyad 1 transitioned to telehealth on session 11, Dyad 2 transitioned to telehealth on session 5, and Dyad 3 transitioned to telehealth on session 4 and transitioned back to in-person implementation on session 7. Caregivers experienced minimal difficulty accessing Zoom links via phone or laptop. Once transitioned to telehealth, Dyad 1 sat at their kitchen table, and Dyads 2 and 3 sat on their living room couch. Pros to the transition to telehealth included the ability to continue with implementation of the program as intended without delay. Cons to telehealth included limited time to prepare for the transition, and difficulty observing parent-child interactions and maintaining parent and child attention during sessions.

HOT DOCS EI

HOT DOCS EI is a BPT program intended to support parents of children birth to five years who display a wide range of challenging behaviors or issues related to feeding, sleeping, compliance and more. The program is designed to be delivered in 13 sessions. Each session lasts approximately one hour. The first session includes introductions, establishment of rapport with the family, discussion of goals, processes, content of the HOT DOCS EI program, overview of session structure, and session wrap up. Sessions 2-12 include review of information covered the previous week, and review of any homework activities over the past week. After the review, the trainer explains and demonstrates new information and techniques with the caregiver. Caregivers are provided the opportunity to practice the new skills with in-session coaching from the trainer. At the end of each session, the trainer explains and models the Parenting Tip and Play and

Practice activity for the upcoming week. The final session (i.e., session 13) is focused on reducing caregiver stress and includes additional opportunities to practice learned skills and stress management strategies.

The activities for each session include teaching of new information and techniques, modeling, coaching, and in-session practice with techniques and skills. Each training session also includes a Parenting Tip and a Special Play Activity. Parenting Tips are specific skills caregivers are asked to practice throughout the following week (e.g., catch them being good). Play and Practice activities are 5-minute play interactions caregivers are asked to engage in daily with their child. Inexpensive items such as bubbles represent good activities for play and practice time. See Table 2 below for an overview of each HOT DOCS EI session. A more detailed description of each training session follows.

Session one. The first session is used to establish rapport with caregivers and gain basic understanding of the challenging behaviors displayed by the target child. Caregivers are asked about the frequency, duration, and intensity of behaviors. During session one, caregivers also are provided a brief overview of the goals, processes, and content of HOT DOCS EI program including review of the structure of the sessions, attendance policy, and importance of skill practice. The session concludes with discussion of the caregivers' expectations of the program, final questions, and confirmation of date and time for the next session.

Session two. The second session begins with a brief review of information covered during session one and focuses on teaching caregivers the importance of daily routines while helping them identify problematic routines within the family. Parents complete the "Evaluating Daily Routines" worksheet to help them identify challenging times. If possible, parents practice the routine in session. If the parent identifies feeding or sleep difficulties, the trainer may review

the handouts for healthy feeding and sleep behaviors. The Parenting Tip for this session is "Catch Them Being Good" which is a tip that focuses on positive reinforcement through use of specific labeled praises to encourage appropriate behavior. The Play and Practice activity for this week is bubbles. The trainer models the skills, and caregivers are informed about the benefits of play and practice time. Caregivers are asked to play bubbles with their child while the trainer coaches them to use various skills (e.g., labeled praise).

Session three. The third session introduces caregivers to the problem solving process and HOT DOCS problem-solving chart used for understanding challenging behavior. Caregivers are taught how to understand and assess behaviors, triggers, reactions, and functions. During the session, caregivers and the trainer practice using the chart for various challenging behaviors. No new Parenting Tip or Play and Practice activity is provided during this session, rather parents are encouraged to continue practicing the tip and activity from the previous week.

Session four. The fourth session provides caregivers with an in depth review of the problem solving process and training in the use of various preventative strategies, including using timers, providing prompts, transition cues, clear expectations, visual schedules or prompts, and busy bags. The Parenting Tip for this session is "Give Clear Directions," which promotes caregivers' ability to tell the child what to do rather than telling them what not to do. The Play and Practice activity is fun dough. The trainer models the skills, and caregivers are asked to play fun dough with their child while the trainer coaches them to use various skills (e.g., labeled praise, following child's lead).

Session five. The fifth session provides caregivers with knowledge of prevention strategies that focus on reducing triggers that provoke challenging behaviors. Example strategies to reduce triggers include encouraging adequate sleep and daily physical activity, limiting screen

time, utilizing natural endings, and providing children with choices. During the session, the trainer models the skills, and caregivers are provided with coaching on how to offer choices and provide praise to the child for making a choice. No new Parenting Tip or Play and Practice activity is provided during this session, rather caregivers are encouraged to continue practicing the tip and activity from the previous weeks.

Session six. The sixth session provides caregivers with training prevention strategies focused on prompting desired behaviors and practicing positive exposures. Prevention strategies focused on prompting desired behaviors include clear directions (session 4), routines (session 2), setting of rules and expectations, and establishment of routines and rules. Prevention strategies focused on practicing positive exposures include "just for me" stories, and practice exposures. Parents are not provided with a new parenting tip during this session but are encouraged to continue use of previous tips. The Play and Practice activity for this session is coloring. During the session, the trainer models the skills and caregivers are coached on their skill usage while coloring with the child.

Session seven. The seventh session teaches caregivers strategies for improving transitions between activities. Example strategies for transitions include prompts, warnings, timers, and visual supports (e.g., first-then boards). The parenting tip for this session is "Validate and Redirect" which encourages parents to respect their child's feelings while helping them learn to follow a consistent routine and transition between activities. During the session, caregivers receive coaching and are asked to practice transitioning between activities with their child following modeling from the trainer.

Session eight. The eighth session provides caregivers training in how to teach children new skills to replace problems behaviors. Examples of new skills include communication, use of

calm voice, feeling words, and turn taking. Caregivers use the problem solving chart to help them identify skills their child needs to learn. Using a play activity, the trainer models and coaches the caregiver as they learn to break down new skills into individual steps in order to begin teaching the child the new skill. The Parenting Tip for this session is "Use a Calm Voice" which reminds caregivers to use a calm, quiet voice in response to their child's behavior, and especially in response to challenging or noncompliant behavior. This skill is practiced and coached during session. The Play and Practice activity for this session is pretend play.

Session nine. The ninth session introduces caregivers to the planning of new responses for appropriate behavior. Examples of responses for appropriate behavior include physical affection, tangible items, and desired activities. During the session, the trainer models and coaches the caregiver on how to respond to all instances of appropriate behavior the child engages in. The focus of this practice is to help caregivers identify good behaviors and provide the child with immediate feedback. No new Parenting Tip or Play and Practice activity is provided during this session, rather parents are encouraged to continue practicing the tip and activity from the previous weeks.

Session ten. The tenth session focuses on teaching caregivers the first new response for inappropriate behavior which is planned ignoring. Caregivers are taught the purpose of planned ignoring including how it works and what to expect from children. The trainer also reviews how the "Validate and Redirect" parenting skill can be used to address minor misbehaviors, and teachers the caregiver when it is appropriate to offer breaks to the child. During the session, the trainer models and coaches the caregiver on how to respond to instances of inappropriate or challenging behavior in which the child engages. The trainer helps the caregiver identify triggers and the function of the misbehavior in order to select an appropriate new response from those

taught during the session (i.e., ignore, validate & redirect, break or cool off). No new Parenting Tip or Play and Practice activity is provided during this session, rather parents are encouraged to continue practicing the tip and activity from the previous weeks.

Session eleven. The eleventh session focuses on teaching caregivers Follow-Through which is the next new response for inappropriate behavior. Caregivers are taught the purpose of follow-through including when and how to use it. During the session, the trainer models how to use the follow-through script. Throughout the remainder of the session, the trainer models how to use follow-through with the child and provides the caregiver various opportunities to practice and receive immediate feedback. No new Parenting Tip or Play and Practice activity is provided during this session, rather parents are encouraged to continue practicing the tip and activity from the previous weeks.

Session twelve. The twelfth session focuses on teaching caregivers time out for non-compliance and aggression which is the last response taught for inappropriate behaviors. Caregivers are provided information about how to effectively use time-out including when it is helpful, when it is not helpful, and appropriate time-out locations. During the session, the trainer demonstrates the time out process to the child using an older sibling, doll, or toy. The child is taught where the time out location will be and the caregivers is provided opportunities to practice the procedure when the child is not upset or in trouble. No new Parenting Tip or Play and Practice activity is provided during this session, rather parents are encouraged to continue practicing the tip and activity from the previous weeks.

Session thirteen. The thirteenth and final session focuses on teaching caregiver's strategies to reduce their stress. Examples of ways caregivers can reduce their stress include creating healthy routines, simplifying daily schedules, and managing funds. During the session

the trainer teaches and models how to reduce caregiver stress. The Parenting Tip for this session is “Take 5 for Yourself which reminds caregivers to focus on their own health and stress levels throughout the week. The Play and Practice activity for this week is music. Caregivers are informed of how music can be used to help children develop skills and also help reduce caregiver stress.

Session materials. Throughout the sessions, live coaching and feedback was provided to the caregivers by a certified HOT DOCS trainer. The trainer utilized the HOT DOCS EI manual to facilitate the sessions. Other required materials include photocopies of worksheets and fidelity sheets. Toys were also necessary but were often supplied by the caregiver. During implementation of the intervention via telehealth, related session worksheets were sent to parents via email prior to the session or at the onset of the session. Instructors informed caregivers of toys that would be needed at the beginning of the session or just before the Practice and Play activity. Instructors continued to complete fidelity sheets after each session.

HOT DOCS Training Process.

The following section provides an overview of the processes and procedures used to train HOT DOCS trainers. HOT DOCS trainers are individuals who are employed by the program or volunteer their time to learn the program and deliver it to caregivers. The HOT DOCS EI sessions implemented as part of the current study were provided by two different HOT DOCS trainers who received HOT DOCS certification through the process discussed below. Dyads 1 and 2 received intervention implementation from the primary investigator of the current study, and the intervention for Dyad 3 was implemented by another provider trained to deliver HOT DOCS services.

Description of the train the trainers process. In order to become a certified trainer, trainees are required to either first attend a one-day workshop that provides a comprehensive overview of the HOT DOCS program, or trainees can choose to attend the weekly HOT DOCS sessions as an observer. After completing one of the above tasks, trainees are required to co-teach alongside a master HOT DOCS trainer. Trainee responsibilities are scaffolded and increase over time. During the early sessions the trainee may primarily focus on presenting small portions of the content whereas as sessions progress, trainees to take on a more active role such as presenting additional content, responding to participants' questions, and managing the dynamics of the class.

After each session, trainees are rated on fidelity and competence, and are provided feedback from the master trainer. Trainees must effectively co-teach all sessions and ultimately demonstrate the ability to (1) present and understand the content of the HOT DOCS program, (2) provide evidence-based recommendations and strategies to caregivers, (3) encourage caregivers and share personal experiences where appropriate, and (4) effectively guide participants through the problem solving process. Trainee's must receive a score of 3 (i.e., satisfactory) or higher during the final evaluation in order to obtain certification.

Intervention Fidelity

As part of the proposed study, treatment integrity was assessed after every session. The trainer used the integrity checklists provided in the HOT DOCS EI manual to determine whether or not all components and topics of the session were delivered as intended. A sample session integrity checklist can be found in Appendix D. The number of completed activities (i.e., check marks) on the checklist indicating completed steps of the HOT DOCS EI session was divided by

the total number of prompts that were to be completed in order to generate a percentage of implementation integrity for each intervention session.

Table 2. Overview of HOT DOCS EI Sessions

Session Number	Session Topic	Parenting Tip	Practice & Play Activity
1	HOT DOCS EI Orientation	---	N/A
2	Daily Routines	Catch Them Being Good	Bubbles
3	Problem Solving Challenging Behavior	---	Problem-Solving
4	Preventing Challenging Behaviors Part 1	Give Clear Directions	Fun Dough
5	Preventing Challenging Behaviors Part 2: Reducing Triggers	---	Offering Choices as a Prevention Strategy
6	Preventing Challenging Behaviors Part 3: Prompting Desired Behaviors & Practicing Positive Exposures	---	Coloring
7	Preventing Challenging Behaviors Part 4: Improving Transitions	Validate & Redirect	Transitioning between Activities
8	Teaching New Skills to Replace Problem Behaviors	Use a Calm Voice	Pretend Play
9	New Responses Part 1: Overview & Responses for Appropriate Behaviors	---	New Responses for Appropriate Behaviors
10	New Responses Part 2: Responses for Inappropriate Behaviors	---	Responses for Inappropriate Behaviors
11	New Responses Part 3: Responses for Inappropriate Behaviors, cont.	---	Use Follow Through
12	New Responses Part 4: Responses for Inappropriate Behaviors, cont.	---	Teaching Time Out
13	Reducing Caregiver Stress	Take 5 for Yourself	Music

Note. Dash marks included in the table "---" denote weeks which caregivers were not taught a new Parenting Tip.

