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# Helping our toddlers, developing our children's skills (HOT DOCS): An investigation of a parenting program to address challenging behavior in young children

Jillian Leigh Williams  
*University of South Florida*

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*Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS):*

An Investigation of a Parenting Program to Address  
Challenging Behavior in Young Children

by

Jillian Leigh Williams

A dissertation submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
Department of Psychological and Social Foundations  
College of Education  
University of South Florida

Co-Major Professor: Kathy Bradley-Klug, Ph.D.  
Co-Major Professor: Kathleen Armstrong, Ph.D.  
Constance Hines, Ph.D.  
Carol Lilly, M.D.

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behavior, problem solving

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## Dedication

This dissertation is dedicated to the memories of my grandfathers, Willis Barton Conable and David Edward Williams, who taught me through their words and their actions that this little girl could grow up to become anything she wanted as long as she put her mind to it and did well in school. I believe both of these great men will be watching from above as I become “Dr. Williams” and it is in their honor that I have persevered to achieve this distinction.

This dissertation is also dedicated to my parents, David and Jana Williams, who have never wavered in their belief that I would achieve greatness. Throughout my life, they have not only encouraged me to pursue my education but have provided the supports necessary to allow me to dedicate myself completely to my education. Because you have taught me to set my expectations high, I hope I will continue to make you proud as I finish my education and become a professional. I love you both and thank you so much for your help in achieving my dreams.

Finally, I dedicate these 222 pages to my partner and my best friend, Shane Childres, who has put up with endless hours of typing, revising, and worrying as I prepared this dissertation. Who, in return, gave me the love, laughter, and excitement necessary to balance the rigors of finishing my doctoral degree and beginning my “big people” career.

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## Table of Contents

List of Tables	v
List of Figures	viii
Abstract	ix
Chapter 1 Introduction	
Statement of the Problem	1
Theoretical Framework	4
Overview of the HOT DOCS Parent Training Program	5
Purpose of the Study	6
Research Questions	7
Significance of the Study	8
Definition of Terms	8
Chapter 2 Review of Related Literature	
Overview	10
Prevalence of Young Children with Challenging Behavior	10
Outcomes Associated with Early Emerging Behavior Problems	13
Role of Parenting in Child Behavior Problems	15
Outcomes Associated with Early Intervention	22
Limited Resources for Prevention & Early Intervention	23
Parent Training as an Intervention	25
Parent and Child Characteristics Affecting Outcomes of Parent Training	36
Parent/Caregiver Education Level	37
Parent/Caregiver Social Support	39
Child's Age	39
Child's Diagnosis	41
Preliminary Investigation of the HOT DOCS Parent Training Program	42
Rates and Patterns of Caregiver Attendance	44
Comparison of Participant and Local Demographics	45
Comparison of Child and Caregiver Demographics with Previous Studies	47
Caregiver Knowledge	48
Caregiver Perceptions of Severity of Child Behavior	48
Changes in Child Problem & Adaptive Behavior	50
Caregiver Skills at Home	51

Caregivers' Overall Perceptions of the HOT DOCS Program	52
Conclusions	53
Summary	54
Chapter 3 Methods	
Introduction	56
Participants	56
Description of Caregivers	58
Description of Target Children	62
Settings	64
HOT DOCS Parent Training Program	64
Session One	65
Session Two	65
Session Three	66
Session Four	66
Session Five	67
Session Six	67
Booster Session	67
HOT DOCS Trainers	68
Description of Train-the-Trainers Process	68
Measures	69
HOT DOCS Caregivers Demographics Form	69
HOT DOCS Knowledge Test	70
Achenbach Child Behavior Checklist	70
HOT DOCS Program Evaluation Survey for Caregivers	71
Data Collection Procedures	72
Data Analysis	75
Caregiver Knowledge	75
Caregiver Perceptions of Severity of Child Behavior	76
Changes in Caregiver Perceptions of Severity of Child Problem Behavior	78
Overall Perceptions of the HOT DOCS Program	79
Chapter 4 Results	
Overview	81
Caregiver Knowledge	81
Research Question #1a	81
Research Question #1b	82
Caregivers' Level of Education	83
Caregivers' Social Support	87
Target Child's Age	90
Target Child's Diagnosis	92
Caregiver Perceptions of Severity of Child Behavior	95
Research Question #2a	95

Research Question #2b	98
Caregivers' Level of Education	99
Caregivers' Social Support	103
Target Child's Diagnosis	106
Changes in Child Problem Behavior	109
Research Question #3a	109
Research Question #3b	113
Caregivers' Social Support	114
Target Child's Diagnosis	117
Target Child's Age	121
Caregivers' Overall Perceptions of the HOT DOCS Program	125
Research Question #4	125
Summary	133
Chapter 5 Discussion	
Overview	135
Demographic Characteristics	136
Rates and Patterns of Caregiver Attendance	136
Comparison of Caregiver Demographics with the Local Community and Previous Studies	140
Caregivers' Gender/Relationship to Target Child	141
Caregivers' Race/Ethnicity	142
Caregivers' Level of Education	145
Type of Insurance	146
Caregivers' Social Support	147
Target Child's Preexisting Diagnosis	149
Caregiver Knowledge	150
Caregiver Perceptions of Severity of Child Behavior	156
Changes in Child Problem Behavior	159
Caregivers' Overall Perceptions of the HOT DOCS Program	163
Implications for Practitioners	165
Limitations	167
Directions for Future Research	169
Conclusion	171
References	173
Appendices	196
Appendix A: HOT DOCS Parent Training Program	197
Appendix B: HOT DOCS Demographic Form for Caregivers (English)	198
Appendix C: HOT DOCS Demographic Form for Caregivers (Spanish)	199
Appendix D: HOT DOCS Knowledge Test (English)	200

Appendix E: HOT DOCS Knowledge Test (Spanish)	201
Appendix F: HOT DOCS Program Evaluation Survey for Caregivers (English)	202
Appendix G: HOT DOCS Program Evaluation Survey for Caregivers (Spanish)	203
Appendix H: Relation between Research Questions and Variables	204
About the Author	End Page



## List of Tables

Table 1	Attendance Record of Initial Caregiver Participant Sample	58
Table 2	Breakdown of Participant Sample by Gender, Race/Ethnicity, Education Level, and Social Support	59
Table 3	Breakdown of Participant Sample by SES Indicator	61
Table 4	Relation of Caregiver to Target Child by Participant Gender	62
Table 5	Number and Percent of Target Children by Preexisting Diagnosis	63
Table 6	Means and Standard Deviations for Participant Scores on the Knowledge Test	82
Table 7	Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Caregivers' Education Level	83
Table 8	Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Caregivers' Education Level	85
Table 9	Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Caregivers' Social Support	88
Table 10	Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Caregivers' Social Support	89
Table 11	Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Target Child's Age	90
Table 12	Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Target Child's Age	91
Table 13	Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Target Child's Diagnosis	93
Table 14	Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Target Child's Diagnosis	94

Table 15	Means and Standard Deviations for Pretest Scores on the CBCL	96
Table 16	Observed and Expected Frequencies for CBCL Internalizing & Externalizing Subscale T-Scores	96
Table 17	Means and Standard Deviations of CBCL Internalizing and Externalizing Scores by Caregivers' Education Level	100
Table 18	Analysis of Variance of Pre-Test CBCL Scores by Caregivers' Education Level	102
Table 19	Means and Standard Deviations of CBCL Internalizing and Externalizing Scores by Caregivers' Social Support	104
Table 20	Analysis of Variance of Pre-Test CBCL Scores by Caregivers' Social Support	105
Table 21	Means and Standard Deviations of CBCL Internalizing and Externalizing Scores by Target Child's Diagnosis	106
Table 22	Analysis of Variance of Pre-Test CBCL Scores by Target Child's Diagnosis	107
Table 23	Means and Standard Deviations of Pre- and Posttest CBCL Scores by Scale	110
Table 24	Analysis of Variance of CBCL Pre- and Posttest Scores	111
Table 25	Means and Standard Deviations of Pre- and Posttest CBCL Scores by Caregivers' Social Support	114
Table 26	Analysis of Variance of CBCL Pre- and Posttest Scores by Caregivers' Level of Social Support	116
Table 27	Means and Standard Deviations of Pre- and Posttest CBCL Scores by Target Child's Diagnosis	118
Table 28	Analysis of Variance of CBCL Pre- and Posttest Scores by Target Child's Diagnosis	120
Table 29	Means and Standard Deviations of Pre- and Posttest CBCL Scores by Target Child's Age	122

Table 30	Analysis of Variance of CBCL Pre- and Posttest Scores by Target Child's Age	124
Table 31	Ratings of Participant Satisfaction with the HOT DOCS Training Program	127
Table 32	How are you using the information you learned in HOT DOCS?	129
Table 33	Have you shared information from HOT DOCS with...?	130
Table 34	What can we do to improve HOT DOCS?	131
Table 35	What did you value most about taking the HOT DOCS class?	132

## List of Figures

Figure 1.	Mean Knowledge Test scores by caregivers' education level.	87
Figure 2.	Number of expected and observed CBCL T-scores by descriptive category.	98
Figure 3.	Mean CBCL Internalizing and Externalizing subscale scores by caregivers' education level.	103
Figure 4.	Mean CBCL Internalizing and Externalizing subscale scores by target child's diagnosis.	109
Figure 5.	Pre- and posttest mean scores for CBCL scales.	112

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ABSTRACT

This study investigated outcomes of a parent training curriculum: *Helping Our Toddlers Developing Our Children's Skills (HOT DOCS)*, using secondary analyses of existing data collected between May 2007 and March 2009. The evaluation studied the impact of specific components of the parent training program on both participants' knowledge and attitudes and their perceptions of target children's behavior. Caregivers ( $n = 334$ ) of children between the ages of 18 months and 5.11 years of age who were participants in the parent training program were included in the study. Measures included a pre/post knowledge test, pre/post rating scales of child problem behavior, and a program evaluation survey. Results indicated significant increases in caregiver knowledge following participation in the program, but non-significant differences between groups of participants based on various demographic variables. Prior to participation in the program, caregivers' perceptions of the severity of child problem behaviors were significantly different from that of the normative population. Following participation in the program, results showed a significant decrease in caregiver perceptions of the severity of child problem behaviors, regardless of caregiver/target child demographic variables. Caregiver feedback indicated high levels of satisfaction with the program.

## Chapter 1

### Introduction

#### *Statement of the Problem*

After nearly three decades of cross-disciplinary research, professionals in the fields of psychology, education, and medicine are no longer surprised that their client lists, student rosters, and appointment schedules are filled with young children displaying challenging behaviors. The most commonly cited challenging behaviors in young children (between the ages of 18 months and 5.11 years old) include sleeping difficulties, mealtime and feeding issues, toilet training, temper tantrums, aggression, sibling rivalry and noncompliance. Recent research has shown that approximately 15%-25% of all typically developing preschool children have chronic levels of behavior problems that fall within the mild to moderate range (Campbell, 1995; Keenan & Wakschlag, 2000; Knapp, Ammen, Arstein-Kerslake, Poulsen, & Mastergeorge, 2007; Lavigne et al., 1996). Prevalence rates of chronic behavior problems for minority children and/or children in low-income families have been identified as ranging between 25% and 35% of typically developing children (Gross, Sambrook, & Fogg, 1999; Webster-Stratton, 1998). A more recent community study of approximately 8,000 families indicated that 10% of infants between the ages of birth and one-year scored within the significant range on a screening instrument for emotional and behavioral problems and 6% of one-year-old children were

scored as significantly high by parents on the Difficult Child scale of the Parenting Stress Index (Beernink, Swinkels, & Buitelaar, 2007).

The long-term outcomes associated with early onset challenging behavior in young children have been well-documented (Coie & Dodge, 1998; Dishion, French, & Patterson, 1995; Kazdin, 1995; Moffitt, 1993; Reid, 1993; Tremblay 2000). In general, the earlier the problem behavior develops the more stable and intense the associated negative outcomes are over time. Dishion and colleagues (1995) found that early appearing behavior problems in a child's preschool career are the single best predictor of delinquency in adolescence, gang membership, and adult incarceration. Other researchers have identified similarly poor long-term outcomes related to academic and school performance. Kazdin (1993) and Tremblay (2000) concluded from their research that preschoolers with challenging behaviors are at a greater risk of experiencing school failure than typically developing children.

Several studies have investigated the poor social and interpersonal outcomes associated with developing challenging behaviors at an early age. Coie and Dodge (1998) found that preschoolers with challenging behaviors were more likely to experience early and persistent peer rejection. Strain and his colleagues (1983) reported that preschoolers with challenging behaviors also were more likely to experience more punitive interactions with teachers than their typically developing peers. Reid (1993) found that early appearing aggressive behavior is the single best predictor of juvenile gang membership and violence.

In response to research demonstrating the rapid and enduring increase in the prevalence rates of young children with challenging behaviors and the associated

negative long-term outcomes, professionals across disciplines have developed a variety of treatments to help prevent and treat these behaviors. For example, psychotropic medications (Barkley, 1997), individual clinical therapy or counseling with the child (Barkley et al., 2000; Forehand & Long, 1988), individual consultation with the family (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Feinfield & Baker, 2004), play therapy (Blackwell, 2005; McNeil, Capage, Bahl, & Blanc, 1999; Nixon, Sweeny, Erickson, Touyz, 2003), and behavioral parent training (Kazdin, 1997; Sanders, Mazzucchelli, & Studman, 2004; Webster-Stratton, 1998) have all been evaluated for their efficacy in reducing challenging behavior in young children. Of these interventions and treatments, behavioral parent training delivered in a group format has been shown to be an effective treatment for challenging behavior in young children, while utilizing the least amount of resources and empowering parents to prevent the development of future problem behaviors (Barlow & Parsons, 2002; Lundahl, Risser, & Lovejoy, 2006; Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Nelson, 1995; Sandall & Ostrosky, 1999; Smith & Fox, 2003).

Despite the available evidence supporting the effectiveness of early intervention, there is a lack of services, resources, and empirically-supported interventions available to caregivers of young children displaying challenging behavior (Kazdin & Kendall, 1998; Knitzer, 2007; Walker et al., 1998). Based on the abundance of research supporting the primary role of parents and caregivers in young children's emotional and behavioral development, it follows that the most logical target for prevention and early intervention efforts would be improving caregiving skills and enhancing the caregiver-child relationship (Knitzer, 2007). Thus, group-based parent training would be an economical



and ecologically-based system for providing children and families with the knowledge, skill, and support they need to prevent and correct challenging behaviors (Smagner & Sullivan, 2005). The ability of one child care professional to simultaneously meet the needs of multiple families and children at once dramatically increases the efficiency of limited resources, professionals, and funding sources.

Researchers also have investigated differential outcomes for caregivers who attend behavioral parent training programs based on demographic variables and social characteristics. Specifically, studies have shown that variables, such as caregivers' educational level and degree of social support, as well as child's age and severity of symptoms or existing diagnosis may impact the degree of success in a given parent training program (Bakermans-Kranenburg et al., 2003; Reyno & McGrath, 2006; Stolk et al., 2008). In order to maximize the effectiveness of an intervention, it is important to identify factors that will allow practitioners to appropriately match clients with treatments in which they are likely to succeed (Smith, Landry, & Swank, 2005). More research is needed to specifically identify parent and child characteristics which may affect successful completion and outcomes of participating in a parent training program.