Measures

HOT DOCS demographic survey. The HOT DOCS demographic survey was created by the developers of the program as a standardized way to obtain information regarding caregiver and child demographics. The survey consists of 10 items that ask several questions related to caregivers' age, race/ethnicity, name and type of insurance, educational level, gender, and relationship to target child. Additional questions include age of the target child, and age of and other young children in the household. See Appendix A for a copy of this Demographic Survey.

Therapy attitude inventory for HOT DOCS. The Therapy attitude inventory for HOT DOCS survey is a 10-item survey which assess caregivers' perceptions regarding the overall benefits of the HOT DOCS program. This survey was adapted from the original 10-item TAI (Eyeberg, 1993). The scores of the ten items on the original scale are added to yield a total score, with higher scores indicating high levels of satisfaction. In a study examining 62 mother-child Dyads, the TAI was associated with high internal consistency (.91), high stability (.85), and moderate external validity (.36 to .49) (Brestan et al., 1999). Additionally, cronbach's alphas for the TAI have ranged from .88 to .91 (Brestan et al., 1999; Eisenstadt et al., 1993) Similar to the original survey, the TAI for HOT DOCS survey includes questions related to treatment acceptability, helpfulness of the program at strengthening relationships (e.g., relationship with child) and usefulness of techniques learned. The survey utilizes a 5-point scale of varied response options relevant to each specific question. For example, some responses range from 1, "Much worse than before" to 5 "Very much better than before" whereas others range from 1, "Hindered much more than helped" to 5 "Helped very much". Endorsement of higher numbers

indicates increased satisfaction with the program. A copy of this measure may be found in Appendix B.

DOCS parenting stress measure. The HOT DOCS Parenting Stress measure is an assessment tool adapted by the HOT DOCS team from the Autism Parenting Stress Index (APSI; Silva & Schalock, 2011) (see Appendix C). The APSI was designed to be used in the clinical setting and was initially developed to determine the effects of a five-month, parent intervention for children with Autism Spectrum Disorder (ASD) on reducing parental stress. Findings from this measure were also intended to help identify areas of parenting where increased support was needed (Silva & Schalock, 2011). After a series of 100 interviews in which caregivers were asked to discuss areas of their child's functioning that caused stress and identify the three most stressful areas, categories including core social disability, difficult-to-manage behavior, and physical issues emerged. The APSI measure was validated using a sample of 274 children under six years of age who were typically developing or diagnosed with ASD or developmental delays. Results ultimately found the APSI to be a reliable measure of parenting stress in young children. Internal consistency and test-retest reliability for the overall parenting stress scale were also examined and the Cronbach's Alpha for typically developing children was .834, children with ASD was .827 and children with developmental delays .732. The test-retest reliability coefficient was .882 (Silva & Schalock, 2011).

Given this information, developers of the DOCS PSM omitted ASD related items included in the APSI and retained those that align with the skills and examples used in the HOT DOCS program. As such, the adapted survey utilized as part of HOT DOCS and the current study contains 17 items related to caregivers' perceptions regarding their ability to handle stress associated with their child's challenging behaviors. The scale ranges from 0 (i.e., not at all

stressful) to 4 (i.e., so stressful parents feel they are unable to cope). Scores are interpreted given guidelines based on the analyses of groups of surveys completed by HOT DOCS families. The ranges obtained were based on percentage of participants within the range. As such, scores of 17 or less indicate low stress (scores at the 1st-65th percentile), scores between 18-34 indicate moderate stress (scores at the 66-75th percentile), scores between 35-51 indicate considerable stress (scores at the 76-90th percentile), and scores between 51-68 indicate extreme (scores at the 91st – 100th percentile). To determine the effectiveness of the HOT DOCS program on parenting stress, the DOCS PSM was used in a HOT DOCS study that took place in a school setting (Donnelly et al, 2018). A Cronbach's alpha of .91 was obtained and significant decrease in parenting stress from pretreatment (M=39.33; SD=13.28) to posttreatment (M=34.33; SD=12.42) with a moderate effect (i.e., .52) was reported (Donnelly et al., 2018). As such, the DOCS PSM measure was chosen for the current study given the reliability of the original APSI measure, the high alpha level of the DOCS PSM adapted scale, and the alignment with overall goals of the HOT DOCS program.

Eyberg child behavior inventory (ECBI). The ECBI (Eyberg & Pincus, 1999) is a 36-item measure comprised of two scales to measure parental perceptional of children's challenging behaviors. The Intensity scale measure the frequency of the occurrence of the behaviors from 1 (never) to 7 (always). The Problem scale measures the extent to which caregivers feel the same behaviors rated for intensity are problematic. This is based on yes/no responses. Total raw scores on the ECBI are converted to *T*-scores. The average ECBI score is 50 with a standard deviation of 10. Scores 60 and above on the intensity scale are considered clinically significant. Scores of 11 or higher on the problem scale are considered significant.

The ECBI was re-standardized with a sample of 798 students (Eyberg & Pincus, 1999). Results demonstrate that the ECBI is an adequate measure of reliability and validity for measuring problem behavior across raters and time. Ten-month test retest reliability of the scales also was assessed and found to be .75 for both the problem and intensity scales (Funderburk et al., 2003). These findings were consistent regardless of gender. With regard to internal consistency, the internal consistency of the Intensity problem scale is .93 whereas the internal consistency of the Problem scale is .95 (Eisenstadt et al., 1994). ECBI interrater reliability amongst mothers and fathers was .61 for the Problem Scale, and .69 for the intensity scale.

Research Design

This study utilized a non-concurrent multiple baseline design. A non-concurrent design was selected given the clinical nature of the study and extent to which caregivers were able to begin the intervention. A multiple baseline design was selected for the current study due to its methodological rigor in terms of being able to observe changes in the dependent variables given an intervention, and due to the staggering of baseline starting points across time. Additionally, this design was selected because it was conducive to the types of analyses used to address the research questions. Finally, this design was selected because it would have been impossible to use reversal designs (e.g., ABAB) with the HOT DOCS EI intervention given that parents learn new skills each week, and previous knowledge that had already been taught throughout the intervention could not be removed.

Data Collection Procedures

Due to a global pandemic, delivery of the HOT DOCS EI was transferred to implementation via telehealth. Caregivers' transition to telehealth services occurred at different time points depending on where they were with implementation at the time of the social

distancing recommendation due to the pandemic. Specifically, Dyad 1 transitioned to telehealth on session 11(i.e., data point 29; March, 2020), Dyad 2 transitioned to telehealth on session 5 (i.e., data point 19; April, 2020), and Dyad 3 transitioned to telehealth on session 4 (i.e., data point 11; April, 2020). Despite the global pandemic, the assessment schedule remained unchanged. The following paragraphs of this section describe in detail additional data collection procedures that were utilized in the current study, including the assessment schedule, random assignment strategies, and ethical considerations.

Assessment schedule. Data collected for each caregiver included the demographics survey, Docs Parenting Stress measure, Therapy Attitude Inventory for HOT DOCS, and ECBI. Prior to the start of the program participants completed the HOT DOCS Pre-Test which consisted of the consent to participate, demographics survey, ECBI and Docs Parenting Stress measure. While in baseline, caregivers completed the ECBI and Docs Parenting Stress measure twice per week. During the intervention sessions (i.e., sessions 1-13), caregivers also completed the Parenting Stress measure and ECBI twice per week; however, as part of the final survey administered during week 13, caregivers completed the HOT DOCS Post-Test which included the Therapy Attitude Inventory for HOT DOCS in addition to the usual ECBI and Docs Parenting Stress measure. In order to encourage survey completion, the researcher sent mid-week reminders to the caregivers as necessary. All surveys were administered to caregivers via a SurveyMonkey link emailed every Tuesday and Friday. Survey completion was frequently monitored by the primary investigator who checked Qualtrics at least 3-4 times per week to determine survey completion. If surveys were not completed by Sunday, caregivers were sent another reminder email with the survey link. See Table 3 below for the assessment schedule.

Table 3. Assessment Schedule

Pre-Intervention/Baseline	Intervention (Weeks 1-13)	Post-Intervention (Week 13)
Consent to Participate	ECBI (2x/week)	ECBI
Demographics	Parenting Stress (2x/week)	Parenting Stress
ECBI (2x/week)		Therapy Attitude Inventory
Parenting Stress (2x/week)		

Random assignment. Random assignment is often used when completing single case studies to increase internal validity (Kratochwill & Levin, 2010). The three caregivers were randomly assigned to determine baseline lengths. Inclusion of four multiple baseline conditions equates to a total of 24 potential randomization outcomes (i.e., $4! = 4 \times 3 \times 2 \times 1$). The HOT DOCS master trainer placed the possible baseline observations of 4, 6, 8 and 10 into a hat and randomly pulled the numbers to determine which caregivers would receive the pre-established baseline observations of either 4, 6, 8, and 10 respectively. Dyad 1 received 8 baseline observations, Dyad 2 received 10 baseline observations, and Dyad 3 received 4 baseline observations. Given that it was possible the HOT DOCS EI might not produce immediate effects with regards to decreases in parents' reported child behavior problems and stress, the researcher decided to keep more than one data point between the baseline start times.

Ethical considerations. The current study was approved by the University of South Florida Division of Research Integrity and Compliance Institutional Review Board (IRB) as part of a larger investigation of HOT DOCS submitted by a faculty member in the College of Medicine. The primary researcher of the current study was a volunteer on the larger HOT DOCS project and completed all Social & Behavioral Sciences research trainings. After the trainings were completed, the primary investigator was added to the pre-existing IRB as a team member.

Informed consent and permission forms were distributed to caregivers using a Survey Money Link. All caregiver-child information and data were kept confidential and entered into password protected Excel sheets.

Data Analysis

The single case data collected in the study were analyzed in several ways. In order to answer the research questions of the study, an overview of the analysis procedures are discussed below.

Research question 1. In order to analyze research question 1 of the study, regarding the effectiveness of the HOT DOCS EI program at decreasing caregivers' reports of problem behavior in their children, and caregivers perceived stress associated with their ability to handle their children's behavior problems, visual analyses were conducted. Specifically, the level (i.e., mean), trend (i.e., slope), variability (i.e., range of data deviating from the trend), immediacy of effect, overlap, and consistency of ECBI and HOT DOCS Stress Test data patterns across phases were examined (Kratochwill et al., 2010).

***Visual analysis*.** A visual analysis of the data also was conducted following the four steps outlined by the What Works Clearinghouse (Kratochwill et al., 2010). First, the researcher analyzed the baseline data. Essentially, the researcher aimed to determine whether or not the baseline was stable and if there were any trends. Next, the researcher examined the intervention phase to determine whether there were any patterns in the intervention data. After, the researcher compared the baseline data to the intervention data collected in order to provide insight on treatment effectiveness. It was anticipated that the visual analysis would indicate higher T-scores and higher total scores on the ECBI and Docs Stress measures during baseline, and lower T-scores and total scores during intervention following a relatively downward trend. Finally, the

researcher examined individual effects sizes across the three caregivers in order to compare effects. Non-overlap indices also were computed using an online system.

Additionally, a masked visual analysis (MVA) was conducted to reduce type 1 error. The masked visual analysis team consisted of three faculty members from a Midwestern behavioral health clinic with expertise in single case design. As part of the MVA, the researcher provided the masked analysis team with visuals of the graphed data obtained throughout the study. The analysis team was tasked with determining which participants received the baseline observations of 4, 6, 8, and 10 respectively; all team members were naïve to the treatment order. Completion of the MVA was meant to provide insight on probability of correctly identifying the treatment order and whether or not a treatment effect existed.

Research question 2. In order to answer research question 2 of the proposed study regarding parents' perception of the effectiveness of the HOT DOCS EI program at improving their parent-child relationship (i.e., items 3 & 6), increasing their parenting skills (i.e., items 1, 2 & 4), and helping navigate family related concerns (i.e., item 8), IBM SPSS Statistics (Version 26) predictive analytic software was used to conduct item-level descriptive statistics (e.g., frequencies and averages) of caregivers' responses to the Therapy Attitude Inventory.

Research question 3. In order to address research question three regarding caregivers' overall perceptions of the effectiveness of the HOT DOCS EI, IBM SPSS was used to conduct item-level descriptive statistics of caregiver responses on the Therapy Attitude Inventory (i.e., items 5, 7, 9, and 10). In addition, the total score of the measure was calculated for each participant. Scores of 35 or higher on the Therapy Attitude Inventory indicate overall satisfaction with the HOT DOCS EI program.

Chapter IV: Results

This chapter presents the results of the data collected throughout the current study and the analyses used to investigate this study's research questions. To answer the first research question, visual analyses were analyzed to assess the effectiveness of the HOT DOCS EI at decreasing caregivers' reports of problem behavior in their children, and caregivers perceived stress. Descriptive statistics were computed to answer research questions two and three which focused on the effectiveness of the program at increasing parenting skills, positive parent-child relationships, and familial household relationships. Descriptive statistics also were used to determine parents' overall perceptions of the HOT DOCS EI program. This chapter begins with a discussion of intervention integrity, followed by the results of the visual analyses for each dependent variable. Results of the masked visual analysis also are reviewed. Next, results from descriptive analyses are discussed. The chapter ends with a summary of parents' satisfaction with the intervention under study.

Intervention Integrity

To measure intervention integrity, the number of completed activities (i.e., check marks) on the checklist indicating completed steps of the HOT DOCS EI session was divided by the total number of activities possible in order to generate a percentage of implementation integrity for each intervention session. This percentage was computed for each intervention session and then averaged across sessions. The average percent of completed intervention activities ranged from 67% to 100%. Sessions completed with less than 100% integrity primarily missed the Play and Practice opportunity. The one session with the lowest integrity average of 67% had 4 out of

6 activities completed. The overall average of intervention session completeness was 93.36% with a standard deviation of 9.03. These data indicate the intervention was implemented with relatively high levels of integrity. No difference in integrity was noticed between sessions provided face-to-face in comparison to telehealth.

Visual Analysis

Visual analyses were conducted using the four-step process recommended by What Works Clearinghouse (WWC) (Kratochwill et al., 2010). Treatment effects were identified when data patterns within the dependent variables were associated with stable baselines, changes in level across baseline and treatment phases in the direction of the expected behavior change, and fewer overlapping data. In addition, at least three demonstrations of a treatment effect must have been identified across the three Dyads in order for changes in a dependent variable to be considered a cause of the intervention under study.

Visual analysis results for each Dyad are discussed for the following dependent variables: parent report of child challenging behavior (i.e., ECBI Intensity, ECBI Problem), and parent report of stress (i.e., DOCS Stress test). Discussion of results for each dependent variable is accompanied by figures displaying the multiple-baseline graphs across Dyads for the baseline and intervention phases (Dyad 3 had the highest number of observations despite having the shortest baseline length due to data still being collected during weeks the intervention was not implemented). In addition, descriptive statistics (i.e., level, trend, variability) and effect sizes are presented in tables for each dependent variable.

ECBI intensity. Dyad's 1, 2, and 3 each had negative baseline trends in the direction of the expected behavior change overall (see Figure 1). Each Dyad's last baseline observation was in the opposite direction of the expected behavior change. Each Dyad's baseline intensity data

also demonstrated variability and less stability across observations. ECBI scores of 60 or higher are considered to be clinically significant, and higher scores are indicative of greater intensity of behavior. Baseline ECBI intensity T-scores for Dyad 1 ranged from 40- 63, baseline scores for Dyad 2 ranged from 49-65, and baseline scores from Dyad 3 ranged from 59-74. On average, the baseline level (i.e., mean) was 49.88 for Dyad one, 57.00 for Dyad two, and 65.25 for Dyad three. An overall negative trend in the direction of the expected behavior change was demonstrated within the intervention phase ECBI Intensity data for Dyads 1 and 3. Dyad 2 maintained a relatively flat trend in the intervention phase. None of the three Dyads exhibited an increase in their ECBI Intensity scores immediately after beginning the HOT DOCS EI intervention program. ECBI scores in the intervention phase also demonstrated continued variability for Dyads 1 and 3. Dyad 2 demonstrated less variability in the intervention phase than during baseline. On average, the intervention level (i.e., mean) was 41.42 for Dyad one, 55.65 for Dyad two, and 48.81 for Dyad three.

A comparison of baseline and intervention phase levels indicate less intense child behavior problems for all Dyads in comparison to where they first started with all ratings of children's behavior problems falling within a sub-clinical range upon completion of the HOT DOCS EI program. While the parent from Dyad 2 experienced improvements in child behavior problems within the first three weeks of the HOT DOCS intervention, the ECBI Intensity scores for Dyads 1 and 3 increased within the first three weeks. Additionally, for Dyad 2, the trend of the last three baseline data points is discriminably different from the negative or neutral trend indicated by the first three intervention data points. Dyad 1 had positive trends in ECBI Intensity scores during the last three baseline data points, as well as during the first three intervention data points. Dyad 3 had variable trends in ECBI Intensity scores across the last three baseline points

and first intervention points. Visual analyses indicate overlapping intensity data for Dyad's 1, 2 and 3. Tau is an index of non-overlap that was developed by Parker et al. (2011) who examined 200 single case data sets to determine their distributions relative to several non-overlap indices including Tau. Table 5 provides Tau values that correspond to the 10^{th}, 25^{th}, 50^{th}, 75^{th} and 90^{th} percentiles given the Parker et al., distribution. Tau values of 1 represent the highest possible value that can be obtained and indicate less overlap. In the current study, Tau was calculated with (i.e., Tau-U) and without (i.e., Tau) baseline trend correction using an online calculator developed by Pustejovsky and Swan (2018) in order to provide insight regarding overlapping data and possible treatment effects across all Dyads. The online calculator utilized does not produce Standard Error and Confidence Intervals for treatment effects with trend correction (i.e., Tau-U). Tables 6 and 7 below provide the Tau and Tau-U values obtained for the Intensity outcome. Tau and Tau-U intensity values for Dyads 1 and 3 fell between the 50^{th} and 75^{th} percentile, and Tau and Tau-U intensity values for Dyad 2 fell between the 10^{th} and 25^{th} percentile. Using the Parker and Vannest (2012) effect size classification, Tau values for Dyad 1 and Dyad 3 demonstrate a medium to high effect, and Tau values for Dyad 2 demonstrate a small effect. Tau-U values for Dyad 1 and Dyad 2 indicate a small effect and Tau-U values for Dyad 3 indicate a medium to high effect.

Overall, analysis of changes in data patterns in intensity scores suggest that at least three replicated treatment effects were not observed across the three Dyads. For example, all Dyad's demonstrated some overlapping data, less stability given trends towards the expected behavior change during baseline, and Dyads 1 and 2 maintained sub-clinical scores throughout majority of the baseline and intervention phases.

Table 4. Descriptive Statistics for Eyberg Child Behavior Inventory

		Baseline Phase		Intervention Phase	
		Mean (SD)	Range	Mean(SD)	Range
Dyad 1	Intensity	49.88 (8.66)	40.00-63.00	41.42 (4.81)	37.00-55.00
	Problem	57.75 (9.01)	43.00-67.00	52.88 (10.10)	41.00-73.00
Dyad 2	Intensity	57.00 (5.29)	49.00-65.00	55.65 (2.71)	51.00-63.00
	Problem	59.00 (4.29)	51.00-65.00	60.15 (2.71)	55.00-64.00
Dyad 3	Intensity	65.25 (6.29)	59.00-74.00	48.81 (7.39)	37.00-66.00
	Problem	61.75 (5.44)	56.00-69.00	48.50 (8.20)	41.00-67.00

Table 5. Tau and Tau-U Percentile Distributions

	Percentile Rank				
Tau/Tau-U	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}
	.00	.36	.63	0.93	1.00

Table 6. Tau Intensity Effects

	Effect Size	SE	Lower CI	Upper CI
Dyad 1	0.68	0.14	0.23	0.88
Dyad 2	0.14	0.29	-0.27	0.50
Dyad 3	0.90	0.07	0.33	0.99

Note. <.65=small effect, between 0.66 and 0.92=medium to high effect, >.93=strong effect

Table 7. Tau-U Intensity Effects

	Effect Size
Dyad 1	0.60
Dyad 2	0.03
Dyad 3	0.88

Note. <.65=small effect, between 0.66 and 0.92=medium to high effect, >.93=strong effect

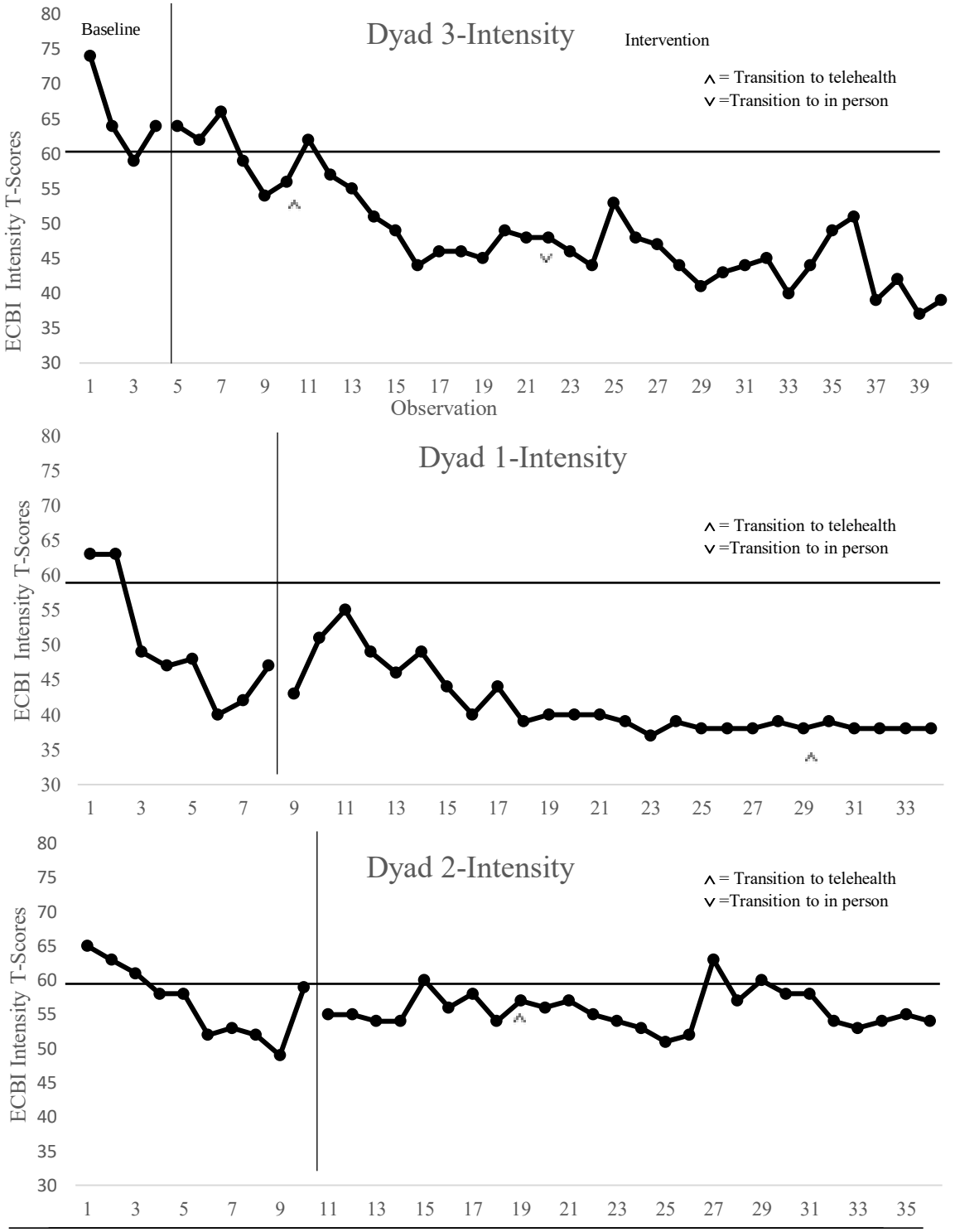


Figure 1. Multiple Baseline ECBI Intensity Results
Note. Horizontal line indicates clinical significance T-score of 60