#### *Theoretical Framework*

Historically, one of the major theories guiding the inquiry into chronic behavior problems in young children is Skinner's (1953) theory of behaviorism. At its foundation, behaviorism postulates that all behavior is observable and functional. Behaviorism relies on the manipulation of antecedents and consequences and the effects of reinforcement and punishment as a means of changing and shaping behavior. In addition to approaching the study of challenging behavior in young children from a behavioral theoretical

framework, it is necessary to view the problem through an ecological model of child development (Bronfenbrenner, 1979). An ecological model takes into account biological, sociological, and psychological domains of child development and functioning (Sontag, 1996). From an ecological perspective, manipulation of a child's environment, including the behavior of caretakers, will directly impact the child's behavior (Bronfenbrenner, 1979). Given the above, an intervention program designed with the principles of behaviorism and ecology in mind would seem promising.

#### *Overview of the HOT DOCS Parent Training Program*

HOT DOCS, or Helping Our Toddlers Developing Our Children's Skills (Armstrong, Lilly, & Curtiss, 2006) is a behavioral parent training program, which incorporates both behavioral and ecological perspectives in its theoretical framework. HOT DOCS meets the following criteria for a behavioral intervention: 1) centers around an operant model of behavior, 2) provides caregivers with detailed information on effective caregiving strategies, 3) focuses on control of antecedents instead of punitive consequences, and 4) enhances generalization from the training setting to the home setting. HOT DOCS was designed to teach parents a problem-solving process based upon the foundation of behavioral principles (e.g., antecedents, consequences, and function of behavior) delivered in parent-friendly language. Unlike other parent training programs that focus on teaching parents to fix specific behavior problems, HOT DOCS teaches caregivers to use a step-by-step method to identify features of the environment and interpersonal interactions that may contribute to the reinforcement or maintenance of current and future problem behaviors. HOT DOCS also focuses on instructing caregivers to recognize that children may use challenging behaviors because they lack the

knowledge or skills to use more appropriate behaviors. Program developers note that HOT DOCS is different from other existing parent training programs because it directs caregivers to teach children new or replacement skills instead of focusing on contingency management strategies designed to eliminate problem behaviors (Armstrong & Hornbeck, 2005).

HOT DOCS also is unique in that the same curriculum can be delivered to parents, relatives, other caregivers, and child service professionals all in the same group at the same time. This allows parents to bring their support network with them to classes, which enhances the consistency of skill implementation across caregivers and across settings outside of the training session. Other programs (e.g., Incredible Years, Webster-Stratton, 1998; Triple P-Positive Parenting Practices, Sanders, 1999) have separate curricula for parents, children, teachers, and caregivers.

Another major difference between HOT DOCS and existing parent training programs is the total time required for program delivery. The HOT DOCS program is delivered over six consecutive weekly sessions of two hours each, with a 2-month post training booster session, for a total of 14 hours of classroom-based instruction. Other programs average 12-30 weekly sessions or a total of 24-60 hours of training. The program is in its fourth year of implementation, but no comprehensive study of the impact of the intervention on caregivers' knowledge and perceptions of target children's behavior has been undertaken.

#### *Purpose of the Study*

The current study was designed to serve as an evaluation of participants' knowledge and attitudes and as an investigation of participants' perceptions of target

children's behavior following participation in the HOT DOCS parent training program. In addition, this study investigated the extent to which select demographic variables (i.e., caregivers' level of education, caregivers' social support network, target child's age, and target child's diagnosis) moderated participants' outcomes and perceptions.

### *Research Questions*

The following research questions were addressed in the study:

1. a. What is the impact on caregiver knowledge of child development, behavioral principles, and parenting strategies as a result of participation in the HOT DOCS parent training program?  
b. Is there a difference in participant caregivers' knowledge of child development, behavioral principles, and parenting strategies based on caregivers' level of education, caregivers' social support network, the target child's age, and the target child's diagnosis?
2. a. Do caregivers perceive their child as having more problem behavior than a normative sample prior to participation in the HOT DOCS program?  
b. Are there significant differences in caregiver perceptions of the severity of child problem behaviors based on caregivers' level of education, caregivers' social support network, and the target child's diagnosis?
3. a. To what extent do caregivers perceive a decrease in child problem behavior following their participation in the HOT DOCS program?  
b. Are there differential perceptions of child behavior change based on caregivers' social support network, the target child's diagnosis, and the target child's age?

4. What are caregivers' overall perceptions of the HOT DOCS parent training program?

#### *Significance of the Study*

This study investigated whether or not the HOT DOCS program was an effective intervention for increasing caregiver knowledge of behavioral practices, whether or not participation in the program impacted caregivers' perceptions of child behavior, and whether there were differential perceptions and outcomes for specific groups of caregivers. Anticipated contributions to the general knowledge base included: 1) a better understanding of the utility of a group-delivered, behavioral parent training program, which was specifically designed to teach caregivers to use problem-solving strategies to prevent and address challenging behavior in young children while maximizing resource allocation and cost-effectiveness; and 2) information about differential outcomes for various groups of participants based on demographic characteristics. In addition, results of this study will be shared with the HOT DOCS program developers in order to facilitate the process of modifying and improving the instruments and procedures used to evaluate outcomes of the HOT DOCS parent training program and to help improve and refine the content and delivery of the program.

#### *Definition of Terms*

*Young children* is defined for the purposes of this study as children between the ages of 18 months and 5.11 years of age.

*Behavioral parent training* is defined as an intervention technique in which professionals provide training in specific behavioral parenting skills and techniques to parents and caregivers of young children. Behavioral parent training programs generally

have four common elements: 1) centers around an operant model of behavior, 2) provides parents with detailed information on appropriate and effective parenting strategies, 3) focuses on control of antecedents instead of punitive consequences, and 4) enhances generalization from the training setting to the home and community settings (Fienfield & Baker, 2004).

*Challenging behavior* is defined as a pattern of repeated behaviors that place children at risk of poor developmental outcomes in learning and social interactions (Dunst, Trivett, & Cutspec, 2002). Challenging behavior is therefore defined on the basis of its effects.

*Caregivers* is an inclusive term used throughout this study to refer to all parents, relatives, and child care professionals who participated in the HOT DOCS program.

*Child care professional* refers to participants who indicate that they attend HOT DOCS classes in their role as a service provider in a field addressing early childhood development, including early intervention specialists, medical and psychiatry students and residents, occupational/physical/speech therapists, behavioral analysts, daycare providers, and teachers. The designation of child service provider is made by the participants themselves when asked to indicate their relationship to the target child. While providers may also have children of their own and use the skills and techniques learned in the class with their own families, the term provider indicates that their primary purpose in attending the HOT DOCS classes is to develop knowledge and skills to support their clients and patients.

*Trainers* is used to refer to professionals who provided leadership for HOT DOCS parent training classes.

## Chapter 2

### Review of Related Literature

#### *Overview*

This chapter provides a review of the literature relevant to this study. Challenging behavior in young children is discussed, including prevalence rates, negative outcomes associated with early emerging behavior problems, and the role of parenting skills in the development of challenging behavior. Research supporting the importance of prevention and early intervention is reviewed, as well as the effectiveness of parent training as an intervention and differential outcomes based on demographic and social variables. This chapter concludes with a discussion of the importance of providing effective behavioral parent training through an ecological-behavioral framework to enable parents and caregivers to prevent and correct challenging behavior in young children as early as possible.

#### *Prevalence of Young Children with Challenging Behavior*

Numerous studies conducted over the past 30 years have shown a dramatic increase in the number of young children who are referred to professionals due to challenging behaviors (Campbell, 1995; Jolivet, Gallagher, & Morrier, 2008; Knapp, et al., 2007; Lavigne et al., 1996). Studies report that up to 75% of all psychological referrals for children are related to disruptive and noncompliant behavior (Feinfield & Baker, 2004). Researchers also have found that the proportion of children meeting the

criteria for a clinical diagnosis of oppositional defiant disorder (ODD) ranges between 7% and 25%, depending on the age of the population surveyed (Webster-Stratton, 2000).

Overall, the prevalence rate for challenging behaviors in young children varies between 10% and 16% for the general population (Campbell, 1995; Schuchmann, Foote, Eyberg, Boggs, & Algina; 1998; Webster-Stratton, 2000) and between 25% and 30% of the 7.6 million infants and children living below the poverty level (Gross et al., 2003; Keenan & Wakschlag, 2000; Knitzer, 2007; Qi & Kaiser, 2003). More recently, researchers have begun to investigate the prevalence rates of emotional and behavioral problems in infants and children younger than preschool age. Results of these preliminary projects indicate that up to 10% of infants and 6% of 12-month-old children had significant emotional and behavioral problems (Beernink et al., 2007). In the same survey, 70% of the parents surveyed whose infants' and young children's behavior did not reach clinically significant levels reported that their children frequently displayed behaviors such as "quickly shifts activities," "angry moods," and "demands must be met immediately" (Beernink et al., 2007).

Gross and colleagues (2003) conducted a cross-sectional study of 2- and 3-year-old children from low-income families to describe the prevalence rates and correlates of challenging behaviors in preschool children. The study included parents of 133 young children from 10 daycare centers in an urban city. Most of the parents included in this study were African American (64%) or Latino (25%) and were categorized as being low in socio-economic status based on income level (e.g., 50% of participants earned less than the state's median income). Parents completed measures of type and intensity of child behavior problems, parenting self-efficacy, parental discipline strategies, and



parental stress. Findings from the study showed that 32% of the young children had clinically significant levels of problem behaviors in the home setting. These results should be interpreted with caution given that the sample was composed of two minority ethnic groups of low socio-economic status (SES). Results from these findings should only be generalized to similar populations.

In 2003, Qi and Kaiser conducted a review of research pertaining specifically to challenging behaviors in young children from low-income families. These researchers reviewed and summarized research on this topic published between 1991 and 2002 with the goal of synthesizing prevalence rates of behavior problems and identifying risk factors for behavior problems. Results of this study showed that children whose families are poor are significantly more likely than middle- or upper-class families to develop behavior problems. Findings from this review were similar to previous reports in estimating that prevalence rate of challenging behavior for children from low-SES families is approximately 30% (Gross et al., 1999; Del'Homme, Sinclair, & Kasari, 1994; Feil, Walker, Severson, & Ball, 2000).

Keenan and Wakschlag (2000) conducted a study to examine the severity of challenging behaviors exhibited by preschool-aged children. The authors completed comprehensive psychological evaluations with 79 clinic-referred preschoolers from a primarily low-SES, urban setting. The comprehensive evaluations included semi-structured diagnostic parent interview (Schedule for Affective Disorders for School-Age Children-epidemiological 5<sup>th</sup> version; Orvaschel & Puig-Antich, 1995), child behavior rating scales (Child Behavior Checklist; Achenbach, 1991), direct observations of parent-child interactions, developmental assessment (Differential Abilities Scales; Elliot, 1983),

and overall clinical impairment ratings (Child Global Assessment Scale; Setterberg, Bird, Gould, Shaffer, & Fisher, 1992). Results indicated that nearly 80% of the preschool children met Diagnostic and Statistical Manual-4<sup>th</sup> Edition (DSM-IV, American Psychiatric Association, 1994) criteria for a disruptive behavior or Attention-Deficit/Hyperactivity Disorder. Specifically, 60% of the children met criteria for Oppositional Defiant Disorder (ODD) and 42% met criteria for Conduct Disorder (CD). These findings support the growing body of research identifying increasing prevalence and severity rates of disruptive behaviors in young children.

#### *Outcomes Associated with Early Emerging Behavior Problems*

Preschool years are a time identified by immense developmental challenges, which may include temporary bouts of problem behaviors, many of which resolve without any professional help or targeted intervention (Magee & Roy, 2008). However, unresolved early emerging behavior problems are early warning signs of much more serious future behaviors (Magee & Roy 2008). The problem of increasing prevalence rates of challenging behavior in young children becomes more significant when the long-term outcomes associated with early-emerging behavior problems are taken into account. Children who are identified as hard to manage at ages 3 and 4 years of age are twice as likely as their typically-developing peers to continue to display problem behavior into adolescence (Beernink et al., 2007; Campbell & Ewing, 1990; Egeland, Kalkoske, Gottesman, & Erikson, 1990; Fischer, Rolf, Hasazi & Cummings, 1984; Magee & Roy, 2008).

Egeland and colleagues (1990) conducted a longitudinal study in which they assessed the stability of behavior problems in children beginning in preschool and

following-up again when children reached the 3<sup>rd</sup> grade. Parents of 118 children between the ages of 4½ and 5 years of age completed child behavior rating scales and measures of parental stress and mental health when their child turned 3 years old and entered preschool and again when they began 3<sup>rd</sup> grade. Assessments also included direct observations of child behavior and semi-structured parent interviews. Ninety-six children met criteria for problem behaviors including acting out, withdrawal, or inattention. Twenty-two children did not meet criteria and served as the control group. Results indicated a high degree of stability in the presence of child problem behaviors. A limitation of this study was that the assessments of children's behaviors were only conducted at two points in time (3 years and 5 years of age), which excludes a critical period in the development of early emerging behavior problems occurring between 2 and 3 years of age.

A similar study conducted by Campbell and Ewing (1990) tracked the stability of behavior problems first identified in the preschool years; however, in this study, follow-up assessments were conducted at age 6 years and again at 9 years of age and focused specifically on the children who were excluded from the age range in the previous study. Parents of 51, three-year-old children completed behavior rating scales, parenting stress indices, semi-structured interviews and participated in direct observations of behavior. Assessments were conducted at three points in time, first when children entered preschool at 3 years of age, again at 6 years of age, and again at 9 years of age. Twenty-nine of the children were classified as “hard-to-manage” and 22 children served as developmentally appropriate control group peers. Results of this study showed that children who exhibited clinically significant problem behavior at 3 years of age were

more likely than same-aged peers who did not exhibit problem behaviors to continue to demonstrate problem behaviors at ages 6 and 9 years of age. Results also showed that the majority (67%) of children who had clinically significant behavior problems at 6 years of age met Diagnostic and Statistical Manual-3<sup>rd</sup> Edition (DSM-III; American Psychiatric Association, 1987) criteria for externalizing disorders at age 9 (e.g., ADHD, OCD, CD).

Young children who demonstrate challenging behavior in the preschool years are more likely to experience school failure (Kazdin, 1993; Tremblay, 2000), peer rejection (Coie & Dodge, 1998), punitive teacher interactions (Strain, Lambert, Kerr, Stragg, & Lenker, 1983), and unpleasant family interactions (Patterson & Fleischman, 1979). Preschoolers with early-emerging challenging behavior are also more likely to develop adult lives characterized by violence, abuse, loneliness, psychiatric illness, injury, unemployment, divorce, and early death (Coie & Dodge, 1998; Kazdin, 1995; Lipsey & Derzon, 1998; Olweus, 1991; Walker, Colvin, & Ramsey, 1995).