ECBI problem. Dyad 1 had a variable baseline trend with several data points in the opposite direction of the expected behavior change overall. Dyad's 2 and 3 each had negative

baseline trends in the direction of the expected behavior change overall (see Figure 2). Each Dyad's last baseline observation was in the opposite direction of the expected behavior change. Baseline data from Dyad 1 demonstrated the most variability across observations. Baseline data from Dyads 2 and 3 demonstrated less variability. Baseline ECBI problem T-scores for Dyad 1 ranged from 43- 67, baseline scores for Dyad 2 ranged from 51-65, and baseline scores from Dyad 3 ranged from 56-69. On average, the baseline problem level was 57.75 for Dyad 1, 59.00 for Dyad 2, and 61.75 for Dyad 3. An overall negative trend in the direction of the expected behavior change was demonstrated within the intervention phase ECBI problem data for Dyads 1 and 3. Dyad 2 maintained a relatively flat trend in the intervention phase. None of the three Dyads exhibited a significant increase in their first ECBI problem score immediately after beginning the HOT DOCS EI intervention program. ECBI scores in the intervention phase also demonstrated continued variability for Dyads 1 and 3. Dyad 2 demonstrated similar variability across intervention and baseline phases. On average, intervention problem score levels were 52.88 for Dyad one, 60.15 for Dyad two, and 48.50 for Dyad three.

A comparison of baseline and intervention phase levels indicates parents from all three Dyads viewed their children's behavior as less problematic in the intervention phase in comparison to where they first started with all ratings of children's perceived problem behavior falling within a sub-clinical range upon completion of the HOT DOCS program. Although Dyad 2 reported ECBI problem scores that indicated less problematic challenging behavior within the first three weeks of the HOT DOCS intervention, ECBI problem scores for Dyads 1 and 3 were variable and increased within the first three weeks. Additionally, Dyad 1 had relatively positive trends in the opposite direction of behavior change in ECBI problem scores during the last three baseline data points and the first three intervention data points. Dyad 2 had a relatively neutral

trend during the last three baseline data points and a negative trend during the first three intervention data points. Dyad 3 had less stable trends in ECBI problem scores across the last three baseline points and first three intervention points. Visual analyses indicate overlapping ECBI problem data for Dyad's 1, 2 and 3. Tau problem values for Dyad 1 fell at the 25th percentile, whereas Tau-U values for Dyad 1 fell between the 10th and 25th percentile. Tau and Tau-U values for Dyad 2 each fell below the 10th percentile, and Tau and Tau-U values for Dyad 3 each fell between the 50th and 75th percentile. Using, the Parker and Vannest (2012) effect size classification, Tau and Tau-U values for Dyad 1 and Dyad 2 demonstrate a small effect, whereas Tau and Tau-U values for Dyad 3 demonstrate a medium to high effect. Overall, data presented for the ECBI problem scale indicate that three treatment effects were not observed across the three Dyads.

Table 8. Tau Problem Effects

	Effect Size	SE	Lower CI	Upper CI
Dyad 1	0.36	0.21	-0.11	0.68
Dyad 2	-0.11	0.24	-0.48	0.29
Dyad 3	0.75	0.12	0.15	0.94

Note. <.65=small effect, between 0.66 and 0.92=medium to high effect, >.93=strong effect

Table 9. Tau-U Problem Effects

	Effect Size
Dyad 1	0.35
Dyad 2	-0.20
Dyad 3	0.74

Note. <.65=small effect, between 0.66 and 0.92=medium to high effect, >.93=strong effect

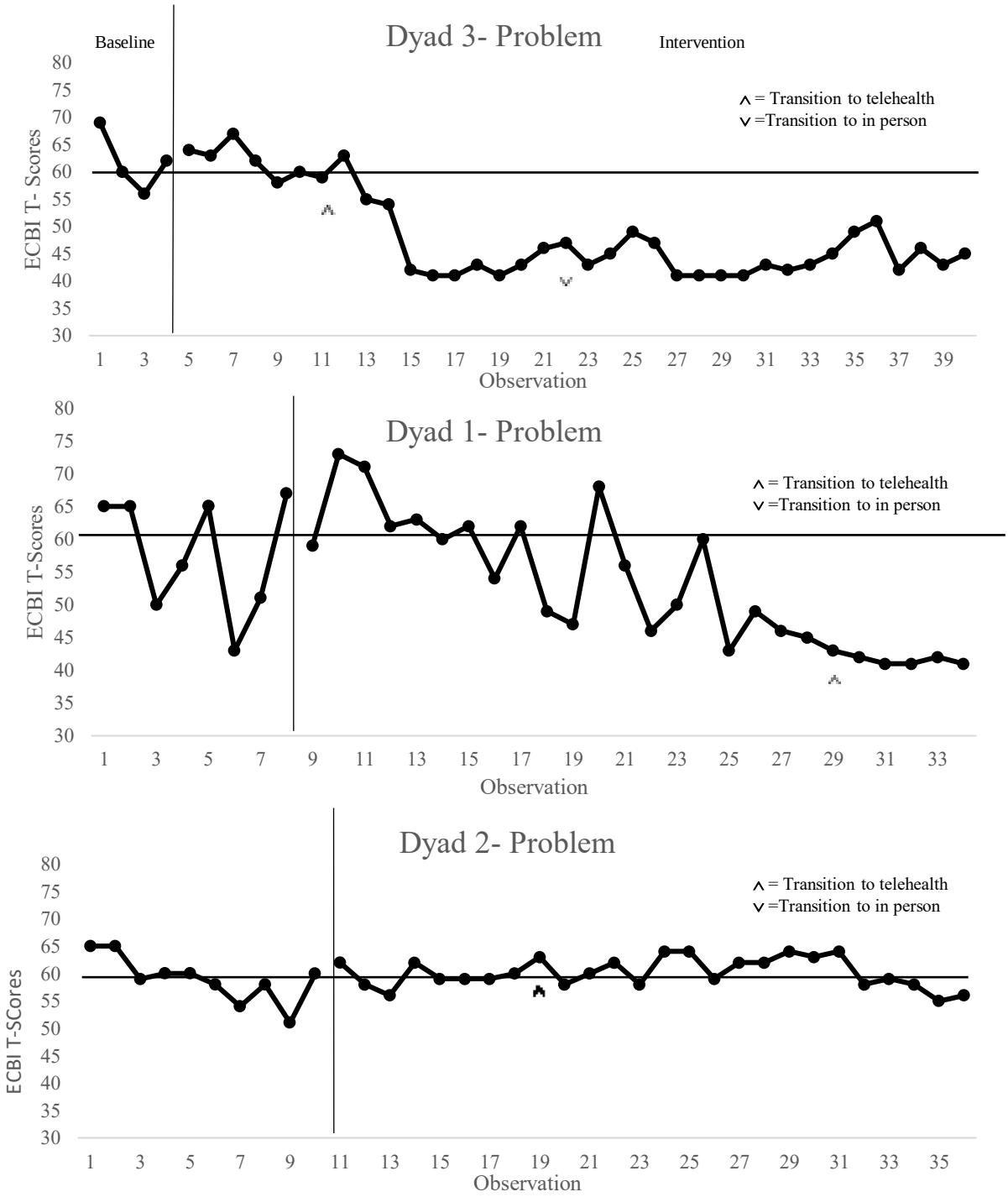


Figure 2. Multiple Baseline ECBI Problem Results
Note. Horizontal line indicates clinical significance T-score of 60

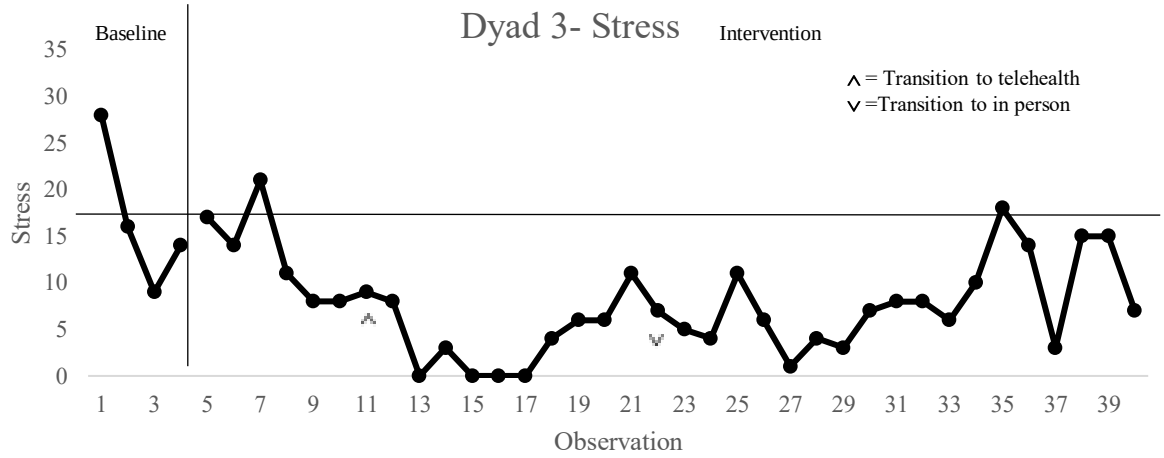
Docs parenting stress measure. Dyad 1 had a variable and unstable baseline trend with data points that initially began to fall in the direction of the expected behavior change before

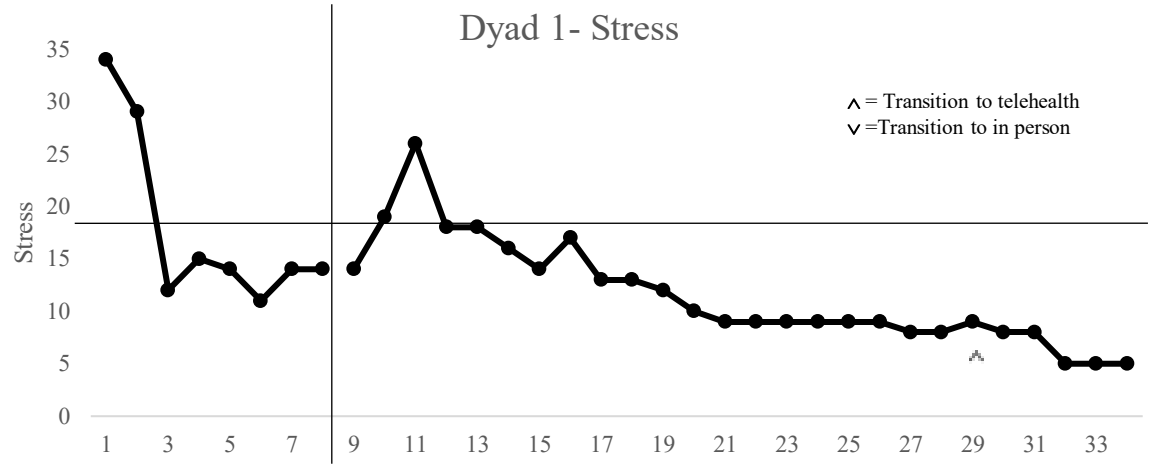
changing to maintain a relatively flat trend throughout the remainder of the baseline phase. Dyad 2 maintained a relatively neutral baseline trend throughout the duration of the baseline phase. Dyad 3 had a negative baseline trend in the direction of the expected behavior change (see Figure 3). Dyad's 1 and 3 had final baseline observations in the opposite direction of the expected behavior change whereas Dyad two's last baseline observation was in the direction of the expected behavior change. Baseline stress data from Dyads 1 and 3 demonstrated variability and instability across baseline observations. Data from Dyad 2 indicated some stability and less variability in the baseline phase. In addition, baseline stress scores for Dyad 1 ranged from 11-34, scores for Dyad 2 ranged from 18-28 and stress scores for Dyad 3 ranged from 9-28. Scores of 17 or less indicate low stress, scores between 18-34 indicate moderate stress, scores between 35-51 indicate considerable stress, and scores between 51-68 indicate extreme (scores at the 91st – 100th percentile). On average, the baseline stress score levels were 17.86 for Dyad 1, 23.70 for Dyad 2, and 16.75 for Dyad 3. In the intervention phase of treatment, an overall negative trend in the direction of the expected behavior change for parental stress was demonstrated for Dyad 1. Dyad 2 maintained a relatively flat trend in the intervention phase with the exception of two data points that indicated a spike in parent reported stress before returning to lower levels in a downward trend. Dyad 3 demonstrated an initial negative trend before becoming relatively variable in the intervention phase. Parents from Dyads reported a slight increase or the 'same" level of stress after beginning the intervention phase of treatment as indicated by review of their first three treatment data points. HOT DOCS EI stress scores in the intervention phase also demonstrated some variability for Dyads 2 and 3. Dyad 1 demonstrated less variability in the treatment phase than the intervention phase. On average, intervention stress scores were 11.54 for Dyad 1, 16.77 for Dyad 2, and 7.72 for Dyad 3.