#### *Role of Parenting in Child Behavior Problems*

Much of the recent research conducted in the fields of psychology and education has focused on the etiology of challenging behavior in young children. A major theme to emerge in this body of research is that parenting style and parent-child relationships are significant determinants of child mental health problems, including challenging behavior (Jolivet et al., 2008; Loeber & Dishion, 1983; Patterson, DeBaryshe, & Ramsey, 1989; Rutter, 1991; Stormshak, Bierman, McMahon, Lengua, 2000). Studies have shown that a common factor in the etiology of most childhood behavior problems and social-emotional disorders is difficulty in the parent-child relationship (Kendziora & O'Leary, 1993; Mrazek, Mrazek, & Klinnert, 1995; Patterson et al., 1989; Rutter, 1991; Shaw, Emery, &

Turner, 1993). Magee and Roy (2008) found that even when all environmental risk-factors were accounted for, children of mothers with less parenting ability were 41% more likely than children of mothers with more adequate parenting skills to display challenging behaviors by the time they entered school. Negative parent-child interaction styles are more frequently observed in families with young children with behavior problems and are predictive of more persistence in disruptive behaviors (Buss, 1981; Feinfield, 1995; Pettit, Bates, & Dodge, 1993; Webster-Stratton, 1985). Patterson's (1982) coercion model explains how negative parent-child interactions lacking warmth and negotiation serve to exacerbate a child's problem behaviors, especially aggression. Parenting skill deficits produce combinations of oppositional and avoidant behaviors in children, which in turn increase parental negativity towards the children (Bradley et al., 2003; Brenner & Fox, 1998, Cummings & Davies, 1994). The result of prolonged coercive interactions is a strained parent-child relationship and persistent challenging child behavior (Patterson, 1982). In contrast, recent research involving the study of resiliency in children's early development indicated that effective parenting is the most powerful protective factor (Luthar, 2006; Singer, Ethridge, & Aldana, 2007). Thus, harsh and inconsistent parenting places children at risk for problematic development, while positive and consistent parenting can serve as a protective factor against other environmental risks.

Denham and colleagues (2000) conducted a study to examine the contribution of parental emotions and behaviors to the emergence of disruptive and noncompliant behaviors in preschool children. The study included 79 mothers and fathers and their children, who met criteria for being at-risk for development of disruptive behavior

disorders. Children involved in this study ranged in age from 2 years to 5 years of age, with a mean age of 4½ years. Participants in this study were predominantly Caucasian (96%) and from a middle- or upper-class socio-economic status (96%). Families were evaluated at four times during the 4-year longitudinal study, including a pretest, two progress monitoring evaluations, and a posttest. Researchers assessed children's externalizing behavior through parent and teacher reports using Achenbach's (1991) Child Behavior Checklist (CBCL) and Teacher Report Form (TRF), as well as Youth Self-Reports (YSF). Parenting skills were assessed at the first and fourth assessment through direct observation of parents' interactions with their children in naturalistic play activities. Parenting patterns were coded for patterns of behavior, including supportive presence, limit setting, allowance of autonomy, negative affect, quality of instruction, and confidence. Parenting patterns also were coded for emotional expression, including anger and happiness. Results of the study indicated that children with externalizing problems evident during the pre-test continued to have behavior problems at the 2-year and 4-year follow-up evaluations. Results also demonstrated that proactive parenting techniques (e.g., being supportive, giving clear directions, setting limits) predicted decreased behavior problems overtime, especially for children with clinically significant levels of problem behaviors at pre-test. Conversely, children of parents who frequently expressed anger were more likely to have continued or worsening externalizing behaviors at the follow-up evaluations. The results of this study should be interpreted with caution, given the limited diversity in ethnicity and SES of the participants included and the small sample size.

Other studies have shown that parents of young children with externalizing behaviors use more frequent verbal and corporal punishment than parents of young children without challenging behaviors (Nicholson, Fox, & Johnson, 2005). Nicholson and colleagues (2005) conducted a study investigating the difficulties of parenting children with challenging behavior as well as the protective factors that may exist in these families. Preschool teachers identified 30 children (ages 2 to 5 years) who displayed challenging behaviors and a matched group of 30 children who did not display challenging behaviors to serve as the comparison group. Teacher classification of child behavior problems was confirmed using the Sutter-Eyberg Student Behavior Inventory (Eyberg & Pincus, 1999). The final sample consisted of 60 children and their mothers who were mostly Caucasian (93%), married (78%), and had a minimum of a high school diploma (72%). Each mother was asked to complete a self-report measure of parenting behavior (Parent Behavior Checklist; Fox, 1994), and two rating scales of child behavior (Child Behavior Scale (CBS); Fox & Nicholson, 2003; Eyberg Child Behavior Inventory (ECBI); Eyberg & Pincus, 1999) during a home interview. With regard to parent behavior, significant results were found ( $p < .05$ ) in the differences between the parenting practices of mothers of children with challenging behavior and mothers of children with typical behaviors. Specifically, mothers of children with challenging behavior reported more frequent use of verbal and corporal punishment than mothers in the control group. No differences were found between the mother's use of nurturing behaviors or expectations. With regard to child behavior, mothers of children with challenging behavior rated their children's behavior at home to be significantly more problematic than mothers in the control group on both the ECBI and CBS. Results of this study

indicated that mothers of children with teacher-identified challenging behavior interact with their children differently than mothers of children without challenging behaviors. This study provided evidence of differences in parenting practices in families of children with typical and challenging behavior, however, generalization of these results are limited due to a small sample size and homogenous participant demographics. The conclusions of this study are also limited by the use of only self-report measures and no direct observations of parent or child behavior.

A similar study by Stormshak and colleagues (2000) also investigated differences in parent-child interactions in families with children with challenging behavior, but avoided the problem of limited generalizability in the previous study by selecting a more diverse sample. This study was conducted with a large population-based sample of at-risk and diverse 1<sup>st</sup> grade students from four locations across the United States (North Carolina, Tennessee, Washington, and Pennsylvania). The sample included 631 kindergartners (mean age 6.45 years) with challenging behavior from various ethnic and racial groups (49% minority-predominantly African American, 51% European American) and socio-economic status levels as well as a matched comparison sample of 387 children without challenging behaviors. Measures used in this study included parent (Child Behavior Checklist; Achenbach, 1991) and teacher reports (Teacher Observation of Classroom Adaptation-Revised; Kellern, 1989) of child behavior and several self-report measures of parenting practices (Conflict Tactics Scale; Straus, 1989; Parent Questionnaire; Strayhorn & Weidman, 1988; Parenting Practices Inventory; CPPRG, 1996). Results indicated that parents who reported that their children had challenging behaviors also reported significantly more frequent use of punitive discipline strategies



and aggressive parenting styles (e.g., yelling, spanking, threatening) than parents who reported their children's behavior to be within normal limits. Punitive discipline and inconsistent parenting were significantly associated with child oppositional, aggressive, and hyperactive behaviors. With the exception of a stronger relationship between punitive discipline strategies and child problem behaviors for African American than European American parents, there were no significant differences between ethnic groups across parenting practices or child behavior found in this study. This lack of significant group differences suggests a high degree of consistency in the influence of parenting practices on child behavior across ethnic groups in America. Similar to previous studies, the absence of direct assessment of child behavior, parenting practices, and parent-child interactions presents a limitation to the results of the study.

While negative parenting practices can produce or exacerbate problem behavior in children, child problem behaviors can also lead to increased levels of parent stress, and marital conflict (Forehand & Long, 1988; Patterson, Reid, & Dishion, 1992; Webster-Stratton & Hammond, 1997). Following the cyclic model, elevated levels of chronic parental stress are associated with the maintenance of externalizing behavior problems in children (Campbell, 1997; Heller, Baker, Henker, & Hinshaw, 1996). Recent research also has shown that nurturing, authoritative, responsive parenting that utilizes positive behavioral interventions can improve child behavior, enhance child development, reduce the need for professional services in the future and reduce parent stress (Hebbler et al., 2001; Nicholson et al., 2005; Ramey & Ramey, 1998; Shonokoff & Phillips 2000).

Pettit and colleagues (1993) conducted a longitudinal study investigating the family interaction variables that were predictive of children's externalizing problems

during the transition from kindergarten to 1<sup>st</sup> grade. Specifically, the researchers investigated the hypothesis that positive-proactive and negative-coercive parenting styles would make independent, non-overlapping contributions to the prediction of conduct problems in children. The sample included 165 families who were recruited from a larger, ongoing study (see Dodge, Bates, & Pettit, 1990). The sample consisted of a range of social classes (high, middle, and low income families) and equal numbers of boys ( $n = 82$ ) and girls ( $n = 83$ ). The sample was predominantly White (84%) and represented two-parent families (70%). The children were stratified into groups of high, medium, and low aggression based upon mother's ratings of child aggression on the Child Behavior Checklist (Achenbach & Edelbrock, 1983). All children were observed in their homes during the summer prior to beginning kindergarten using a focused-narrative observational system to code various family interactions. Observations were conducted on two separate occasions for each family, lasting approximately two hours each, and were typically conducted during or near dinner time. Families were instructed to proceed with their normal routines and behaviors and attempt to ignore the observers as much as possible. In addition to the direct observations, parents completed child behavior rating scales. All three data collection methods (home observations, parent rating scale, and teacher rating scale) were completed again a year later, in the summer prior to children beginning 1<sup>st</sup> grade. Results indicated a strong correlation ( $p < .05$ ) between negative-coercive parenting by mothers and child externalizing behavior problems in and 1<sup>st</sup> grade (behaviors rated by both parents and teachers). Correlations between negative-coercive parenting by fathers and child externalizing behavior problems were not significant at the kindergarten or first grade levels. This study also found that early, positive parent-child

and family interactions predicted lower levels of externalizing behavior problems in kindergarten and first grade. These results provide support for the significant influence of parenting styles and parent-child interaction patterns on child behavior problems.

#### *Outcomes Associated with Early Intervention*

Despite the projections of negative short- and long-term outcomes for children who develop challenging behaviors at an early age, research has shown that the use of evidence-based intervention techniques can prevent and alleviate many of the associated negative outcomes (Jolivette et al., 2008; Marchant, Young, & West, 2004; Walker et al., 1998; Webster-Stratton, 1998). Marchant and colleagues (2004) recently demonstrated that prevention strategies implemented as early as the preschool years helped children avoid more severe problems later in life. In this study, four 4-year-old children who were considered to be at-risk for developing antisocial behavior and their parents participated in an intervention training program. During the training phase, the parent coach (first author) developed a collaborative relationship with parents, trained parents to use specific parenting skills, and provided parents with immediate feedback on their use of the skills. Specific skills included a direct teaching sequence aimed at increasing child compliance with multi-step directions and a corrective teaching sequence used when the child was non-compliant with adult direction. The direct teaching sequence included describing the skill (compliance) and the steps the child should follow, giving reasons that show the benefit of compliance, showing or modeling the steps of compliance for the child, and giving the child feedback in the form of praise or correction. The corrective teaching sequence included being positive (praise), describing the incorrect behavior, prompting the correct behavior (role play if necessary), and praising the child for listening and

trying again. The study used a multiple baseline design across the four parent-child dyads to investigate parent and child behaviors in baseline, training, coaching, and follow-up phases. Results of the study showed that children as young as 4 years old were able to show improvements in their behavior following a brief parent-child intervention.

Limitations of this study included the small sample size and a homogenous sample in terms of ethnicity (all four families were Caucasian). Despite its limited generalizability, the results of this study suggest that early intervention for challenging behaviors in young children can be effective with children as young as 4 years of age.

When parents use responsive parenting practices and positive behavioral interventions in the early years, behavior problems are less entrenched, easier to treat, and the potential impact upon future developmental trajectories is greater (Dunlap & Fox, 1996; Lutzker & Campbell, 1994; Webster-Stratton, 1998). In other studies, early intervention has been associated with a decreased risk of withdrawal, aggression, non-compliance, teen pregnancy, juvenile delinquency, and special education placement (Strain & Timm, 2001). The application of evidence-based treatment approaches has also been associated with increased self-control, self-monitoring, self-correction, and social-emotional health (Webster-Stratton, 1990); more positive peer relationships and social skills (Denham & Burton, 1996); and improved academic success (Walker et al., 1998).

#### *Limited Resources for Prevention & Early Intervention*

Despite the available evidence supporting the effectiveness of early intervention, there is a lack of services, resources, and empirically-supported interventions available to caregivers of young children displaying challenging behavior (Kazdin & Kendall, 1998; Knitzer, 2007; Walker et al., 1998). Recent estimates have shown that fewer than 10% of

young children who show early signs of problem behavior receive services for their difficulties (Kazdin & Kendall, 1998). For those children who do receive services, the outcomes may still be bleak, considering research findings that the developmental course of challenging behavior is predictably negative for children who are not treated or who receive “poor” treatment (Lipsey & Derzon, 1998; Patterson & Fleishman, 1979; Wahler & Dumas, 1986). Kumpfer and Alvarado (2003) also suggested that a lack of professional training in evidence-based intervention approaches may be contributing to small effect sizes in prevention and intervention research. The lack of available services is even more dismaying in the light of research findings showing that if challenging behaviors are not altered by the time a child reaches the age of nine years, the behavior problems are considered chronic and will require continuing and costly intervention (Dodge, 1993).

Investigations into federal, state, and local policies have shown that obtaining funding to procure early intervention services for families of children with challenging behavior is one of the key barriers to positive outcomes (Knitzer, 2007; Smagner & Sullivan, 2005). Knitzer (2007) commented that despite the incontrovertible evidence offered in support of the positive outcomes associated with addressing early emerging challenging behavior and the life-long negative outcomes associated with delayed intervention services, federal and state funding is most usually provided long after behavior problems reach a severe enough level to meet diagnostic criteria for behavioral and psychological disorders. Even the Part C program of the Individuals with Disabilities Education Act (IDEA, 2004), which is purported to serve infants and young children who are *at risk* for developmental delays requires that children’s emotional and behavioral

problems reach a level of severity intense enough to qualify for a clinical diagnosis (Knitzer, 2007).

Given that federal, state, and local funding sources are insufficient to meet the needs of children and families with early-emerging behavior problems, policy-makers and child service agencies should prioritize prevention strategies and intervention techniques that “yield the greatest return on investment,” (Knitzer, 2007, p.238). Based on the abundance of research supporting the primary role of parents and caregivers in young children’s emotional and behavioral development, it follows that the most logical target for prevention and early intervention efforts would be improving caregiving skills and enhancing the caregiver-child relationship (Knitzer, 2007). Thus, group-based parent training would be an economical and ecologically-based system for providing children and families with the knowledge, skill, and support they need to prevent and correct challenging behaviors (Smagner & Sullivan, 2005). The ability of one child care professional to simultaneously meet the needs of multiple families and children at once dramatically increases the efficiency of limited resources, professionals, and funding sources.

#### *Parent Training as an Intervention*

In order to maximize available resources and maintain a cost-effective method of service delivery, intervention techniques reaching the most children using the fewest resources have recently drawn attention. The most promising and effective of these cost-reducing interventions is behavioral parent training (Barlow & Parsons, 2002; Kazdin, 1995; Knitzer, 2007). Parent training involves professionals teaching parents and other caregivers the basics in behavioral principles and behavior management techniques,

which the parents can then apply with their children (Tiano & McNeil, 2005). Parent training programs have been shown to be effective when delivered to individual parents or to groups of parents (Barlow & Parsons, 2002; Feinfield & Baker, 2004). Many researchers have provided evidence supporting the use of behavioral parent training programs to reduce the development and persistence of problem behavior and improve the quality of parent-child interactions (Armstrong & Hornbeck, 2005; Gross et al., 2003; Maughan et al., 2005; McMahon & Forehand, 2003; Nixon et al., 2003).

The majority of empirically-supported parent training programs have four common components: a) center on an operant model; b) provide detailed information on the effective and appropriate use of time-out procedures; c) focus on antecedent control instead of punitive consequences; and d) program for generalization from the training setting to natural settings, including home and community contexts (Feinfield & Baker, 2004). Research has also shown that programs that focus on changing parenting behavior have a stronger effect on child behavior outcomes than do programs that focus on changing parents' attitudes (Sanders, 1996). In an analysis of parent training research conducted by Webster-Stratton and Taylor (2001), available evidence suggested that parent training produced the greatest effects with children between the ages of 3 and 10 years; created clinic-based changes that generalized to the home setting (but not often to the school setting); created clinically significant and meaningful improvements in two thirds of targeted children; and resulted in changes in children's behavior lasting up to four years. Recent research on parent training with low-income families showed that "well implemented, family-focused two-generational comprehensive programs for infants

and toddlers can reverse the predictable negative developmental trajectories for many low-income infants and toddlers” (Knitzer, 2007, p. 238).

In 2005, Maughan and colleagues conducted a meta-analysis of the existing body of literature and research available regarding behavioral parent training as a treatment for externalizing behavior problems in children. The meta-analysis provided a description of studies, summarized the effects of the treatment studied, described variables that affected the treatment effects, and calculated an effect size to indicate the significance of each treatment’s effects. Studies which were included in the meta-analysis were: a) conducted between 1966 and 2001; b) targeted at least one externalizing behavior; c) targeted children who did not have autism or developmental delays; d) included treatment procedures such as training parents or caregivers in the use of reinforcement and/or time-out and one additional parenting procedure; e) targeted children between the ages of 3 and 16 years old; f) used at least one outcome measure on child’s behavior; g) used either between-subjects group design, within-subjects group design, or single-subject design; and h) incorporated graphs displaying raw data representing baseline data with at least 5 data points if single subject design was used. To find research studies, the authors searched using internet tools and journal databases looking for all studies on behavioral parent training conducted within the specified time period. The search resulted in 294 studies, of which 79 (26%) met the remaining inclusion criteria.

Each study was coded for specific information related to participant demographics, research design and methods, training program components, and outcome assessment. Effect sizes were calculated using statistics such as  $t$ ,  $F$ , or  $p$  values when means and standard deviations were not available. For between-subjects designs, effect



sizes were calculated based upon differences between pretest and posttest scores between the control and treatment group participants. For within-subjects designs, effect sizes were calculated based upon difference between pretest and posttest scores for a single sample, divided by the pretest standard deviation (producing a standardized mean change). For single-subject designs, effect sizes were calculated using the ITSACORR computer program. After an effect size was computed for each individual study, a composite effect size with a 95% confidence interval was calculated for each of the three research design types (between-subjects, within-subjects, and single-subjects designs). Potential bias for studies not included in the meta-analysis, which may not have been available due to null results, no effect or lack of publishing, was corrected for by calculating a Fail Safe  $N$ , which represented the number of studies that would have had to be included in the meta-analysis if all the possible studies were included.

For the 79 studies included, 108 separate effect sizes were calculated. Most of the studies used a group training format ( $n = 32$ ), some used individual consultation ( $n = 20$ ), some used controlled learning techniques ( $n = 10$ ), and the remaining studies used mixed methodology ( $n = 17$ ). There were 2,083 participants in the between-subjects groups; 1,088 participants in the within-subjects groups. There were 15 single-subject studies, which yielded 1,482 data points.

The unweighted mean effect size for between-subjects studies was  $d = .58$  (each study contributes equally to overall mean) and the weighted mean effect size was  $d = .30$  (95% CI .21 to .39). There were no significant outliers in the between-subjects group. Because the confidence interval did not include zero, it was assumed that behavioral parent training conducted in a group format had a significant effect on the criterion

variable. Differences in effect size were found when studies were analyzed separately based on the coded criteria variables. Studies with parents of children between the ages of 3 and 5 years had an effect size of .40 while studies with parents of children between the ages of 6 and 8 years had an average effect size of .19 and children between the ages of 9 and 11 years had an average effect size of 1.36. Studies with training programs using 1 to 5 sessions had a mean effect size of .96; those using 6 to 10 sessions had a mean effect size of .50; those using 11 to 15 sessions had a mean effect size of .45; and those using more than 15 sessions had a mean effect size of .08; indicating that larger effects were found when fewer sessions were used, although no further explanation or interpretation of these differences were provided. In summary, variables significantly impacting the effect size of between-subjects studies included method of outcome assessment, child age, method of program delivery, number of sessions, method of assignment to conditions, and use of reliability assessments.

The unweighted mean effect size for within-subjects studies was  $d = .74$  and the weighted mean effect size was  $d = .68$  (95% CI .59 to .77). The confidence interval for the within-subjects groups did not include zero, indicating that the studies had a significant impact on outcome measures. There was one outlier present in this group, which was removed from further statistical analyses. Studies delivering training in an individual consultation format had an average effect size of .43, while studies using a group format had an average effect size of .70. This finding supported previous research in demonstrating larger effects when training was delivered in a group format, which has been explained by the positive effects of peer support and modeling (Lundahl, et al.,

2006). In summary, variables significantly impacting the effect size of within-subjects studies included method of outcome assessment and method of program delivery.

The unweighted mean effect size for single-subjects studies was  $d = .59$  and the weighted mean effect size was  $d = .54$  (95% CI .43 to .65). There were no significant outliers in the single-subjects group. The confidence interval did not include zero, implying the treatment had a significant effect on the criterion variable. In summary, variables significantly impacting the effect size of single-subjects studies included child age and method of program delivery.

Results of the meta-analysis suggest that behavioral parent training is an effective intervention for reducing externalizing problem behaviors in children; however, the effectiveness of this intervention is not as large as it was hypothesized to be prior to the meta-analysis. The overall mean weighted effect sizes for between-subjects, within-subjects, and single-subject research designs were all within the small to moderate range and were considered potentially significant (between-subjects and single-subjects) and compelling (within-subjects). The authors cautioned over-interpretation of the superior average effect size for within-subjects design over between-subjects and single-subjects designs, citing previous research showing that this type of research design causes inflated effect sizes, regardless of actual treatment effects on outcomes. The authors also caution against over-interpretation of differences in effect size based on method of outcome assessment, citing a potential for parent biases in self-reported outcome measures versus direct observation. Suggestions for future research included coding studies for treatment integrity and social validity measures. Limitations of the meta-analysis included

variability in the methodological quality of studies reviewed and methodological limitations in calculating effect sizes for outcomes in single-subject designs.

Over the past 20 years, researchers have conducted numerous studies investigating the effectiveness of various parent training programs, including the Incredible Years (Webster-Stratton, 2001), Parent Child Interaction Therapy (Eyberg, 1988), and Triple P-Positive Parenting Practices (Sanders, 1999). Despite differences in training components, duration, and research methodology, several meta-analyses have shown that much of the outcome research available reported similar findings supporting the effectiveness of behavioral parent training programs in improving behavior in young children (Conroy, Dunlap, Clarke, & Alter, 2005; Lundahl et al., 2006; Maughan et al., 2005).

In one examination of the Incredible Years parent training series, Scott (2005) tested the effects of this program in a clinical practice setting. Participants were 59 parents of children ages 3 to 8 years residing in London and Southern England. All children were referred for antisocial behavior to their local community mental health agency. The Parent Account of Child Symptoms was used as a semi-structured interview to gather parents' reports of children's antisocial behavior pre- and post-intervention. Parents also completed the Strengths and Difficulties Questionnaire (SDQ) as a self-report of their child's conduct problems, hyperactivity, peer relationships, and prosocial behavior. Parents received the 12-week BASIC parent training program of the Incredible Years series, which was administered according to the manual. A control (waiting list) group was used for comparison purposes. Facilitators of all sessions were trained therapists from each local health agency. Immediately following the end of intervention,

parent reports of child behavior as measured by the interview showed significant decreases in antisocial behavior; similar findings were shown for negative behavior reports on the SDQ, but with smaller effect sizes. Similar or even greater decreases in antisocial behavior and hyperactivity were found at the one-year follow-up as compared to controls. Peer relationships did not show significant improvement following intervention. The researchers also found that risk factors such as ethnic minority, single parent families, and low SES did not reduce treatment effectiveness. Demographic information did not include the percentages of participants who were mothers versus fathers. This would be valuable information to report regarding whether or not the program was effective for both parents. It is necessary to evaluate research conducted with American children and families and diverse ethnic populations to determine whether this training series will be as effective with American children and families as it was for English participants.

The Incredible Years parenting program was also evaluated among 634 ethnically diverse mothers of children enrolled in Head Start (Reid, Webster-Stratton, & Beauchaine, 2001). The CBCL was used to assess externalizing behaviors including aggression and antisocial behaviors from parent reports. Parents of all ethnic groups receiving intervention were observed to be more positive, less inconsistent, and use less harsh discipline in their parenting (as measured via the Dyadic Parent-Child Interactive Coding System Revised (DPICS-R) compared to parents in the control group, who were exposed to only the regular Head Start program. Additionally, children of parents receiving the intervention were observed via the DPICS-R to exhibit fewer behavior problems at one-year follow-up; however, CBCL reports were not significantly improved

for the intervention group. Importantly, few differences were reported across ethnic groups and significant differences were only found among the use of positive parenting and use of critical statements to children as measured by the DPICS-R. These results indicate the applicability of this program for ethnically diverse populations. The large sample size and randomized, controlled design add statistical strength to the positive findings of this study.

Schuchmann and colleagues (1998) conducted a randomized, controlled trial of Parent Child Interaction Therapy (PCIT) with 64 clinic-referred families. Participants were assigned to a PCIT treatment condition ( $n = 37$ ) or a waitlist control group ( $n = 27$ ). Criteria for inclusion specified that all families referred had a child who was of preschool age (3 to 5 years) with a DSM-IV diagnosis of conduct disorder. Families in the treatment condition participated in PCIT sessions while control group families were evaluated using the outcome measures, but had no other contact with the therapists or researchers. Outcome measures included direct observation of the quality of parent-child interactions using the Dyadic Parent-Child Interaction Coding System-II (DPCICS-II; Eyberg, Bessmer, Newcomb, Edwards, & Robinson, 1994), the Parental Locus of Control Scale (PLOC; Campis, Lyman, & Prentice-Dunn, 1986), and the Dyadic Adjustment Scale (DAS; Spanier, 1976). Assessments were re-administered every four months during treatment and at a follow-up assessment four months after the final PCIT session. Results showed that parents participating in PCIT sessions had more positive interactions with their children, and children demonstrated more frequent compliance with parent direction as compared to the parents in the waitlist control group. Parents in the PCIT group also reported lower levels of parental stress and greater internal locus of control in parenting

practices compared to the waitlist control group. Finally, parents in the PCIT group reported greater improvements in their children's behavior following the therapy sessions than did the control group parents. Differentially positive outcomes for the PCIT group were maintained at the 4-month follow-up assessment. A limitation of this study was the relatively brief follow-up period, as researchers determined maintenance of outcomes at four months post-treatment. Further research assessing treatment maintenance at longer intervals following treatment termination would strengthen the efficacy reports for PCIT.

A more recent study provided support for the long-term maintenance of treatment outcomes for PCIT (Eyberg et al., 2001). Eyberg and colleagues (2001) studied the maintenance of treatment outcomes for 13 families with preschoolers diagnosed with conduct disorder at one- and two-years post-treatment. Treatment effectiveness was measured by the DPCICS-II (Eyberg et al., 1994), the Parenting Stress Index (PSI; Abidin, 1995), the PLOC (Campis et al., 1986), and the DAS (Spainier, 1976). Significant differences ( $p < .05$ ) were found between the PCIT families and the control group families on all measures. Eight of the 13 families maintained positive treatment effects at the one- and two-year follow-up assessments.

Sanders, Markie-Dadds, Tully, and Bor (2000) conducted a controlled trial of Triple P-Positive Parenting Practices (TPP) in which three variants of the program ranging in levels of intensity were compared on 305 preschool-aged children (mean age = 3 years) at risk for developing conduct problems. Families were randomly assigned to one of four conditions: (a) enhanced level, (b) standard level, (c) self-directed, and (d) wait-list control. The various conditions varied from practitioner-assisted to self-directed using booklets and videos at the family's home. The standard program involved teaching

parents 17 core child management strategies. Ten of the strategies were designed to increase children's competence and development (e.g., talking with children; physical affection; praise; attention; engaging activities; setting a good example). The remaining seven strategies were designed to help parents manage challenging behaviors by engaging in positive parenting practices (e.g., setting rules; directed discussion; planned ignoring; clear, direct instructions; logical consequences; and time-out). Parents were taught a six-step planned activities routine to enhance the generalization and maintenance of parenting skills (e.g., plan ahead; decide on rules; select engaging activities; decide on rewards and consequences; and hold follow-up discussions with the child). Parents were taught to apply parenting skills to a broad range of target behaviors in both home and community settings with the target child and their siblings. Short-term and long-term follow-up data were collected on the effectiveness of the intervention. Various measures were utilized to collect frequency and intensity of behavior information for each child in order to ascertain the level of behavior change pre and post-intervention. Specifically, the Parent Daily Report (PDR; Chamberlain & Reid, 1987), Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993), and the Parent Problem Checklist (PPC; Dadds & Powell, 1991) were utilized. The results showed that all levels of the TPP produced significant results for the children and families taking part in the study, however, the enhanced (most intensive) version produced the greatest results.

In summary, group-delivered, behavioral parent training has been shown to be an effective intervention method to prevent and address early emerging challenging behaviors in young children as well as improve the quality of family relationships. The positive effects of behavioral parent training have been demonstrated across a variety of



racial/ethnic groups, families in various socio-economic groups, and for children with a variety of diagnoses and conditions. Finally, behavioral parent training is a cost-effective intervention technique that maximizes time and resources.