Overall, a comparison of baseline and intervention phase levels indicate that all participating parents reported less stress by the end of treatment in comparison to where they first started with all ratings of parent stress falling in the low stress range upon completion of the HOT DOCS program. Dyad 1 demonstrated less variability in the treatment phase than in the baseline phase, Dyad 2 demonstrated relatively consistent variability across phases with the exception of two data points in the intervention phase, and Dyad 3 demonstrated continued variability across both phases. Visual analyses indicate overlapping stress data across all three dyads. Tau and Tau-U stress values for Dyad 1 ranged between the 25th and 50th percentile, and Tau and Tau-U values for Dyads 2 and 3 each fell between the 50th and 75th percentiles. Using the Parker and Vannest (2012) effect size classification, Tau and Tau-U values for Dyad 1 demonstrate a small effect. Tau and Tau-U values for Dyads 2 and 3 demonstrate a medium to high effect. Overall, data do not clearly indicate at least three treatment effects across the three Dyads.

Table 10. Descriptive Statistics for Docs Stress Test

		Baseline Phase		Intervention Phase	
		Mean (SD)	Range	Mean(SD)	Range
Dyad 1	Intensity	17.88 (8.61)	11.00-34.00	11.54 (5.06)	5.00-26.00
Dyad 2	Intensity	23.70 (3.50)	18.00-28.00	16.77 (4.97)	8.00-31.00
Dyad 3	Intensity	16.75 (8.06)	9.00-28.00	7.72 (5.36)	0.00-21.00





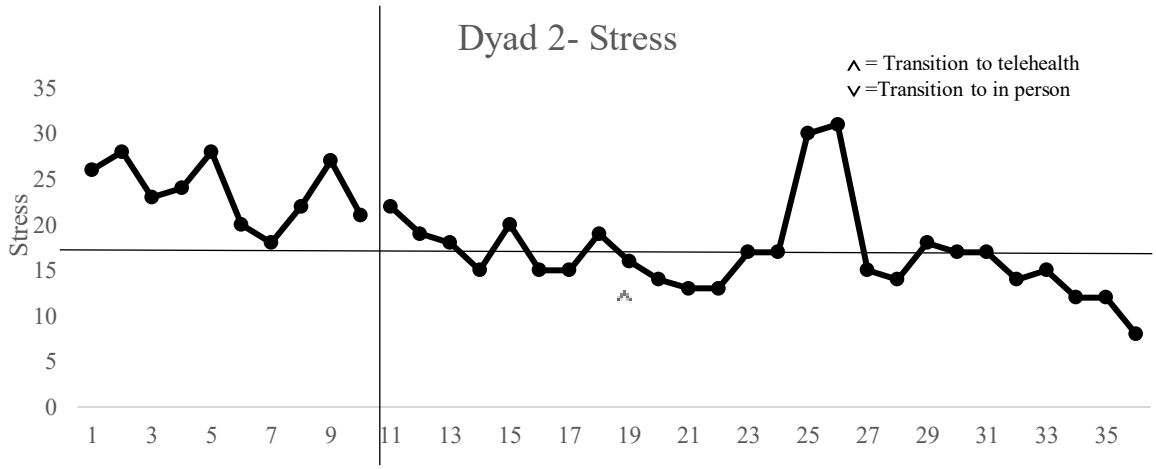


Figure 3. Multiple Baseline DOCS Stress Results
Note. Horizontal line indicates score of 17 or more representing higher stress

Table 11. Tau Stress Effects

	Effect Size	SE	Lower CI	Upper CI
Dyad 1	0.53	0.16	0.07	0.80
Dyad 2	0.78	0.11	0.40	0.93
Dyad 3	0.72	0.15	0.12	0.92

Note. <.65=small effect, between 0.66 and 0.92=medium to high effect, >.93=strong effect

Table 12. Tau-U Stress Effects

	Effect Size
Dyad 1	0.47
Dyad 2	0.73
Dyad 3	0.69

Note. <.65=small effect, between 0.66 and 0.92=medium to high effect, >.93=strong effect

Masked Visual Analysis

Three university faculty members with expertise in single-case design served as the masked visual analysis team for the current study. All analysts were blind to the Dyads' assignment to baseline conditions and uninvolved in the intervention process. The masked analysis team studied graphs of each dependent variable and aimed to estimate which Dyad received specific number of baseline observations (i.e., 4, 6, 8, or10). The masked team discussed their thoughts collectively and consulted with one another to establish response agreement. After review of the data collected, the masked analysis team concluded that they were unable to determine which Dyads received specific baseline lengths. The analyst team reported several reasons for their inability to make an educated guess including the overlapping data points across dependent variables and phases, instability of baseline data, uncertainty regarding time-points with which the ECBI was administered, T-scores that were only slightly above clinical cutoffs, and trends noticed in baseline phase data. Due to the inconclusive results reported by the masked visual analysist team, a *p*-value was unable to be calculated and results further demonstrate difficulty with determining whether a true treatment effect exists.

Descriptive Statistics of Parent Satisfaction with HOT DOCS EI

Caregiver satisfaction with the treatment program was assessed at the end of treatment using the TAI. The researcher used Microsoft Excel to calculate the descriptive statistics included in this study which consisted of item averages and totals on the TAI per caregiver. Scores on the TAI range from 1 to 5 with endorsement of higher numbers indicating increased satisfaction with the program. Total scores of 35 or more indicate overall satisfaction with the program. Overall scores on the TAI from these three caregivers ranged from 45 to 47. Table 12 presents average scores across items and caregivers. Total scores on the TAI across caregivers demonstrate overall satisfaction with the program implemented as part of the current study. Additionally, all total item averages calculated across caregivers was above 4 which further indicates satisfaction at the individual item level. Mother's endorsed improved parenting skills (i.e., items 1, 2, and 4) with two parents indicating they learned "several" new discipline techniques and one parent reported learning "many useful techniques". Mothers also reported an improved parent-child relationship (i.e., items 3 and 6) with one mother reporting her relationship with her child was "very much better than before" another indicating that the relationship was "somewhat better than before" and the final mother indicating the relationship was "the same as before". Furthermore, caregivers reported that the HOT DOCS program helped them with personal or family problems not directly related to their child (i.e., item 8) with all three caregivers indicating HOT DOCS has "helped very much" in this area.

Table 13. Therapy Attitude Inventory Item-Level Descriptive Statistics

Caregiver	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item Total Per Caregiver
Caregiver 1	4	4	5	5	5	4	5	5	5	5	47
Caregiver 2	4	5	4	5	4	5	5	5	4	4	45
Caregiver 3	5	3	3	4	5	5	5	5	5	5	45
Total Item Average	4.33	4.00	4.00	4.67	4.67	4.67	5.00	5.00	4.67	4.67	

Overall, data gleaned from visual analyses, masked visual analyses, and non-overlap indices tests were triangulated to determine the presence of a treatment effect. A treatment effect was considered truly present for a dependent variable when: 1) visual analysis results confirmed at least three treatment effects, 2) masked visual analysis test conducted by an analyst team and p-value obtained led to the rejection of the null hypothesis and 3) Non-overlap indices indicated an effect. No treatment effect was assumed when visual analyses yielded insignificant results. Results from the current study indicate therapeutic treatment effects with all Dyads reporting less intense and problematic challenging behavior from their children and less self-reported stress. However, because treatment effects were not evidenced across replicated outcomes, it is difficult to accurately determine whether the therapeutic effects noticed were truly due to the HOT DOCS EI intervention and not accounted for by other unrelated variables.

Table 14. Triangulation of Results

Dependent Variable	Visual Analysis	Masked Visual Analysis	Tau	Tau-U
ECBI Intensity	○	○	◑	○
ECBI Problem	○	○	○	○
DOCS Stress	○	○	◑	◑

Note. ○ *indicates no noticed effect,* ◑ *indicates a moderate to high effect was noticed for some Dyads,* ● *indicates an effect was noticed across all Dyads*

Chapter V: Discussion

Early intervention behavioral parent training (BPT) has the potential to reduce challenging behavior problems in young children and help prevent negative outcomes later in life such as expulsion from school, lower academic achievement scores, and risky behavior (Kassing et al., 2019; Kremer et al., 2016 & Mead & Bouyer-Hargrove, n.d). Therefore, BPT is often considered the most effective and critical treatment for early childhood behavior problems. However, limited research has been conducted regarding parent training in the home setting, and no research has been conducted on the newly developed HOT DOCS EI which is a program intended to be implemented in the caregiver's home. Thus, the purpose of this study was to provide initial evidence regarding the effectiveness of HOT DOCS EI at decreasing parental reports of child behavior problems and parental stress over time. The study also aimed to examine caregiver reported changes in their parenting skills, parent child relationships, and overall perceptions of the HOT DOCS EI program. Using a multiple baseline design, the researcher conducted visual analyses of the data and calculated effect sizes to measure the impact of the HOT DOCS EI on the intensity and frequency of child challenging behavior as well as parental reports of stress. In addition, descriptive statistics were calculated to provide insight on parent reported effectiveness of the program. This chapter begins with a discussion of the results related to the research questions included in the study, followed by a presentation of the limitations of the study. Finally, recommendations for future research, implications for practice and lessons learned through implementation of the HOT DOCS EI program are shared.

Research Question One

What is the effectiveness of the HOT DOCS EI at decreasing caregiver reports of child problem behavior and Caregiver perceived stress associated with their ability to handle their child's behavior problems? The scores obtained from repeated measures of the dependent variables (i.e., ECBI, Docs Stress test) were analyzed via visual analysis, masked visual analyses and calculation of effect sizes.

ECBI intensity. The frequency of children's behavior problems as measured by the ECBI Intensity scale declined from clinically significant at baseline to sub-clinical levels post-intervention for all Dyads. Results from visual analysis and examination of baseline stability indicated that each Dyad demonstrated evidence of less stability during baseline. Essentially, this suggests that the children included in this study did not demonstrate stable patterns of challenging behaviors during the baseline phase given parents' ratings on the ECBI Intensity scale. Furthermore, although from a clinical standpoint the children exhibited clinically significant levels of challenging behaviors as evidenced by their ECBI intensity scores at the onset of baseline, scores dropped below the clinically significant criteria during baseline for Dyads 1 and 2 and remained below that criteria throughout the duration of the intervention with the exception of a behavioral spike above the clinically significant criteria at point 27 for Dyad 2. Given that parents were expected to rate their child's challenging behavior twice per week, parents were rating their child's behavior over only a few days, and it is possible that the children could have exhibited less intense challenging behavior at different times throughout the week. For these reasons, some variation was expected, but the instability of baseline data contributes to the difficulty associated with determining a treatment effect that is attributable to the intervention, and suggests that prior to starting treatment the children exhibited unstable patterns

of challenging behaviors and appeared to "improve" during baseline. Mask visual analysis also did not yield significant results for the Intensity scale.

Nevertheless, the presence of a therapeutic treatment effect for children's behavior was demonstrated in the current study given that reports of challenging behavior decreased. Decreases in ECBI intensity scores during implementation of the HOT DOCS EI was expected given longstanding evidence of treatment effects for the group-based format of HOT DOCS which has demonstrated significant improvements in parent reported knowledge of behavioral strategies and decreases in the severity of their child's challenging behavior (Childres et al., 2011; Childres et al., 2012; Williams et al., 2010). Furthermore, this finding is consistent with research examining behavioral parent training programs in the home setting in which parents reported improved child behavior overall and with regard to specific challenges (e.g., feeding difficulties) (Fowles et al., 2018; Najdowski et al., 2010). It is hypothesized that the child participants' display of intense challenging behaviors that had been developed or maintained through maladaptive parenting strategies or parent-child interactions may have been interrupted by mothers' participation in the HOT DOCS EI program which helped facilitate knowledge of behavioral function, replacement skills, and use of clear directions and limit setting. Effects were maintained despite Dyads transitioning to telehealth services during implementation. One possible explanation for this might be additional parental support or presence in the home throughout the day for parents who transitioned to remote work due to the pandemic and social isolation requirements. For example, the father of child 1 worked from home and would occasionally check-in (i.e., say hello, ask about content) during sessions before returning to work.

ECBI problem. The extent to which the behaviors rated by the parents on the intensity scale were deemed problematic was reported by the ECBI problem scale. Results from visual analysis and examination of baseline stability indicated Dyad 1 demonstrated the most variability and instability across observations in comparison to Dyads 2 and 3. This finding suggests that the child from Dyad 1 displayed behaviors which the mother considered to be inconsistently problematic. Each Dyad also reported at least one subclinical problematic behavior score during baseline. Regarding improvements, Dyads 1 and 3 demonstrated the biggest decrease in parent reports of problematic behavior from baseline to intervention, whereas Dyad 2 maintained consistent reports of problematic behavior which often hovered between clinically significant and subclinical throughout the duration of intervention implementation. Data from Dyad 2 suggest that although the behaviors were not as intense given the decrease in ECBI Intensity scores from baseline to intervention, the mother still considered these behaviors to be problematic. One possible hypothesis for this finding is that although still perceived as problematic, the mother from Dyad 2 might have become accustomed to the behaviors. Hence, her visual analysis data maintaining a relatively flat trend. The mother from Dyad 2 also had several personal stressors throughout the intervention related to her employment and personal relationships which she disclosed to the primary investigator of the current study. These stressors required her attention and may have contributed to the maintenance of perceived problematic behavior. This finding aligns with research indicating that challenging situations may elicit problem behavior in children which in turn could result in parental stress (Schulz et al., 2018). Given the lack of visual analysis treatment effects replicated across cases, Tau and Tau-U data, and the fact that mask visual analysis tests also did not yield significant results for the problem

scale, it is unclear whether the therapeutic improvements noticed in problem scores over time could be attributed to the intervention.

Nevertheless, from a therapeutic standpoint parents' report of problematic behavior declined from clinically significant at baseline to sub-clinical levels post-intervention for all Dyads indicating a therapeutic treatment effect. Decreases in ECBI problem scores during implementation of the HOT DOCS EI was expected given findings from prior HOT DOCS research discussed previously (Childres et al., 2011; Childres et al., 2012; Williams et al., 2010). Furthermore, it is hypothesized that if behaviors are less intense and parents feel more competent in their ability to manage challenging behaviors, the behaviors may be considered less problematic for them despite their occurrence. Effects were maintained despite Dyads transitioning to telehealth services during implementation.

Docs parenting stress measure. Parenting stress has been frequently cited in the literature as having a bidirectional impact on challenging behavior (i.e., parenting stress can affect child behavior and child behavior can affect parental stress) (Cherry et al., 2019; Neece et al., 2012). All mothers in the current study reported experiencing moderate levels of stress at the very beginning of baseline (i.e., observation 1). Moderate levels of stress were maintained throughout baseline for Dyad 2, but mothers from Dyads 1 and 3 reported instances of low levels of parental stress during baseline. Results from visual analysis and examination of baseline stability indicated variable and unstable parental stress from caregivers of Dyads 1 and 3, whereas data from Dyad 2 indicated some stability and less variability in the baseline phase. The mother in Dyad 1 experienced an increase in stress at observation 11 of the study (i.e., week 2 of intervention), but demonstrated a steady decrease in stress throughout the duration of the intervention. The mother from Dyad 2 experienced moderate to low levels of stress throughout

majority of the intervention with the exception of observations 25 and 26 (week 8 of intervention) in which stress was rated much higher in the moderate range. It is possible that this mother was dealing with personal stressors during this time that may have inflated her responses on this measure, given that her ECBI intensity and problem scores for these observation points were both subclinical. The mother from Dyad 3 maintained low levels of stress throughout the majority of intervention implementation with the biggest increase in stress occurring at observation 7 (i.e., during week 2 of intervention). Findings related to stress levels in the current study are somewhat consistent with previous research indicating that families of children with ASD tend to experience increased stress levels when compared to families of children with developmental disabilities and other impairments (Estes et al., 2009). In the current study, children from Dyads 2 and 3 were both reportedly diagnosed with ASD. Visually, the stress ratings from mother 2 hovered between the moderate to low range more frequently than the stress ratings from mothers 1 and 3, and the ratings from mother 3 were more variable when compared to Dyads 1 and 2 despite them still being in the low stress range. When taken together, although parental stress from Dyad 1 maintained a downward trend, whereas parental stress from Dyads 2 and 3 were higher and more variable, stress ratings from mothers 2 and 3 do not appear to be significantly different than the stress reported from mother 1. As such, given the lack of replicated visual analyses data, inconclusive masked visual analysis tests, and Tau and Tau-U data, it is unclear whether the therapeutic improvements noticed in parental stress over time could be attributed to the intervention.

Nevertheless, from a therapeutic standpoint, these data suggest that mothers included in the study were less stressed at the end of intervention than they were at the beginning of intervention indicating a therapeutic treatment effect. These findings are consistent with previous

research reporting that parents who receive behavioral parent training report decreased levels of stress following treatment (Lowell et al., 2011; Schuchmann et al., 1998; Zemp et al., 2016). These findings are also consistent with other HOT DOCS research which has also demonstrated decreases in parent reported stress following completion of the program (Dunlop et al., 2020).

Telehealth. Due to the COVID-19 pandemic, treatment transitioned to telehealth. Dyad 1 transitioned to telehealth on session 11 (i.e., data point 29; March, 2020), Dyad 2 transitioned to telehealth on session 5 (i.e., data point 19; April, 2020) and Dyad 3 transitioned to telehealth on session 4 (i.e., data point 11; April, 2020). Dyads 1 and 2 completed the remainder of intervention via telehealth, and Dyad 3 transitioned back to in-person home implementation during observation 22 (i.e., data point 22; May, 2020). Despite the transition to telehealth, results from this study still demonstrate therapeutic improvements overall. Furthermore, none of the families reported increased challenging behavior or stress following the transition to telehealth. These findings are consistent with growing research reporting that telehealth is an appropriate method for service delivery that yields positive results on child challenging behavior (Taylor et al., 2008; Wainer & Ingosol, 2015). For example, Tsami et al. (2019) found that behavioral parent training that focused on teaching parents to identify functions of behavior and functional communication training was found effective highly effective in reducing problem behavior in children diagnosed with autism when implemented via telehealth. In another study examining PCIT delivered via telehealth in comparison to clinic based treatment, results demonstrated significant improvements in children's display of disruptive behavior across both conditions, however, telehealth PCIT was associated with fewer perceived barriers to treatment than clinic based PCIT and increased maintenance of treatment response at follow-up (Comer et al., 2017).

Although caregivers in the aforementioned studies reported treatment acceptability and satisfaction with telehealth services, caregivers included in the current study seemed to prefer in-person treatment. For example, the mother from Dyad 1 reported that she felt engagement with her son was "a little lost" during telehealth appointments, emphasizing that her son has a relatively short attention span when engaged in telehealth. Despite these concerns regarding engagement with her son, the mother from Dyad 1 felt as though she was still able to receive the didactic information she needed in an appropriate manner. The mother from Dyad 2 reported similar concerns regarding telehealth as it relates to child engagement. The mother from Dyad 3 reported that she preferred in-person treatment in comparison to telehealth and eventually transitioned back to in-person treatment once her HOT DOCS provider received approval to do so. Additionally, the mother from Dyad 3 also reported that she had a more difficult time remaining focused during telehealth appointments. Given these anecdotal reports, it is possible that the novelty and rather abrupt transition to telehealth from in-person services contributed to the less favorable reflections of telehealth from the caregivers in the current study.

Regarding the HOT DOCS EI providers', perceptions of treatment via telehealth, both providers agreed that telehealth was more challenging than in-person treatment, and also agreed that the in-person sessions were conducted more smoothly and efficiently. For example, providers experienced difficulty facilitating engagement during play-based activities and parents often needed to be redirected back to the teaching portion of the program given other environmental stimuli (e.g., other kids). The provider for Dyads 1 and 2 felt that it was easier to redirect parents and maintain their attention during in-person sessions in comparison to telehealth sessions. The provider for Dyad 3 agreed and further expressed that she experienced a difficult time covering all of the teaching and practice activities during telehealth sessions due to

difficulty managing time and maintaining parent attention during teaching of content. Given these reports, although telehealth has been found beneficial as evidenced by current literature, both providers agreed that their unpreparedness to transition to telehealth could have contributed to their difficulties with telehealth intervention implementation.

Research Question Two

To what extent do caregivers perceive HOT DOCS EI as effective at increasing their parenting skills, increasing their positive relationship with their child and supporting relationships and family related concerns within the household?

Parenting skills. Caregivers included in the current study reported increased parenting skills overall (i.e., discipline techniques, techniques for teaching new skills, and confidence in discipline ability) at the conclusion of the program. Results obtained from the TAI which ranges in scores from 1 to 5 (higher scores indicate more positive responses) found that caregivers from Dyads 1 and 2 reported they learned "several useful techniques" (rated 4) for discipline and the caregiver from Dyad 3 reported feeling as though she had learned "many useful techniques" (rated 5) related to discipline. Examples of discipline techniques taught as part of the current program include catching children being good, follow-through, and time-out. Additionally, Caregivers 1 and 2 reported feeling "much more confident" (rated 5) in their ability to discipline their child and caregiver 3 reported feeling "somewhat more confident" (rated 4). These findings related to discipline strategies are important given research indicating that ineffective parenting practices (e.g., yelling, threats, coercion, spanking) during early childhood tends to lead to an increase in challenging behavior (Leijten et al., 2018; Nicholson et al., 2005). Therefore, teaching parents appropriate discipline techniques is a critical component of BPT programs that aim to help reduce child challenging behavior. Regarding techniques for teaching their child new

(i.e., replacement) skills, caregiver 1 reported having learned "several new techniques" (rated 4), caregiver 2 reported "many useful techniques" (rated 5) and caregiver 3 reported "a few new techniques" (rated 3). Examples of new skills taught as part of the current program include teaching children to communicate, use feeling words, and take-turns. In sum, the overall improvements in parenting skills reported by caregivers in the current study is consistent with previous foundational research related to HOT DOCS implementation in the home setting in which 100% of the respondents reported improved parenting skills, as well as consistent with research on PCIT implemented in the home setting in which parents also reported improvements in their parenting skills (Armstrong et al., 2006; Fowles et al., 2018). Furthermore, because the skills taught during the HOT DOCS EI program are evidence-based and focused on helping parents identify and understand the function of behaviors in order to determine appropriate replacement behaviors, improvements in parenting skills also suggest that caregivers may have gained a foundational understanding of child behavior which could help facilitate their implementation of appropriate responses to both positive and challenging behavior.