*Parent and Child Characteristics Affecting Outcomes of Parent Training*

Although parent training has been shown to be an effective treatment or intervention for a variety of behavior problems, not all families who participate benefit equally (Reyno & McGrath, 2006). Over the past 20 years researchers have investigated a variety of demographic and social variables that might explain these differential outcomes (Knapp & Deluty, 1989; Oltmanns et al., 1977; Strain, Young, & Horowitz, 1981; Webster-Stratton & Hammond, 1990). As a result of this research, several variables have been identified as potential predictors of the likelihood families will experience success in parent training programs. These variables include caregivers' educational attainment level and social support network as well as target child's age and severity of symptoms or existing diagnoses (Bakermans-Kranenburg et al., 2003; Reyno & McGrath, 2006; Stolk et al., 2008). In order to maximize the effectiveness of an intervention, it is important to identify factors that will allow practitioners to appropriately match clients with treatments in which they are likely to succeed (Smith, Landry, & Swank, 2005).

Despite early evidence that specific parent, family, and child characteristics impact the effectiveness parent training programs for different participants, very little research has been conducted to specifically analyze predictors of success beyond basic demographic data of the parent and/or child (Smith et al., 2005). The majority of research studies report differential program outcomes based on either socio-economic status or

racial/ethnic group. However, results of these studies are difficult to interpret due to the broad operational definitions and measurement constructs used to define variables such as "socio-economic status" and "symptom severity" and "social support." For instance, socio-economic status has been defined through a combination of measures, including family income, parent educational level, parent occupation, and/or geographic location (Reyno & McGrath, 2006). "Symptom severity" has been conceptualized as the number of symptoms reported by the parent (Sanders et al., 2000), the number of comorbid psychological or medical diagnoses a child has when entering treatment (Scott, 2005), and/or scores on a standardized testing instrument (Webster-Stratton, 1998).

More research is needed to specifically identify parent and child characteristics which may affect successful completion and outcomes of participating in a parent training program. The current study will analyze the following demographic and social variables: 1) caregiver's education level (i.e., earned a high school diploma or less, completing technical training or a 2-year college program, or earned a 4-year or graduate college degree); 2) caregiver's social support (i.e., attending HOT DOCS classes with someone or attending alone); 3) target child's age (i.e., under three years of age or over three years of age); and 4) child's preexisting psychoeducational or medical diagnoses (i.e., no preexisting diagnosis, children with autism spectrum disorders, developmental delays, speech/language impairments, or medical/genetic disorders).

#### *Parent/Caregiver Education Level*

Previous studies of parenting programs have reported higher than expected educational attainment for participants (Fienfield & Baker, 2004; Hartman, Stage, & Webster-Stratton, 2003). Researchers hypothesize that the higher mean educational levels

of their participant samples may be explained by the additional financial and social supports available to these families with higher levels of educational attainment. These resources allow parents to participate in and complete training programs, while parents with lower educational attainment are often unable to attend and complete training sessions due to issues associated with socioeconomic status, such as lack of transportation, childcare, and time (Lundahl et al., 2006).

It is difficult to analyze the impact of parent/caregiver education level on parent training outcomes because this specific variable is often combined with other demographic characteristics to form the more generalized variable of socio-economic status. For example, a meta-analysis conducted by Reyno and McGrath (2006) identified a combined socio-economic variable of low education/low income as a statistically significant predictor for premature discontinuation of treatment. In contrast, Cunningham, Bremner, and Boyle (1995) found that a combined variable consisting of parents' educational level and family functioning, defined as socio-economic status, accounted for 23% of the variance in attendance. In this study, parents with higher educational backgrounds and better functioning families attended more sessions than families with lower educational levels and poorer family functioning.

For those studies that did specifically analyze participant data based on parents' educational attainment as a distinct variable, it was found that parents with lower levels of education demonstrated greater gains following participation in a parenting program (Beauchaine et al., 2005; Berlin et al., 1998; Lundahl et al., 2006; Olds et al., 1999; Reid, Webster-Stratton, & Baydar, 2004; van Zeijl et al., 2006). Researchers hypothesized that parents with lower education levels experienced more adverse family circumstances,

which increased their overall need for support and therefore their motivation to attend and complete intervention programs (Beauchaine et al., 2005).

#### *Parent/Caregiver Social Support*

Most studies of parent training program outcomes have reported data on social support by defining families as single-parent versus father-involved families (Holden, Lavigne, & Cameron, 1990; Smith, Landry, & Swank, 2000). Recently, however, research has emerged focusing on the importance of resiliency and protective factors for families of children with challenging behavior (Luthar, 2006; Singer et al., 2007). Included in the research on family resiliency is a broader definition of social support, including extended family and community members in addition to spouses or partners.

Some research studies report that participants in parent training programs who have fewer social supports had less positive outcomes as a result of intervention than participants with stronger or wider social support networks (Kazdin & Wassell, 1999; Smith et al., 2005; Webster-Stratton & Hammond, 1990). Researchers have hypothesized that parents with available social supports are better able to utilize information and skills learned in parent training programs because their own emotional needs are met by their supporters (Smith et al., 2005).

#### *Child's Age*

In addition to caregiver characteristics that affect outcomes of participation in parent training programs, researchers have suggested that the target child's age or level of development also affect success (Forehand & Wierson, 1993; Ruma, Burke, & Thompson, 1996). However, treatment research on the effectiveness of parent training programs has generally defined age groups of target children for comparisons as young

children (e.g., 0 to 5 years of age), older children (e.g., 6 to 12 years of age), and adolescents (e.g. 13 to 18 years of age) (Ruma et al., 1996). Little research is available on the differential outcomes for parents of infants, toddlers, and young children (e.g., 0 to 1 year, 1 year to 2 years, and 2 years to 6 years of age) (Kazdin, 1993).

A few studies have reported child's age as variable affecting treatment outcome, however, age groups in these studies were young children ages 2.5 to 6.5 years and older children 6.5 to 12.5 years, with younger children having more positive outcomes than older children and adolescents (Bath, Richey, & Haapala, 1992; Dishion & Patterson, 1992). In another study, researchers measured treatment effectiveness as the number of sessions participants required in order to obtain specific skills (Holden et al., 1990). In this study, participants with younger children (3.3 years of age) required more sessions of a parent training to have positive outcomes than parents of older children (3.8 years). For this particular parent training program, parents of older children benefitted more than parents of younger children (age range for sample was 18 months to 70 months of age; mean age of 36 months). Overall, the existing research on the influence of child's age on parent training program outcomes suggests that parents of older children, between the ages of 3 and 12 years of age, have more positive outcomes than parents of children who are older than 12 or younger than 3 years of age. However, conclusions about the benefits of parent training for caregivers of children between the ages of 2 and 6 years of age are difficult to draw due to the paucity of research focusing on differences within this age group.

### *Child's Diagnosis*

Another factor that has been identified as a moderator of treatment outcomes in parent training programs is the child's diagnosis (Holden et al., 1990; Lundahl et al., 2006; Ruma et al., 1996). However, published research findings on the impact of the child's diagnosis are difficult to compare and interpret because the majority of empirical studies have specified inclusion criteria requiring that target children have preexisting mental, emotional or behavioral diagnoses to participate in study (e.g., ADHD, ODD/CD, attachment disorder). Few published, evidence-based interventions target parents of children with non-clinical levels of challenging behavior (Lundahl et al., 2006; Maughan et al., 2005; Schumann et al., 1998).

Another difficulty in interpreting existing research on parent training programs for children with different conditions or diagnoses is that most parenting programs do not include parents of children with a variety of diagnoses (Lundahl et al., 2006; Maughan et al., 2005). Most parenting programs have been created to meet the specific needs of children and families with a particular diagnosis or condition. For example, programs based on the principles of applied behavior analysis (ABA) have been offered almost exclusively to children with autism spectrum disorders (Conroy et al., 2005); PCIT and Incredible Years are mainly offered to families of children with Oppositional Defiant Disorder and/or Conduct Disorder; while the Defiant Child program (Barkley et al., 2000) was designed for parents of children with Attention Deficit/Hyperactivity Disorder.

In summary, further research is needed in order to definitively identify parent and child demographic and social characteristics that might serve as predictors of differential levels of success following participation in parent training programs. At present,

researchers have not yet come to a consensus on whether variables such as parent level of education (Beauchaine et al., 2005; Berlin et al., 1998; Lundahl et al., 2006), child's age (Forehand & Wierson, 1993; Ruma et al., 1996), or child's diagnosis (Holden et al., 1990; Lundahl et al., 2006; Ruma et al., 1996) accurately predict participants' outcomes. They do, however, seem to agree that parents with higher levels of social supports benefit more from any type of parent training program than parents with limited or no social support network (Holden et al., 1990; Lundahl et al., 2006; Smith et al., 2005). It is clear that further research is needed to add to the literature base regarding the impact of these variables on parent training outcomes.

*Preliminary Investigation of the HOT DOCS Parent Training Program*

The original *Helping Our Toddlers (H.O.T.)* curriculum (Armstrong & Hornbeck, 2005) was developed through a U.S. Department of Education grant, with funds matched by the Children's Board of Hillsborough County, Florida (Fox, Dunlap, & Powell 2002). The grant was provided to fund research to investigate the effectiveness of positive behavior support (PBS) applied to toddlers with challenging behavior and was referred to as the Early Intervention Positive Behavior Support (EIPBS) project. The H.O.T. curriculum was developed by the EIPBS project director and a parent of a young child diagnosed with autism spectrum disorder to assist parents on the waitlist for the more intensive, individually developed EIPBS intervention. The H.O.T. curriculum was based on the principles of PBS (i.e., understanding the function of behavior, its antecedents and consequences, and teaching replacement behaviors). The parent training program consisted of six weeks of group instruction conducted in community settings, such as churches and the YMCA.

The original H.O.T. curriculum was delivered to four cohorts of parents and caregivers of young children with challenging behaviors, averaging 8-12 individuals per group occurring between 2005 and 2006. Data collected during these initial trainings included demographic information, caregiver satisfaction with the program, knowledge of basic behavioral principles, and use of parenting skills taught in class. These data were used to refine the curriculum and generate outcome reports required by the funding agency. Data gathered through focus groups and follow-up surveys conducted upon completion of the fourth cohort of participants, showed that 100% of caregivers who participated in the program reported improvements in their own parenting skills and their child's behavior (Armstrong, Hornbeck, Beam, Mack, & Popkave, 2006). Following the first four cohorts of H.O.T. parent training, several revisions to materials, procedures, and data collection were made to the curriculum. Subsequently, the original H.O.T. curriculum evolved into a manualized training program called Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS; Armstrong, Lilly, et al., 2006). While evaluation data from a pilot study indicated promising outcomes of the HOT DOCS curriculum (Williams, 2007), a more rigorous and standardized evaluation is needed to advance the evidence-base.

Preliminary reports suggest the potential effectiveness of the Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS) parent training program as a means of reducing challenging behavior in young children and improving parent-child relationships (Armstrong, Hornbeck, et al., 2006; Williams, 2007). Preliminary reports are based on the results of a pilot study of the program's effectiveness completed by Williams (2007). The pilot study was designed to evaluate the HOT DOCS parent



training program using archival data collected between August 2006 and April 2007. The evaluation used a one-group, pre/posttest design to study the impact of specific components of the parent training program on both participants' knowledge and attitudes and their perceptions of targeted children's behavior. One-hundred-forty-six caregivers of children between the ages of 14 months and 10 years of age participated in the parent training program and were included in the analyses. Measures included a pre/post knowledge test, rating scales of child problem behavior, weekly progress monitoring forms for caregiver behavior at home, and a program evaluation survey. Rates and patterns of caregiver attendance, comparisons of caregiver demographics with local demographics and with previous research on parent training programs, changes in caregiver knowledge, caregiver perceptions of children's problem and adaptive behaviors, skill use at home, and overall perceptions of caregiver participation in the program were analyzed.

The pilot study had several significant limitations. These limitations included the use of archival data, the absence of a control or wait-list control group to use as a normative comparison group for the participants who received training, the small sample size, and the low return rate of several outcome measures used. Therefore, results should be interpreted with caution.

#### *Rates and Patterns of Caregiver Attendance*

Rates and patterns of caregiver attendance and attrition were analyzed and compared with findings from previous studies of group-delivered behavioral parent training. Overall patterns of attendance and rates of attrition found in the pilot study were similar to those found in previous research (Eyberg et al., 2001; Feinfield & Baker, 2004;

Kazdin, 1997; Sanders et al., 2000). Of the 189 caregivers attending the first of six sessions of HOT DOCS training, 146 completed the program (e.g., attended three or more sessions), resulting in an attrition rate of 23%. Eyberg and colleagues (2001) reported similar rates of attrition in an evaluation of the Parent-Child Interaction Therapy (PCIT) intervention. Specifically, of the original 20 participants, 13 completed the training, resulting in a 30% attrition rate.

#### *Comparison of Participant and Local Demographics*

Demographic information for the caregivers serving as participants in the pilot study was compared with local demographic information provided by the United States Census Bureau for Hillsborough County, which is the local community where HOT DOCS was developed and delivered to families. The participant sample consisted of 15% fewer caregivers reporting their ethnicity as Caucasian (44% versus 59%), 11% fewer caregivers reporting their ethnicity as Black/African American (5.5% versus 16.3%), and 14% more caregivers reporting their ethnicity as Hispanic (35% versus 21.2%) than adults residing in Hillsborough County in 2005 (United States Census Bureau, <http://quickfacts.census.gov/qfd/states/12/12057.html>). These results suggest that the HOT DOCS program reached more Hispanic caregivers, who have been underserved by other parenting programs. However, a disproportionately low percentage of Black/African American caregivers participated in the HOT DOCS program. Preliminary analysis of the caregivers signing up to participate in the program but not completing training (e.g., drop-outs) did not indicate differential rates of attrition for caregivers reporting their race/ethnicity as Black/African American. The underrepresentation of Black/African American caregivers in the HOT DOCS program may be related to a

decreased number of families from this race/ethnic category who self-refer and/or are referred by professionals to participate in parent training or perhaps identify with a different racial or ethnic category. The high percentage of sample participants reporting their race/ethnicity as Hispanic as compared to local norms is likely explained by the provision of HOT DOCS classes in Spanish.

Participants reported level of education attained was compared to census data from 2000. The participant sample reported a similar percentage of high school graduates (89% versus 81%), twice the number of college graduates (53% versus 25%), and three times the number of graduate degrees (31% versus 12%) as compared to census data. The use of type of insurance as an indicator for socioeconomic status (SES) in the pilot study prohibits precise comparisons with local population statistics, which report SES using ranges of annual household income. However, general comparisons of the proportion of the study sample reporting having Medicaid or no insurance, which were response categories used by the program developers to indicate low-SES, were compared with Hillsborough County estimates of adults falling below the poverty line (US Census Bureau, 2000). Approximately 31% of HOT DOCS participants reported having no insurance or Medicaid insurance compared to 12% of adults in Hillsborough County classified as low-SES. This comparison indicates that the HOT DOCS parent training program was provided to a higher percentage of low-SES families than would have occurred simply by chance. Since previous research has shown that children of parents who are considered low-SES or low-income have a greater chance of developing more severe levels of challenging behavior (Gross et al., 1999; Keenan & Wakschlag, 2000; Qi

& Kaiser, 2003), the large proportion of participants falling within this category can be considered a positive finding.