Parent-child relationship. Several empirical studies have highlighted the role of positive parent-child relationships as it relates to children's display of appropriate and/or challenging child behavior (Knitzer, 2007; Masse et al., 2016). Regarding the relationship between caregiver and child, caregivers in the current study were asked how well they got along with their child at the conclusion of the study in comparison to when they first began the program. Caregiver 1 reported that she believed she and her son got along with one another "very much better than before" (rated 5), caregiver 2 reported that she and her son got along with one another "somewhat better than before" (rated 4), and caregiver 3 reported that she and her son got along with one another "the same as before". Although caregiver 3 did not report an improvement in

her relationship with her child following completion of the program, it is important to note that her relationship did not get worse. Research suggests that stable attachments between parents and their children not only helps to promote children's social emotional and behavioral development, but also allows children to feel and experience security in their relationships with their caregivers (Thompson, 2008). Furthermore, given literature reporting that children are more likely to comply with parent directives when there is a positive parent-child relationship, caregivers also reported on their child's compliance with commands. Caregiver 1 reported that her son's compliance "somewhat improved" (rated 4) and caregiver's 2 and 3 reported that their sons' compliance with commands "greatly improved" (rated 5). These findings suggest that by the end of the study, all children included in the study were more likely to follow their parents' directions than they were at the beginning of the study. However, because maintenance data were not collected, it is undetermined whether or not these behavioral changes were maintained.

Relationships and familial concerns. Because parental difficulty with managing child challenging behavior can negatively impact other aspects of parents' personal life, the extent to which the HOT DOCS EI program helped with other general personal or family problems not directly related to the caregivers' target child was assessed. All three caregivers included in this study reported that the program "helped very much" (rated 5) with such concerns. This finding is consistent with previous research on behavioral parent training in which the program was found to also help parents with other personal or family problems unrelated to their child (DeLoatche, 2015).

Research Question Three

What are caregivers' overall perceptions of the effectiveness of the HOT DOCS EI training program as measured by the total score on the Therapy Attitude Inventory?

The HOT DOCS program overall has maintained a history of high treatment satisfaction amongst caregivers (Agazzi et al., 2010; Dunlop et al., 2020; Williams, 2007). In light of previous findings, it was anticipated that caregivers included in the current study would report satisfaction with the HOT DOCS EI. Overall scores on the TAI from caregivers in the current study demonstrated results consistent with previous findings with all parents reporting high levels of satisfaction with the program as evidenced by total scores above (35). Specifically, caregivers 1 and 3 reported that they liked the program "very much" and caregiver 2 reported that she liked the program "somewhat". Caregivers 1 and 3 also reported that the HOT DOCS EI was "very good" at helping to improve their child's behaviors and caregiver 2 reported the program was "good". All three caregivers included in the study reported that they were "very satisfied" with the progress their child has made in their general behavior. Caregivers 1 and 3 reported that the major behavior problems their child had at home before the start of the program were "greatly improved" and Caregiver 2 reported that the major problem was "somewhat improved". Several decades of research have demonstrated that high levels of treatment acceptability and satisfaction are predictors of more positive treatment outcomes (Childres et al., 2011; Eckert & Hintze, 2000). Therefore, the high ratings of satisfaction with the HOT DOCS EI as reported by parents in the current study and the evidence of a therapeutic treatment effect is consistent with research indicating that caregivers are more likely to report positive outcomes following treatment if they are satisfied with the program. Unsolicited feedback from caregivers included: "Thank you for allowing us to be a participant in the program, you have improved our lives, my child's behavior, and given us the confidence we need to raise xxx to be a well behaved child!" (caregiver 1), "I enjoyed the program and learned many things on disciplining my child that I've been able to implement with my other children as well, which has helped me a lot"

(caregiver 2), and "I originally tried to do this program online but it did not work for me at all. I think my face to face facilitator was crucial in my understanding and implementing of the program" (caregiver 3).

Limitations

The present study was associated with several potential limitations. First, although the use of a relatively homogenous sample of mothers could help increase the generalizability of therapeutic effects and results to similar populations, caregivers included in the study were recruited via convenience sampling, which in turn limits the generalizability of observed effects and results to dissimilar populations (e.g., fathers, other caregivers). In addition, use of a non-concurrent design also served as a limitation because it did not allow the researcher the ability to determine whether all participants were impacted by the same external factor at the same time. For this reason, it was harder to rule out history (i.e., events occurring concurrently with the intervention) as an explanation for the observed changes in child behavior or parental stress. Additionally, the a priori selection of intervention start points may have prevented the study from establishing stable baselines. Baseline lengths were pre-established based on previous research regarding childhood challenging behavior which suggests that children with clinically significant behavior tend to demonstrate relatively stable levels of behavior (Basten et al., 2016; Fox et al., 2002; Knap, 2018). For this reason, the PI of this study initially anticipated that children in the current study would demonstrate stable levels of behavior during baseline. Additionally, baselines were pre-established due to practical and clinical recruitment constraints which made it difficult to have unspecified baseline lengths. For example, in an effort to recruit participants, the researcher considered it important to provide potential participants with information regarding how long they would need to be in baseline before receiving the intervention. As such, because

baselines were not stable prior to transitioning to treatment for several of the outcomes, and given the fact that the data followed a downward trend in baseline, identification of a treatment effect was challenging. Furthermore, because children appeared to have less intense and problematic behavior during baseline and parents reported less stress, it is unclear whether effects were a continuation of the trend in baseline or if the HOT DOCS EI contributed. Additionally, intensity and problem T-scores, at baseline, were only slightly above clinically significant levels for two of the three Dyads which made it more difficult to demonstrate significant improvement on these variables. One possible explanation for the trends in baseline could relate to the researcher's decision to intervene at what would be considered less than ideal times given children's behavioral "improvements" during baseline. Thus, it is possible that children would have returned to higher or clinical levels of behavior if baseline lengths were longer.

Another limitation of the study relates to the sudden change in intervention service delivery. Specifically, due to a global pandemic, caregivers were transitioned to intervention implementation via telehealth. Thus, the intervention was unable to be implemented in-person as originally intended and caregivers transitioned to telehealth at different time points during implementation. Intervention integrity did not appear to significantly decrease with telehealth, however there were several challenges associated with implementation via telehealth including computer and/or sound difficulties, behavior management difficulties, and difficulty viewing interactions during the play and practice activities. Additionally, use of the ECBI represents a relative limitation because although the ECBI was implemented twice per week in an effort to obtain enough data to demonstrate change, the frequency of the administration of the ECBI, along with its lack of sensitivity to change, could have contributed to the high level of

overlapping data observed in the study. Additionally, because caregivers must respond with either “yes” or “no” on the ECBI problem scale, variability amongst item responses related to caregiver perceptions of problematic behavior is limited. For example, ECBI intensity scores from caregiver 2 demonstrated improved child behavior, but there were several instances in which the behaviors were still considered problematic. Possible explanations for this include the limited item response variability of the ECBI problem scale and limited parental comfort with responding “no” to items indicating the behaviors are no longer “problematic”.

A final limitation of the study relates to the natural maturation of children during participation in the HOT DOCS EI. In other words, events in children’s lives and their natural process of maturation may have occurred concurrently with the HOT DOCS intervention and could have contribute to some of the behavior related decreases. For example, the child participants may have experienced reductions in their displays of challenging behavior due to being exposed to appropriate behaviors modeled by their other relatives, and/or siblings.

Implications for Future Research

Results from this study pose several areas for future research. The present study found therapeutic evidence of improvements in that parents reported less behavioral problems and less parental stress following implementation of the HOT DOCS EI; however, it is unclear whether these improvements are attributable to the HOT DOCS EI intervention. Thus, the current study could be replicated with a diverse sample of 4 or more caregivers and young children, and a more rigorous analysis design (e.g., multilevel models) in order to expand upon the current findings and increase opportunities for statistical evidence of effectiveness and statistical power. Future studies may also consider allowing for extended baseline sessions or baselines without the

use of a priori start points in order to establish stable baselines as necessary to help accurately identify treatment effects.

Additionally, because two children in the current study had an Autism diagnosis, future studies may include a larger sample of children with various diagnoses (e.g., ASD, ADHD, developmental delay, etc.). Future studies also could utilize other methods to measure children's behavior problems such as reports from children's preschool teachers or other caretaking partners in the home where applicable. HOT DOCS providers could also directly observe parent use of skills and child behaviors using several methods (e.g., frequency counts, duration, etc.) in order to further provide insight and track growth with skills learned and implemented over time. Future research could also consider looking at more specific behavior problems (e.g., tantrums) by having parents indicate 1-2 specific problematic or intense behaviors in order to help inform whether or not the HOT DOCS EI was helpful at addressing their more specific behavioral concerns in addition to childhood behavior overall. Future research should also consider having caregivers complete the ECBI once per week instead of twice per week given that less change noticed within a few days and to ensure feasibility for caregivers. The caregiver from Dyad 2 in particular struggled to keep up with completing rating scales as the study progressed, and acknowledged during the post assessment that keeping up with the ratings was difficult for her.

Finally, as the HOT DOCS EI continues to be examined over time, future research could consider evaluating the effectiveness of the guide when implemented based on parental needs. For example, as opposed to parents going through all 13 sessions of the intervention, research could be conducted to determine the effectiveness of the program when only specific sessions are implemented based on parental need at the time. Research in this area could help inform whether or not there is a greater benefit to going through the entire program in comparison to a more

modularized version of the program. Future research may also consider monitoring maintenance of behavior change upon completion of the HOT DOCS EI program in an effort to help provide insight regarding whether effects are maintained over time or if booster sessions might be warranted.

Implications for Practice

The information gained from the results of this study gives the HOT DOCS EI developers an opportunity to continue to refine and improve the program measures, tools, and procedures. One important implication for practice relates to the homework activities. Essentially, because the HOT DOCS EI currently does not include very specific homework assignments and assessments, it was difficult for the therapist to determine whether or not parents actually practiced skills learned. The program would benefit from incorporating a homework fidelity measure and more specific homework activities. For example, as part of special play homework, providers would benefit from being transparent with regards to skills parents are expected to practice during this 5 minutes of time, and provide parents with a homework sheet to chart days in which they were able to engage in the play and/or skills practiced (e.g., reflections, praise, etc.). Furthermore, when teaching compliance and the timeout procedures included in the program, parents could be provided with a progress monitoring form to record their requests, children's compliance, and whether or not they were sent to timeout. The data obtained from this progress monitoring form could be reviewed and discussed during the session in order to inform goals related to compliance or problem solve any barriers to implementation of strategies. Providers included in the current study informally discussed with parents whether or not they had an opportunity to practice the skills they had learned, but specific evidence or data were not obtained. Development of a short participant manual could also be helpful to provide to

caregivers along with other necessary materials. For example, manuals may be mailed to parents prior to the implementation of the intervention if possible or hand delivered during session 1.

The teaching and coaching strategies applied in the HOT DOCS EI to encourage parents' use of appropriate skills (e.g., labeled praise, ignoring, etc.) consist of best practices in parent consultation that are endorsed by multiple parent training and interaction therapy protocols (Armstrong et al., 2006, Dishion et al., 2012; Eyberg, 1988). Providers' use of praise, modeling of skills, and responsiveness to caregiver concerns and questions during sessions are all important components of service delivery that not only help to establish relationships with caregivers but also increase the likelihood that caregivers will be responsive to feedback they are provided. Additionally, because caregivers included in the study participated in sessions without their significant other, it is important to emphasize the importance of parental consistency when applying strategies and discipline practices. Providing caregivers with short handouts that highlight topics discussed and skills learned can help ensure that the other caregiver involved with the child is aware of new strategies being used for behavior management.

It might also be helpful to provide caregivers with certain materials prior to sessions so that they can review and have a better idea of what will be discussed during the upcoming session. For example, a 5-10-minute introductory video of material being taught could be sent to caregivers prior to the sessions so that they are exposed to background or introductory information regarding the topic, which could possibly increase time available in session to further discuss material and complete practice and play activities. Additionally, if completing the program via telehealth, it is important to ensure that an approved application (e.g., Zoom) is used for all sessions. Providers should prepare for telehealth in advance. For example, it is important for caregivers and providers to determine whether families have an appropriate device to use

during telehealth sessions. Providers must also feel comfortable with basic technology troubleshooting and engage in frequent communication with parents during play activities to ensure the child and parent can be observed and provided appropriate feedback. It may be helpful for therapists to observe a trainer using telehealth for implementation of the HOT DOCS EI to learn about strategies for developing rapport with caregivers, observe methods to maintain caregiver engagement during sessions, and learn ways to problem solve issues with technology prior to implementing the program via telehealth.