#### *Comparison of Child and Caregiver Demographics with Previous Studies*

Demographic information for the caregivers serving as participants in the study also was compared with demographic information for participant samples from previous research of group parent training programs. Most of the existing research on parent training programs has focused on female caregivers, specifically mothers of children with problem behavior (Bagner & Eyberg, 2003; McNeill, Watson, Hennington, & Meeks, 2002; Phares, Fields, Kamboukos, & Lopez, 2005; Reid et al., 2001). The gender and relationship with target child of participants in this application differs notably from previous research on parent training interventions, specifically by encouraging participation of fathers, non-related caregivers, and professionals. Participants in the sample were 68% female and 32% male, including 54% mothers, 29% fathers, 8% professionals (i.e., early interventionists, service coordinators), and 7% grandparents.

Preexisting diagnoses of target children of participants in the pilot study were compared with demographic information from previous research. The majority (66%) of target children in this study did not have a preexisting medical, psychological, or behavioral diagnosis as reported by caregiver participants at the time of HOT DOCS participation. In contrast, the majority of previous studies of parent training programs have specified inclusion criteria requiring that target children have preexisting mental, emotional or behavioral diagnoses to participate in study. Thus, the HOT DOCS parent training program may provide early intervention services that may serve as preventative measures for children exhibiting non-clinical levels of challenging behaviors.

### *Caregiver Knowledge*

Results of the pilot study indicated a significant increase in participants' scores on the HOT DOCS Knowledge Test from pretest to posttest,  $t(1,111) = 8.45, p < .001$ .

Although the difference in mean score from pretest to posttest differed by fewer than two correct answers, the effect size of the statistical difference was large ( $d = 1.13$ ), indicating significant and meaningful increases in the number of correct answers provided by participants. Knowing and understanding these skills and concepts may be considered ideal outcomes of the parent training program. Therefore, an increase in the number of items correct may indicate successful delivery of skills and concepts.

### *Caregiver Perceptions of Severity of Child Behavior*

Participants were expected to report high levels of perceived challenging behavior in target children. Expectations of high levels of problem behavior were based on the method of participant recruitment. Participants may have self-referred to the program after seeing community advertisements or hearing about the program from friends, or were referred to the program by professional service providers. Although the pilot study did not base participant inclusion on pre-test behavior rating scale scores, it was hypothesized that most of the caregivers seeking to participate in the program would report that their children had more severe levels of problem behavior than a normative sample.

Results of the study supported this hypothesis by indicating that participants reported significantly more severe levels of child problem behavior at pre-test than was predicted for a normative sample of the population (Internalizing subscale,  $\chi^2(1, n = 101) = 252.24, p < .01$ ; Externalizing subscale,  $\chi^2(1, n = 101) = 335.66, p < .01$ ). Statistical

analyses revealed that nearly twelve times as many caregivers in the participant sample perceived their child's problem behaviors to be within the clinically significant range on both the Internalizing and Externalizing subscales of the CBCL (Achenbach, 2001) than was expected given a normal distribution. These results indicate that the majority of caregivers who elected to participate in HOT DOCS perceived their children as having clinically significant levels of problem behavior prior to beginning the training program.

As with caregiver perceptions of severity levels of child problem behavior, it was expected that caregivers would also perceive their children as having lower than expected levels of adaptive behavior. Although caregivers often cite challenging behavior as their primary concern, children likely have comorbid deficits in adaptive or prosocial behaviors (Conroy et al., 2005). Despite the lack of available research using parent perceptions of children's adaptive behavior as inclusion criteria or outcome measures, initial studies have indicated that high levels of problem behavior interfere with children's ability to develop and maintain appropriate levels of adaptive behavior (Carr et al., 2002; Conroy et al., 2005; Dunlap, 2006; Fox et al., 2002). Therefore, it was expected that caregiver participants would report lower levels of child adaptive behavior than expected in a normative sample of the population.

Results of the pilot study supported the hypothesis by indicating that the sample participants reported significantly more severe deficits in child adaptive behavior at pre-test than were predicted for a normative sample of the population (Conceptual domain,  $\chi^2(2, n = 106) = 306.04, p < .01$ ; Social domain,  $\chi^2(2, n = 106) = 354.11, p < .01$ ; Practical domain,  $\chi^2(2, n = 103) = 525.04, p < .01$ ). Statistical analyses revealed that nearly ten times as many caregivers in the participant sample perceived their child's

adaptive behaviors to be within the clinically significant or deficit range on the Conceptual, Social, and Practical subscales of the ABAS-II (Harrison & Oakland, 2003) than was expected given a normal distribution. These results indicate that the majority of caregivers who elected to participate in HOT DOCS perceived their children as having clinically deficient levels of adaptive behavior prior to beginning the training program.

#### *Changes in Child Problem & Adaptive Behavior*

Results of the pilot study indicate significant reductions in the severity of child problem behavior as perceived by caregivers,  $F(1, 27) = 8.489, p < .01$ . It could not be determined from the data available whether child behavior actually improved or, as suspected in previous studies, changes in scores were due to reductions in parent stress and increases in parenting competency. Results of the pretest/posttest comparisons made in the pilot study should be interpreted with caution due to a low return rate of posttest scales (less than a 25% return rate).

Results of the pilot study indicated non-significant levels of perceived change in the severity of deficits in child adaptive behavior on the part of caregivers. It could not be determined from the data available whether child adaptive behavior actually did not change from pretest to posttest or whether other confounding variables, such as low return rate of posttest scales (<25%) could explain the non-significant findings. Differential return rates may be explained by actual changes in children's adaptive behavior. For example, caregivers whose children increased their adaptive skills may have been perceived as no longer having a problem, in which case caregivers may have had less motivation to complete lengthy rating scales (Barkley et al., 2000). Caregivers of

children whose behavior did not improve or worsened following participation in the program may also have avoided completing and returning the posttest rating scales.

### *Caregiver Skills at Home*

Caregivers reported high overall frequencies of use of each skill as well as differential rates of ease for various skills. Caregivers reported *Catch Them Being Good* as easiest skill to use, followed by *Use Preventions*, *Use Calm Voice*, *Follow Through*, and *Use Positive Words*. Results of statistical analyses revealed no significant relationships between frequency of use and ease of use. These findings may be explained by the restricted range of ratings of ease or difficulty (e.g., choices only 1 through 4) and the restricted range of days it was possible for caregivers to use skill (e.g., seven days maximum). Another possible confounding variable is the differential number of caregivers completing weekly Tip Tracker sheets as fewer participants completed and turned in Tip Tracker sheets for each session than the previous sessions.

Results were predicted to show a peak in level of difficulty of skill use during the middle of the week, which may be explained by the extinction burst phenomenon of child behavior (Cooper, Heron, & Heward, 1987). For example, the first day or two parents used the skill at home children would initially be compliant with parent direction. However, once children perceived a change in caregiver behavior, children's challenging behavior temporarily increased (e.g., testing the limits) and then will decrease if caregivers remained consistent in their use of the new skill. Given the behavioral concept of extinction bursts, a hypothesized pattern would be for caregivers to initially report easier use of skills, followed by more difficulty using skills, and then a return to reports of more ease of use by the end of the seven-day period.



Results supported the hypothesized pattern of reported ease or difficulty of use as predicted by the presence of extinction bursts in children's behavior. Four of the five skills followed the expected pattern of reported ease of use, followed by a peak in difficulty, and then a decrease in difficulty. However, caregivers' ratings for each of the four skills that followed this pattern were varied. Caregiver ratings for *Use Preventions* most clearly followed the anticipated pattern. *Follow Through*, *Use Calm Voice*, and *Catch Them Being Good* followed the pattern to a lesser degree. Caregiver ratings for ease of use of *Use Positive Words* did not follow the expected pattern. Instead caregivers rated the skill as being initially more difficult and progressively getting easier throughout the week. The pattern of perceived difficulty of *Use Positive Words* may be explained by the placement of this skill as the first skill assigned as homework in the HOT DOCS program. Caregivers may have reported use of this skill to be more difficult than later skills because they were adjusting to making changes in their overall parenting practices and not necessarily because the skill itself was more difficult to use.

#### *Caregivers' Overall Perceptions of the HOT DOCS Program*

With few exceptions, the majority of caregivers (95%) indicated that they *Agreed* or *Strongly Agreed* that the HOT DOCS program met their expectations, was beneficial to their families, and positively impacted their behavior as caregivers. The few statements on the survey with which caregivers *Disagreed* or *Strongly Disagreed* related to the ability to implement specific skills at home and the program's impact on child behavior. These findings are not surprising, given that many parent training interventions struggle with accomplishing transfer of skills taught in the classroom to the home setting (Eyberg, 1988; Sanders, 1999). In light of the overwhelmingly positive response to these items,

those few participants who were not satisfied with the program were provided individual consultation and possible referrals for further assessment and treatment strategies. These results were interpreted as exceptions to a program perceived as effective, rather than proof that the program is not effective.

The majority of caregivers (70%) reported that they were using the skills learned in the program at home or in the community and had shared the information they learned with others (95%), including spouses, family, and friends. When asked to provide suggestions for future HOT DOCS classes, 40% of caregivers answered “Nothing, the program is fine as is,” and 25% answered “More time,” (e.g., more classes, longer sessions, booster sessions). These results support caregiver ratings of satisfaction with the program, by indicating that there were no significant changes or improvements that should be made to the program. When asked what they valued most from the training, the majority (60%) of caregivers indicated the specific skills taught in the sessions.

### *Conclusions*

Results of the pilot study suggest successful outcomes for caregivers and children participating in the HOT DOCS program, including increases in caregiver knowledge, frequent use of skills at home, high levels of satisfaction with the program, and reductions in the perceived severity of child behavior problems. Results also indicated several modifications that could be made to the program to improve participant outcomes and increase the validity and reliability of program evaluations, including changes to measurement instruments (e.g., knowledge test, adaptive skill measure, evaluation survey) and data collection procedures (e.g., waitlist control group, low rate of return of

posttest rating scales). Overall, the HOT DOCS parent training program appeared to be a promising early intervention program that could be delivered in group format.

Although these preliminary findings are encouraging, federal mandates, such as the Individuals with Disabilities Education Act (IDEA, 2004, U.S. Department of Education) and the No Child Left Behind Act (NCLB, 2001), emphasize the importance of selecting only those interventions that are empirically-supported through rigorous and competent research. Therefore, a more extensive evaluation of the HOT DOCS parent training curriculum must be completed.

### *Summary*

The past three decades of research have indicated an alarming and ever-growing need for effective and economically feasible interventions that address challenging behavior in young children. Studies have consistently demonstrated prevalence rates of challenging behavior upwards of 25% in the 3- to 5-year age group and more recent research has begun to demonstrate prevalence rates near 10% in the infant and toddler age group. Longitudinal research also has clearly demonstrated the profuse, long-term negative outcomes associated with early emerging behavior problems. Following the research on increasing prevalence rates and long-term negative outcomes, researchers and practitioners have developed a multitude of strategies for preventing and treating behavior problems in children and families. Of these interventions, behavioral parent training has been supported by numerous, repeated, well-designed studies and is generally considered the best-practices approach to preventing and remediating challenging behavior in young children. The past three decades of research has clearly indicated a need for cost-efficient, empirically-supported, evidence-based parent training

interventions, which enable parents and caregivers to prevent and correct challenging behavior in young children as early as possible.

## Chapter 3

### Methods

#### *Introduction*

The purpose of the current study was to evaluate participants' knowledge and attitudes and investigate of participants' perceptions of target children's behavior following participation in the HOT DOCS parent training program. In addition, this study investigated the extent to which select demographic variables (i.e., caregivers' level of education, caregivers' social support network, target child's age, and target child's diagnosis) moderated participants' outcomes and perceptions. The study was a secondary analysis of existing data drawn from the HOT DOCS database, which was developed for storing data on program participants for purposes of program evaluation. For purposes of this study, a one-group, pretest/posttest design was utilized. The design was dictated by the type of data collected by program developers. This chapter presents information about participants, trainers, training settings, the HOT DOCS parent training curriculum, measurement tools, and methods of data collection and analysis.

#### *Participants*

The participants in this study were caregivers of children between the ages of 18 months and 5.11 years of age identified as displaying challenging behaviors. The sample was a convenience sample, as participation in the training program was voluntary. Participant caregivers included biological, adoptive, and foster parents, grandparents,

other relatives, and child service providers. Participants were recruited through community advertisements or were referred by their pediatrician, psychologist, or therapist to participate in a university- and community-based parent training program for families and service providers of children displaying challenging or disruptive behavior. As referrals were made or caregivers responded to public advertisements, caregivers' names were added to a wait-list for future training sessions.

Altogether, 662 caregivers were invited and scheduled to participate in the parent training program. Of these, only 465 (70%) attended the first training session. The remaining 197 caregivers did not return reminder telephone calls and did not participate in the program. Thus, the initial sample for the study consisted of 465 caregivers who attended at least the first session. As is shown in Table 1, 102 (21.9%) caregivers attended fewer than three of the training sessions and were considered program drop-outs, 29 (6.2%) caregivers attended three or more sessions but elected not to sign the Internal Review Board (IRB) release form and therefore were not included in data collection for the purposes of this study, although they did complete the course. The final participant sample for this study consisted of 334 caregivers who attended at least three sessions conducted between May 2007 and March 2009 and consented to participate in the evaluation of the program by signing the IRB release form.

Brief analyses were conducted to investigate potential differences between those caregivers who attended three or more sessions and were considered program completers ( $n = 334$ ) and those caregivers who attended fewer than three sessions and were considered drop-outs ( $n = 61$ ). Independent-sample t-tests were calculated to compare the groups of completers and drop-outs for several demographic variables and two measures

collected at pretest. No significant differences ( $p > .05$ ) were found between program completers and drop-outs for the following demographic variables: caregivers' age, race/ethnicity, level of education, and relationship to target child, and target child's age. No significant differences were observed between the completers and the drop-outs for the outcome measures administered during the first session including the Knowledge Pretest ( $n = 51$ ) and the CBCL pretest ( $n = 23$ ).

Table 1

*Attendance Record of Initial Caregiver Participant Sample*

Attendance record	# Caregivers	Percent
Attended fewer than 3 training sessions	102	21.9
Attended 3 or more sessions but did not sign IRB	29	6.2
Attended 3 or more sessions and signed IRB	334	71.8

*Note:*  $n = 465$ .

*Description of Caregivers*

A breakdown of the final participant sample by gender, race/ethnicity, education level, and social support network is shown in Table 2. Participants were 25.7% male ( $n = 86$ ) and 74.3% female ( $n = 248$ ). They ranged in age from 14 to 69 years ( $M = 35.9$ ,  $SD = 8.63$ ). The majority of the sample (88%) consisted of caregivers reporting their race/ethnicity as White (46.7%) or Hispanic (41.3%). African American/Black and Asian caregivers contributed only about 8% of the sample. Caregivers' reported level of education varied from less than a high school diploma to a graduate level degree; 52.6% of the sample reported having an undergraduate or graduate degree. The largest percentage of participants (28.7%) had a degree from a 4-year college ( $n = 96$ ) and 23.9%

had a graduate degree. Approximately one-half of the participants ( $n = 164$ ) attended the program with another caregiver. The remaining participants ( $n = 170$ ) attended the program alone.