Lessons Learned

The current study and implementation of the HOT DOCS EI was met with several "lessons learned" throughout the process. The lessons learned discussed in this section may be helpful for providers who are interested in conducting research or implementing this program in the future. Therefore, the first lesson learned relates to data collection. It would be helpful for providers collecting data to complete the ECBI and other related forms with caregivers at the very beginning of the session to ensure that these data are obtained. If completing the program via telehealth, the clinician could consider using the "share screen" function on Zoom to read the questions aloud and select answers based on caregivers' response. However, when completing the ratings via Zoom it is important to remind the caregivers to simply state their numerical response to decrease opportunities for long discussion regarding parents' responses.

The second lesson learned relates to the importance of flexibility. For example, although the play activities included in the manual occur at the end of sessions, it was sometimes more advantageous for the provider to engage in the play and practice activity sooner if the child was engaged and willing to interact with the parent. Likewise, it was important for providers to help

caregivers learn to follow their child's lead in order to facilitate a play activity that was enjoyable to the child and conducive to good opportunities for practice and feedback.

The third lesson learned relates to implementation of programs in caregivers' home setting. Specifically, because sessions were implemented in person prior to the COVID-19 pandemic, it was important to understand the unique home environment of each family. For example, because all caregiver-child Dyads included in the current study had other children, it was helpful to discuss whether or not the other children would be nearby during sessions or kept occupied in order to plan and prepare accordingly. Furthermore, because home environments are less controlled in comparison to clinic or community-based settings, it is important to recognize that unpredictable factors or issues may arise and effective problem solving is necessary to address them when they occur.

The fourth lesson learned is related to time management. The manual has preset time limits for topics and activities covered during each session that can be used as a guide to inform how long each activity should take. Although it was very helpful to follow these times ranges to increase implementation integrity, it also was important be reasonably flexible when teaching topics where appropriate. For example, some parents had a solid understanding of certain skills and benefitted from a brief review and discussion as opposed to a more thorough explanation. In addition, given the nature of the content covered during some sessions, it was very important to learn how to respectfully acknowledge and redirect caregivers when conversations unrelated to the content topic were introduced.

The final lesson learned relates to the teaching of topics discussed. Specifically, it was important to explain concepts to parents in a way that they were able to grasp and understand while also aligning skills with their child's behavioral goals where appropriate (Armstrong, Lilly,

& Agazzi, 2006; Dishion et al., 2012). For example, utilizing personal examples from a caregiver's experiences and having additional examples ready to share was useful for caregivers who required additional support with understanding how strategies could be implemented effectively with their child.

Conclusion

Young children with very challenging behavior are at risk for eventual problematic social-emotional functioning, possible academic difficulties, and continued behavioral concerns that are often unlikely to decrease if left untreated. These outcomes are often exacerbated for children with developmental delays or neurodevelopmental disorders. As such, it is imperative for parents of these children to receive early intervention through evidence-based behavioral parent training programs which can help address their concerns. Given that several behavioral parent training programs have a history of group format implementation in community or clinic-based settings, the current study aimed to examine the effectiveness of the HOT DOCS EI which is a one-on-one home-based program. Essentially, the current study aimed to determine whether or not the program was effective at decreasing early childhood challenging behavior and parental stress. Results from the current study indicate therapeutic improvements in overall childhood challenging behavior and parental stress. Results also indicate that parents were highly satisfied with the HOT DOCS EI program despite the transition to telehealth during implementation. Given that results of the current study do suggest improvements, research utilizing more rigorous research methods should be conducted in order to provide more in-depth and higher quality data regarding treatment effects.

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Appendix A: HOT DOCS Demographic Questionnaire

HOT DOCS Demographic Questionnaire – Parent/Caregiver

ADULT PARTICIPANT INFORMATION SECTION:
Please fill out the following information for the adult who is attending.

Participant Name: _____
(first) (last)

DOB: _____ **Gender:** □ Male □ Female □ Prefer not to answer

Address:_____
_____
(Street) (City) (State) (Zip)

Ethnicity	□ Hispanic or Latino □ Not Hispanic or Latino □ Prefer not to answer	
Race	□ White □ Black or African American □ American Indian or Alaska Native □ Asian	□ Native Hawaiian or other Pacific Islander □ Two or more races □ Prefer not to answer
Household Structure	☐ Dual 2 Parent Household ☐ Male (Single) Head of Household ☐ Female (Single) Head of Household ☐ Other-Relative/Kinship Care (Single) Head of Household	☐ Dual 2 Other-Relatives/Kinship Care ☐ Prefer not to answer
Highest level of Education in Household	☐ Some or no high school ☐ Some college ☐ Advanced Degree ☐ High school graduate or GED ☐ Associates Degree ☐ Prefer not to answer ☐ Technical certificate ☐ Bachelor's Degree	
Number in Household	# Adults: _____ # Children: _____	
Primary Language	□ English □ Spanish □ Haitian-Creole □ Prefer not to answer	
Relationship to Child	□ Biological Parent □ Foster Parent □ Adoptive Parent □ Grandparent □ Other:_____	
Marital Status	☐ Married ☐ Separated ☐ Single ☐ Widowed ☐ Divorced	
Current Employment	☐ Full-time ☐ Not employed ☐ Part-time ☐ Prefer not to answer	
Yearly household income	☐ $0 to 9,999 ☐ $25,000 to 34,999 ☐ $50,000 and above ☐ $10,000 to 24,999 ☐ $35,000 to 49,999 ☐ Prefer not to answer	

#1 CHILD INFORMATION SECTION: **Please fill out the following information based on your child. If you have more than one child please complete the additional info for Child #2 below.**		
Child Name: _____ (first) (last) **DOB:**_____ **Gender:** □ Male □Female □ Prefer not to answer		
Child Ethnicity	□ Hispanic or Latino □ Not Hispanic or Latino □ Prefer not to answer	
Child Race	□ White □ Black or African American □ American Indian or Alaska Native □ Asian	□ Native Hawaiian or other Pacific Islander □ Two or more races □ Prefer not to answer
Diagnosis(es): Check all that apply	□ No diagnosis □ Developmental Delay □ Speech/Language Delay □ Intellectual Disability □ Autism spectrum disorder	□ Sensory Processing Problems □ ADHD □ Oppositional defiant Disorder □ Anxiety □ Feeding Difficulties □ Other:_____
Child's Daily Living	□ Not yet in school (circle one): – Home (parent/caregiver/relative) – Daycare (friend/relative) – Daycare (center or home-based)	□ Pre-Kindergarten or Preschool – Free lunch? Yes No □ Kindergarten – Free lunch? Yes No
#2 CHILD INFORMATION SECTION: **Please fill out the following information based on your child.**		
Child Name: _____ (first) (last) **DOB:**_____ **Gender:** □ Male □Female □ Prefer not to answer		
Child Ethnicity	□ Hispanic or Latino □ Not Hispanic or Latino □ Prefer not to answer	
Child Race	□ White □ Black or African American □ American Indian or Alaska Native □ Asian	□ Native Hawaiian or other Pacific Islander □Two or more races □ Prefer not to answer

Diagnosis(es): Check all that apply	□ No diagnosis □ Developmental Delay □ Speech/Language Delay □ Intellectual Disability □ Autism spectrum disorder	□ Sensory Processing Problems □ ADHD □ Oppositional defiant Disorder □ Anxiety □ Feeding Difficulties □ Other:_____
Child's Daily Living	☐ Not yet in school (circle one): – Home (parent/caregiver/relative) – Daycare (friend/relative) – Daycare (center or home-based)	☐ Pre-Kindergarten or Preschool – Free lunch? Yes No ☐ Kindergarten – Free lunch? Yes No

Appendix B: Therapy Attitude Inventory for HOT DOCS

Therapy Attitude Inventory for HOT DOCS

ID Code _____ Date _____

Directions: Please circle the response for each question which best expresses how you

1. Regarding techniques of disciplining, I feel I have learned:

1. Nothing	2. Very little	3. A few new techniques	4. Several useful techniques	5. Many useful techniques

2. Regarding techniques for teaching my child new skills, I feel I have learned:

1. Nothing	2. Very little	3. A few new techniques	4. Several useful techniques	5. Many useful techniques

3. Regarding the relationship between myself and my child, I feel we get along:

1. Much worse than before	2. Somewhat worse than before	3. The same as before	4. Somewhat better than before	5. Very much better than before

4. Regarding my confidence in my ability to discipline my child, I feel:

1. Much less confident	2. Somewhat less confident	3. The same	4. Somewhat more confident	5. Much more confident

5. The major behavior problems that my child had at home before the program started are at this time:

1. Considerably worse	2. Somewhat worse	3. The same	4. Somewhat improved	5. Greatly improved

6. I feel that my child's compliance with my commands or requests is at this time:

1. Considerably worse	2. Somewhat worse	3. The same	4. Somewhat improved	5. Greatly improved

7. Regarding the progress my child has made in his/her general behavior, I am:

1. Very dissatisfied	2. Somewhat dissatisfied	3. Neutral	4. Somewhat satisfied	5. Very satisfied

8. To what degree has the HOT DOCS program helped with other general personal or family problems not directly related to your child:

1. Hindered much more than helped	2. Hindered slightly	3. Neither helped nor hindered	4. Helped somewhat	5. Helped very much

9. I feel the type of program that was used (HOT DOCS) to help me improve the behaviors of my child was:

1. Very poor	2. Poor	3. Adequate	4. Good	5. Very good

10. My general feeling about the HOT DOCS program I participated in is:

1. I disliked it very much	2. I disliked it somewhat	3. I feel neutral	4. I liked it somewhat	5. I liked it very much

Appendix C: DOCS Parenting Stress Measure

PRE - DOCS Parenting Stress Measure

Adapted by the HOT DOCS team at UMASS from the Autism Parenting Stress Index (Silva & Schalock, 2011)

Participant Name or ID Code: _____Date: _____

Please rate the following aspects of your child's behavior according to how much stress it causes you and/or your family by circling the number in the box that best describes your current situation

		Not Stressful	Sometimes creates stress	Often creates stress	Very stressful on a daily basis	So stressful sometimes you feel you can't cope
1	Your child's social development.	0	1	2	3	4
2	Your child's ability to communicate.	0	1	2	3	4
3	Your child's tantrums/meltdowns.	0	1	2	3	4
4	Your child's managing of emotions.	0	1	2	3	4
5	Your child's aggressive behaviors (with siblings, peers, etc.).	0	1	2	3	4
6	Your child's difficulty making transitions from one activity to another.	0	1	2	3	4
7	Your child's sleep problems.	0	1	2	3	4
8	Your child's feeding difficulties.	0	1	2	3	4
9	Your child's bathroom-related behaviors.	0	1	2	3	4

10	Concern about being embarrassed about your child's behaviors.	0	1	2	3	4
11	Concern for the future of your child being accepted by others.	0	1	2	3	4
12	Concern for the future of your child succeeding in school.	0	1	2	3	4
13	The impact parenting your child has on other life activities.	0	1	2	3	4
14	The time parenting your child takes.	0	1	2	3	4
15	The effort parenting your child takes.	0	1	2	3	4
16	The financial resources parenting your child takes.	0	1	2	3	4
17	Not feeling close to your child.	0	1	2	3	4

Appendix D: Sample HOT DOCS EI Integrity Checklist

HOT DOCS Weekly Early Intervention Program Integrity Checklist for Session 4: *Preventing Challenging Behaviors - Part 1*

Interventionist: _____ Client: _____

Date of Session: _____ Independent Rater (if applicable): _____

Directions: Place a checkmark in the appropriate column for each activity to indicate if you engaged in this activity during this session (YES), accidentally skipped or forgot this activity during this session (NO), or if this activity is not necessary or applicable during this session (N/A).

Activity	**Yes**	**No**	**N/A**
1. Brief check-in, review homework activities and previous session's content			
2. In-depth review of the problem-solving process			
3. Introduce Sessions 4, 5, & 6			
4. Use a problem-solving chart completed for homework to introduce appropriate prevention strategies for the family's specific behavior			
5. Teach and practice Parenting Tip: Give Clear Directions			
6. Play and Practice Activity: Fun Dough			
7. Wrap Up: Questions, concerns, date & time of next session			