Table 2

*Breakdown of Participant Sample by Gender, Race/Ethnicity, Education Level, and Social Support*

Variable	Number	Percent (%)
<b>Gender</b>		
Female	248	74.3
Male	86	25.7
<b>Race/Ethnicity</b>		
White	156	46.7
Hispanic	138	41.3
African American/Black	20	6.0
Asian	7	2.1
Other	6	1.8
Not Reported	7	2.1
<b>Caregiver Education Level</b>		
Less than HS	14	4.2
HS Diploma	67	20.1
Technical Training	25	7.5
2-Year College Degree	40	12.0
4-Year College Degree	96	28.7
Graduate Degree	80	23.9
Not Reported	12	3.6
<b>Caregiver Social Support</b>		
Attended alone	170	50.9
Attended with caregiver	164	49.1

*Note.*  $n = 334$ .



The variable “caregiver’s social support,” was measured in terms of whether or not a caregiver was accompanied by another individual representing that same target child. Participants attending the program with another caregiver were assumed to have a constant source of teamwork, partnership, and encouragement to attend weekly sessions, complete homework assignments, and use the skills and techniques taught during class sessions. Although caregivers who attended the program alone may have had social support from other caregivers outside of the training session, therefore affording these participants with the same level of support and encouragement, for the purposes of this study, only those caregivers who attended at least three sessions with another caregiver were counted as “attending together” for the variable caregiver’s level of social support. Caregivers who attended the program together were asked to complete homework assignments together, focusing on the same parenting skills and techniques each week. Caregivers attending the program together also were prompted to complete child behavior rating scales together.

Within the context of this study, type of insurance was used as a general indicator of socio-economic status (SES), with private insurance representing higher SES and Medicaid or no insurance representing lower SES. HOT DOCS program developers originally used type of insurance as a general indicator of participants’ SES because other previous studies in educational or school-based research have used children’s eligibility for free or reduced-price lunch as a general indicator of SES. However, making inferences about participants’ SES based on type of health insurance prohibits precise comparisons with previous research, which mainly defines SES through measures such as

annual household income. Despite the limitations of such a definition, the HOT DOCS program developers made the decision to use type of insurance as an indicator because they believed participant caregivers would more readily provide information about health insurance than they would about annual household income.

As is shown in Table 3, 184 (55.1%) participants reported having private insurance, 92 (27.5%) participants reported having Medicaid insurance, and 21 (6.3%) participants reported having no insurance. Thirty-seven (11%) participants did not respond to this item.

Table 3

*Breakdown of Participant Sample by SES Indicator*

Type of Insurance	Number	Percent (%)
Private	184	55.1
Medicaid	92	27.5
No Insurance	21	6.3
Not Reported	37	11.1

*Note.* n = 334

The majority of participants (85.6%) reported being the target child’s biological, adoptive, or foster parent ( $n = 286$ ). Of the remaining participants, 34 (10.2%) described their role as a child service provider, 12 (3.6%) participants reported being the target child’s grandparent, and 2 (0.6%) participants reported being another relative.

As shown in Table 4, of the female participants, 205 (82.7%) reported being the child’s biological/adoptive/foster mother, 30 (12.1%) reported being child service providers, 11 (4.4%) reported being the child’s grandmother, and 2 (0.8%) reported being

another relative (e.g., aunt, great-grandmother). Of the male participants, 81 (94.2%) reported being the child’s biological/adoptive/foster father, 4 (4.7%) reported being a child service provider, and 1 (1.1%) reported being the child’s grandfather.

Table 4

*Relation of Caregiver to Target Child by Participant Gender*

Relation	Number	Percent (%)
<u>Females (n = 248)</u>		
Mother & Adoptive/Foster Mother	205	82.7
Child Service Provider	30	12.1
Grandmother	11	4.4
Other Female Relative	2	0.8
<u>Males (n = 86)</u>		
Father & Adoptive/Foster Father	81	94.2
Child Service Provider	4	4.7
Grandfather	1	1.1

*Note.* n = 334

*Description of Target Children*

Target children (n = 309) ranged in age from 18 months to 5.11 years (M = 38.08 months, SD = 13.38). Approximately one-half (50.8%) of the target children had preexisting medical and/or psychological diagnoses, as reported by caregivers during collection of demographic information during the first session. Caregiver-reported diagnoses were not verified through review of records or consultation with physicians. Many of the remaining children had recently been evaluated by pediatricians or

psychologists due to parent or teacher concerns with development and behavior, but did not meet criteria for a diagnosis according to the Diagnostic and Statistical Manual-4<sup>th</sup> Edition, Text Revision (DSM-IV-TR, American Psychiatric Association, 2000).

As is shown in Table 5, 40.8% ( $n = 126$ ) of the target children did not have a preexisting diagnosis. Of the children in the sample with preexisting diagnoses, 56 (18.1%) were children with speech or language impairments, 38 (12.3%) were children with developmental delays, 36 (11.7%) were children with a diagnosis on the autism spectrum including Pervasive Developmental Disorder (ASD/PDD), and 27 (8.7%) were children with medical or genetic disorder (i.e., Attention-Deficit/Hyperactivity Disorder, Down syndrome, cerebral palsy, failure to thrive, premature birth). Twenty-six participants (8.4%) did not report whether or not their child had a preexisting diagnosis.

Table 5

*Number and Percent of Target Children by Preexisting Diagnosis*

Child's Preexisting Diagnosis	Number	Percent (%)
None	126	40.8
Speech-Language Impairment	56	18.1
Developmental Delay	38	12.3
ASD/PDD	36	11.7
Medical/Genetic Syndrome	27	8.7
Not Reported	26	8.4

*Note.*  $n = 309$

### *Settings*

The HOT DOCS program was provided through the Children's Medical Services (CMS) clinic, run by the Department of Pediatrics at a large University in West Central Florida. The training groups were held in conference rooms located within a campus clinic and several community settings, including Head Start classrooms, churches, and community centers.

### *HOT DOCS Parent Training Program*

The HOT DOCS parent training program is designed to be delivered in seven sessions (refer to Appendix A for a summary of each session). Each of the sessions lasts approximately two hours. The first session includes thirty minutes of socialization, including a light dinner provided by trainers and brief introductions; twenty minutes during which caregivers completed the demographics form and knowledge pretest (see description of measures below for details); and one hour of behavioral parent training. The second, third, fourth, and fifth sessions include 30 minutes of socialization, peer support and group problem solving, and review followed by an hour of new instruction. The sixth session follows a similar format and then concludes with twenty minutes during which caregivers complete the knowledge posttest and a program evaluation survey (see description of measures below for details). The final session is a booster or refresher session conducted two months after the sixth session and follows a similar format as the previous sessions.

The activities for each session include lecture, practice exercises, role playing, and video vignettes to address the learning objectives for each session. 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, which they recorded using the HOT DOCS Tip Tracker sheets. Tip Trackers recorded the number of days caregivers used the skill, to rate how difficult or easy the skill was to use each day, and prompted caregivers to provide specific examples of how they used the skill with their children each week. The Special Play Activities are 5-minute routines caregivers are asked to engage in daily with their child. Inexpensive items such as bubbles are provided each week to caregivers along with a worksheet with guidelines describing how to use the activities to teach their child motor, communication, and social-emotional skills. A more detailed description of each training session follows.

*Session One.* The first session provides participants with an overview of the HOT DOCS program and an introduction to early childhood development. Caregivers are instructed in brain development, typical ages for achievement of developmental milestones and warning signs for delays in development, school readiness skills, and an overview of the problem-solving process. The Parenting Tip for the first session is “Use Positive Words,” which is explained to caregivers as telling children what to do instead of what not to do. For example, caregivers should say, “Feet on the floor,” instead of “Stop jumping on the couch.” A class activity is conducted in which caregivers brainstorm positive ways to rephrase twenty of the most common behaviors caregivers usually respond to with “No!” or “Stop!” The Special Play Activity for session one is “Bubbles.” Each participant is given a container of bubbles to use for this activity.

*Session Two.* The second session focuses on teaching caregivers about the importance of healthy routines and rituals in promoting positive development and adaptive behavior in young children. Sleep routines, or the activities surrounding

bedtime, are highlighted, since this is the most common problematic routine for most caregivers and children. The Parenting Tip for this session is “Catch Them Being Good,” which prompts caregivers to focus on the positive behaviors or skills their children exhibit each day and to respond with specific, labeled praise for these behaviors. The Special Play Activity for this session is reading, for which caregivers are provided instruction, examples, and a detailed worksheet of activities. Each participant is given a developmentally appropriate storybook.

*Session Three.* The third session introduces caregivers to the basics of behavior development in young children, including the concepts of social learning, modeling, antecedents and consequences, reinforcement and the function of behavior. In this session, caregivers are introduced to the problem-solving chart, which includes triggers, behaviors, consequences, preventions, new skills, and new responses. In this session, caregivers learn to complete the first three sections. The Parenting Tip for this session is “Use Calm Voice,” which reminds caregivers to use a calm, quiet voice in response to their child’s behavior, especially in response to challenging or noncompliant behavior. The Special Play Activity is coloring, for which each participant is given a coloring book and a box of crayons.

*Session Four.* The fourth session provides caregivers with training in the use of various preventative strategies, including using timers, providing prompts, clarifying expectations, visual schedules or prompts, and personalized stories. The Parenting Tip for this session is “Use Preventions,” which promotes caregivers’ use of the preventative techniques taught in the session. The Special Play Activity is fun dough, for which each participant is provided with one color or tub of dough and a durable placemat.

*Session Five.* The fifth session provides caregivers with training in how to teach their children new skills and replacement skills for challenging behaviors. In this session caregivers begin to complete the second half of the problem solving chart, including the preventions and new skills sections. Caregivers are also provided instruction in the appropriate uses and steps for Time-Out from Positive Reinforcement and what to do when children misbehave or are non-compliant. The Parenting Tip for this session is “Follow Through,” which provides caregivers with a brief script to use whenever their children did not comply with a direction or task. The Special Play Activity is playing with a ball, which each participant is provided before leaving the session.

*Session Six.* The sixth and final session focuses on helping caregivers understand and manage their own stress as well as providing a summary and review of the content of the previous sessions. Caregivers complete the final categories of the problem solving behavior chart by listing the variety of new responses caregivers can have to their child’s appropriate behaviors. These new responses include specific praise, prompting, validation and redirection, and follow through. The Parenting Tip for this session is “Take 5 for Yourself,” which reminds caregivers to focus on their own health and stress levels each day. For this week, caregivers are prompted to use one of the five previously learned Special Play Activities each day.

*Booster Session.* A Booster session is held two months after the sixth session and focuses on reviewing the content of the first six sessions and checking in with caregivers on their progress with using skills and techniques learned in HOT DOCS with their children. Caregivers complete and turn in the posttest behavior rating scale before leaving



the session. No new Parenting Tips or Special Play Activities are introduced, although each tip and play activity are reviewed.

All of the HOT DOCS materials, presentations, and handouts have been linguistically translated and culturally adapted from English to Spanish to allow for the program content to be delivered in both languages. The Spanish adaptation was created and field tested by a team of bilingual USF university students and staff including a fellow in internal medicine and pediatrics who was originally from Ecuador; a master of public health graduate student with a medical degree who was originally from Nicaragua; a doctoral intern in school psychology, who spoke Spanish as a second language; and a parent and HOT DOCS graduate, who was originally from Columbia (Curtiss Salinas, Williams, Armstrong, & Ortiz., 2009).

#### *HOT DOCS Trainers*

The following section describes the procedures used to train the HOT DOCS Trainers. HOT DOCS Trainers are those individuals who are employed by or volunteer their time to the program to deliver the program to caregivers. Trainers are required to have served as facilitators of at least one class (7 sessions) of HOT DOCS.

#### *Description of Train-the-Trainers Process*

In order to become a trainer of the HOT DOCS curriculum, trainees first observe or shadow an experienced trainer (someone who has taught the classes at least twice without direct supervision) through the duration of one set of seven sessions of HOT DOCS. During the observation period, trainees are provided with a copy of the HOT DOCS provider's manual, which they review before sessions begin and follow along with during each session. Throughout the observation period, the experienced trainer involves

the trainee in the process of preparing for classes and answers any questions the trainee may have about the curriculum, group management strategies, and methods of interacting with caregivers.

After observing a complete set of seven sessions, the trainee then serves as an assistant to a more experienced trainer. During this phase of preparation, the trainee delivers some of the content during weekly sessions, interacts with caregivers, and helps with material preparation and data collection. Throughout this phase, the trainee meets with the experienced trainer before and/or after each weekly session to discuss any questions or concerns. During this supervision meeting, the experienced trainer provides the trainee with specific feedback on his or her performance. Once the trainee has assisted a more experienced trainer throughout a complete set of seven sessions, the trainee takes on the role of co-leader with another trainer. During these sessions, the trainee should equally share the duties and responsibilities of preparing and leading the sessions with another trainer. Finally, the trainer would co-lead a class with another experienced trainer while the class is observed and/or assisted by a new trainee.

#### *Measures*

*HOT DOCS Caregiver Demographics Form.* The *Caregiver Demographics Form* was developed by the HOT DOCS authors in order to collect demographic information about the caregivers and the target children. This form includes 10 questions asking caregivers to indicate their address, gender, age, relationship to target child, race/ethnicity, and level of education. In addition, they are asked to indicate the target child's age, preexisting medical and/or psychological diagnoses, type and name of health

insurance, and the age(s) of other children in the home. The demographics form is available in both English and Spanish (see Appendices B and C).

*HOT DOCS Knowledge Test.* The *Knowledge Test*, developed by the HOT DOCS authors, is designed to assess caregivers' knowledge of child development, behavioral principles, and parenting strategies. The test consists of 20 "statements, which caregivers are instructed to mark as being "True or False." Each item is scored 1 for the correct answer and 0 for the incorrect answer. The maximum possible score on the test is 20. The test takes approximately ten minutes to complete.

Although the test includes items reflecting various learning objectives in HOT DOCS, there were not enough items per objective to investigate subscale scores. Thus, for the purposes of this study, only total scores were used for data analysis purposes. No information on reliability or validity was available for this instrument. The knowledge test is available in both English and Spanish (see Appendices D and E).

*Achenbach Child Behavior Checklist.* The Child Behavior Checklist (CBCL; Achenbach, 2001) was developed to assess childhood behavior problems. There are multiple versions of the CBCL that are used depending on the child's age and the source of information. The CBCL 1½-5 was developed for use with children between the ages of 18 and 71 months of age and can be completed by parents/caregivers and/or teachers/caregivers. The CBCL problem behavior scores are grouped into two broad-band factors (internalizing and externalizing problems), a total broad-band score derived by averaging weighted scores from the broad-band factors, and eight narrow-band subscales. The narrow-band subscales include aggressive behavior, anxious/depressed, attention problems, delinquent behavior, social problems, somatic complaints, thought

problems, and withdrawn behavior. All versions of the CBCL are available in English and Spanish.

The CBCL 1½-5 is a 99 items-questionnaire that asks parents/caregivers to rate their child's behavior in the previous 2 months by rating each item on a three-point scale: 0 = *not true* of the child, 1 = *somewhat* or *sometimes true*, and 2 = *very true* or *often true*. For some items, in addition to rating the child's behavior on the 3-point scale, caregivers are prompted to provide brief descriptions of problems, disabilities, most significant parent concerns, and to list their child's strengths. Completing the CBCL takes approximately 20 minutes. Responses are scored using a computerized scoring software program. Scores are expressed as T-scores with a mean of 50 and a standard deviation of 10. A T-score of 64 or below is in the normal range; 65-69 is in the borderline range; and 70 or above is in the clinical range. Scores in the borderline or clinical range indicate that a child's behavior problems are more significant than other children the same age and gender.

The CBCL 1½-5 was normed on a national sample of 700 children. The manual reports median internal consistency coefficients for the Internalizing and Externalizing scales that range from .76 to .92. Studies of the CBCL subscales indicated high retest reliability (Withdrawn:  $r = .82$ ; Somatic Complaints:  $r = .95$ ; Anxious/Depressed:  $r = .86$ ; Social Problems:  $r = .87$ ; Internalizing Problems:  $r = .89$ ) and adequate interrater reliability (Withdrawn:  $r = .66$ ; Somatic Complaints:  $r = .52$ ; Anxious/Depressed:  $r = .77$ ; Social Problems:  $r = .77$ ; Internalizing Problems:  $r = .66$ ; Achenbach, 1991).

*HOT DOCS Program Evaluation Survey for Caregivers.* The *Program Evaluation Survey for Caregivers* was developed by the HOT DOCS authors to assess caregiver

participants' perceptions of the effectiveness of the parent training program. The survey consists of eight statements about the benefits of HOT DOCS to caregivers, the skill of HOT DOCS trainers, and HOT DOCS' impact on child and family behaviors and relationships. Caregivers were asked to indicate the extent of their agreement with the eight statements on a 4-point Likert-type scale anchored as 4 = *Strongly agree*, 3 = *Agree*, 2 = *Disagree*, and 1 = *Strongly disagree*. The survey also consists of five questions with multiple response options provided. Caregivers are asked to select the option that best represents their perceptions on the usefulness of the program, what they valued most about the program, as well as any suggestions for future trainings or improvements to the current program.

The original survey developed in 2006 consisted of five open-ended questions or prompts, which were completed in free-response form by caregivers. After the pilot study was completed, the HOT DOCS authors modified the survey by replacing the five open-ended prompts with five statements with response choices provided, which were derived from the thematic analysis of the pilot study survey responses. The new survey provides options for caregivers to check the responses which best pertain to them and will allow for more systematic quantitative analysis of the data. The survey is available in both English and Spanish (see Appendices F and G).

#### *Data Collection Procedures*

Data collected for each caregiver included a demographics information sheet; a knowledge pre- and posttest of the basic principles of behaviorism and child development; behavior rating scales (CBCL); and a program evaluation survey on caregivers' perceptions of the usefulness and effectiveness of the program. Caregivers

completed the Demographics Form and the Knowledge Pretest during the first session. Caregivers were given CBCL behavior rating scales during the first session and were asked to complete and return the forms the next week. Child care providers were not given behavior rating scales unless they were attending the HOT DOCS classes with a specific family for whom they were providing direct intervention services. Caregivers completed the Knowledge Posttest during the final session of training. Caregivers were given behavior rating scales during the Booster Session and were allowed time to complete the scales before leaving. If caregivers did not complete the rating scales before leaving they were given a postage-paid envelope to return the scales upon completion. Caregivers who did not attend the Booster Session were mailed a packet containing the rating scales the day after the Booster Session was held. A postage-paid envelope addressed to the HOT DOCS authors at the CMS clinic was included for return of the completed instruments. Included in the packet was a letter detailing the request for information, directions for completing the rating scale, and a description of how the information would be used as part of the research project. Reminder postcards were mailed to participants who had not returned the behavior rating scales two weeks after the original mailing.

Each program participant was assigned an identification code before the first training session. Identification codes consisted of a five-digit sequence of numbers. The first two digits were the same for each participant enrolled in a cohort of classes (e.g., all participants in the August 2008 classes were given identification codes beginning with the number 27). The third and fourth digit were the same for all members of a group or family attending classes together and focusing on the same child (e.g., a mother, father

and grandmother from the same family attending in August 2008 would have identification codes beginning with 2705). Finally, the fifth digit indicated the participants' relationship to the target child (e.g., all mothers' codes ended in 0, all fathers' codes ended in 1, grandparents and other relatives codes ended in 2, and providers or professionals codes ended in 3).

Data for this study were accessed through the HOT DOCS database housed in the Children's Medical Services (CMS) clinic. Following each weekly training session, the HOT DOCS project director entered participant data using identification codes only into a database maintained by a secure password. Two school psychology graduate students serving as HOT DOCS staff conducted integrity checks comparing the raw data to the data entered into the database to ensure the accuracy of the data. Integrity checks were conducted on every 10<sup>th</sup> participant in the database. All raw data were stored in a locked file cabinet in the CMS clinic.

The primary researcher in this study was involved in the HOT DOCS program prior to proposing this study in the capacity of a trainer and data entry staff. All data used in this study were collected as planned by the HOT DOCS program developers, without input from the primary researcher in regards to the planning of this research project. Specific variables and methods of data collection (i.e., type of insurance as an indicator of SES, target child's diagnosis collected through caregiver-report, without further verification) were defined prior to the proposal of this project by the HOT DOCS program developers. In this sense, although the primary research was involved in providing HOT DOCS trainings and assisting with data entry prior to proposing this study, the data used for the purposes of this research were collected without the control or

contributions of the primary researcher, defining the study as a secondary analysis of an existing or archival data set.

### *Data Analysis*

Data from participants who did not complete three or more HOT DOCS training sessions or who did not sign an IRB consent form were not included in data analyses for this study. The research questions addressed in the study and the analyses used to answer the questions are given below.

#### *Caregiver Knowledge*

*Research Question #1a.* What is the impact on caregiver knowledge of child development, behavioral principles, and parenting strategies as a result of participation in the HOT DOCS parent training program?

A dependent means t-test was conducted to determine if there was a significant difference in participant caregiver knowledge of child development, behavioral principles, and parenting strategies on completion of the HOT DOCS training program, between participants' pretest and posttest scores on the HOT DOCS Knowledge Test. Scores were reported as total number of items correct on the HOT DOCS Knowledge Test.

*Research Question #1b.* b. Is there a difference in participant caregivers' knowledge of child development, behavioral principles, and parenting strategies based on caregivers' level of education, caregivers' social support network, the target child's age, and the target child's diagnosis?

Repeated measures analysis of variance (ANOVA) was used to determine if there was a significant difference in caregiver knowledge due to participation in the HOT



DOCS training program as measured by pre- and post-test scores on the HOT DOCS knowledge test for specific groups of participants. A separate analysis was conducted for each of the following independent variables: education level of caregivers (i.e., less than a high school diploma, high school diploma, technical training, 2-year college degree, 4-year college, or a graduate degree); social support network of caregivers (i.e., caregiver attending training alone vs. accompanied by another caregiver(s)); age of target child (i.e., target child under three years of age vs. target child over three years of age); and diagnosis of target child (i.e., no preexisting diagnosis, target child with autism spectrum disorders, developmental delays, speech/language impairments, or medical/genetic disorders). The dependent variables in each analysis were the pretest and posttest scores on the HOT DOCS Knowledge Test.

#### *Caregiver Perceptions of Severity of Child Behavior*

*Research Question #2a.* Do caregivers perceive their child as having more problem behavior than a normative sample prior to participation in the HOT DOCS program?

Descriptive statistics were used to analyze the severity levels of child problem behavior as perceived by the caregiver prior to participating in the parent training program. Caregiver ratings on the CBCL were used as indicators of problem behaviors in children. Caregiver ratings were analyzed using the descriptive categories assigned to specific score ranges as designated in the CBCL manual.

Number and percent of standard scores falling within the non-significant, borderline, and clinically significant categories in the sample were calculated for a) the Internalizing, and b) Externalizing scales of the CBCL. A chi-square goodness of fit test

was employed to determine if there was a significant departure of perceived severity level of child problem behavior in the sample for the Internalizing and Externalizing scales of the CBCL from that expected in each of the three descriptive categories: Non-Significant (T-scores less than 65), Borderline (T-scores between 65 and 69), and Clinically Significant (T-scores greater than or equal to 70) as expected for a distribution of scores in a national sample.

*Research Question #2b.* Are there significant differences in caregiver perceptions of the severity of child problem behaviors based on caregivers' level of education, caregivers' social support network, and the target child's diagnosis?

One-factor repeated measures ANOVA was used to determine if there were differences in perceptions among caregivers about the severity of children's problem behaviors on the pretest CBCL for specific groups of caregiver participant. A separate analysis was conducted for each of the following independent (group) variables: education level of caregiver (i.e., less than a high school diploma, high school diploma, technical training, 2-year college degree, 4-year college, or a graduate degree); caregiver social support networks (i.e., caregiver attending training alone vs. accompanied by another caregiver); type of preexisting diagnosis of target child (i.e., no preexisting diagnosis, target child with autism spectrum disorders, developmental delays, speech/language impairments, or medical/genetic disorders). The dependent variable for each analysis was the caregivers' rating of the severity of the target child's behavior using standard scores on the Internalizing and Externalizing scales of the CBCL at pretest.

*Changes in Caregiver Perceptions of Severity of Child Problem Behavior*

*Research Question #3a.* To what extent do caregivers perceive a decrease in child problem behavior following their participation in the HOT DOCS program?

A two-factor repeated measures ANOVA was conducted to determine if there were significant differences between caregivers' pretest and posttest scores on the Internalizing and Externalizing scales on the CBCL. The two within-subjects (repeated) factors in this analysis were type of scale (Internalizing vs. Externalizing) and time (T) (i.e., pretest and posttest). The dependent variable was the T-score on the CBCL scales.

*Research Question #3b.* Are there differential perceptions of child behavior change based on caregivers' social support network, the target child's diagnosis, and the target child's age?

Two-factor repeated measures ANOVA were conducted to determine if there were differential perceptions of the change in the severity of children's problem behaviors from pretest to posttest on the Internalizing and Externalizing Scales of the CBCL for specific groups of participant caregivers. A separate analysis was conducted for each of the following independent (group) variables: social support network of caregiver (i.e., attending training alone or attending accompanied by another caregiver); type of preexisting diagnosis of target child (i.e., target child with no preexisting diagnosis, with autism spectrum disorders, with developmental delays, with speech/language impairments, or with medical/genetic disorders); and age of target child (i.e., target child under three years of age vs. over three years of age). The dependent variable in each of the analyses was standard scores on the CBCL's completed by caregivers at pretest and posttest for the Internalizing and Externalizing scales.

*Overall Perceptions of the HOT DOCS Program*

*Research Question #4.* What are caregivers' overall perceptions of the HOT DOCS parent training program?

Caregivers' mean ratings of satisfaction with the HOT DOCS program were computed using quantitative data obtained from the HOT DOCS Program Evaluation Survey for Caregivers.

Before data analyses were conducted, data were screened for missing data and for the assumptions underlying the various inferential statistics used to answer each research question. In the case where a participant did not provide data needed to answer a specific research questions, the participant was only dropped from the particular analysis, and not excluded from the entire participant sample. Consequently, several of the research questions were conducted with different sample sizes, as participants were included in each research question for which they provided complete information.

Assumptions underlying the use of a dependent means t-test included independence of observations, normality of score distribution, and homogeneity of variance. Assumptions underlying the use of repeated measures analysis of variance (ANOVA) included independence of observations, normality of score distribution, homogeneity of variance, and sphericity. Because of the nature of the research design, which relied on the use of pretest and posttest scores from the same group of participants, observations were not independent of one another; consequently, repeated measures ANOVA were employed. To assess data for normality of distribution of scores, values of skewness and kurtosis were examined for each variable and followed by the conduct of Shapiro-Wilk tests of normality. To assess data for homogeneity of variance, Levene's

tests were conducted for each variable. Levene's test of the assumption of homogeneity of variance is not seriously affected by violations of the normality assumption (Glass, 1966).

Although several subsets of the data were found to violate the assumptions of normality and homogeneity of variance, the literature indicates that ANOVA is robust with respect to these types of violations and as long as values of skewness and kurtosis were within acceptable limits, analyses were conducted as planned. The assumption of sphericity was not relevant in this study since the research questions included only within-subjects variables containing two levels of the variable. For all repeated measures ANOVA's sphericity was assumed. Results for analyses for each assumption for individual research questions will be presented before the discussion of results.

Measures of effect size were calculated to provide information about the strength of the relationship between the independent variable and the dependent variables (Stevens, 1999). The reader is referred to Appendix H for a visual representation of data sources and analyses for each research question.

## Chapter 4

### Results

#### *Overview*

The following chapter presents results of various data analyses used to answer each research question. Results are organized by research question. As previously discussed, prior to beginning data analyses data were screened for missing data and for the assumptions underlying the inferential statistics used in each research question.

#### *Caregiver Knowledge*

*Research Question #1a.* What is the impact on caregiver knowledge of child development, behavioral principles, and parenting strategies as a result of participation in the HOT DOCS parent training program?

To determine if there was a significant difference between caregivers' pretest and posttest scores of knowledge of child development, behavioral principles, and parenting strategies on completion of the HOT DOCS Training program, a dependent means *t*-test was conducted using participants' pretest and posttest scores on the HOT DOCS Knowledge Test. Means and standard deviations of pretest and posttest scores of caregivers' knowledge are reported in Table 6. Although results of the Shapiro-Wilk test indicated a violation of normality, for scores on the Knowledge Test at pretest and posttest, given the dependent means *t*-test's robustness against violations of normality, the analysis was conducted as planned.

Table 6

*Means and Standard Deviations for Participant Scores on the Knowledge Test*

Measure	<i>M</i>	<i>SD</i>	Minimum	Maximum	Skewness	Kurtosis
Pre-Test	15.88	2.278	7	20	-.635	.211
Post-Test	17.24	2.009	10	20	-.737	.241

*Note.*  $n = 250$

The results of the *t*-test show that the participants' mean posttest score was significantly higher than their mean pretest score,  $t(1, 249) = 11.22, p < .001$ . The effect size for the *t*-test was large ( $d = 0.633$ ). This finding indicates that caregivers' knowledge of child development, behavioral principles, and parenting strategies was greater after completing the HOT DOCS program than before instruction began.

*Research Question #1b.* Is there a difference in participant caregivers' knowledge of child development, behavioral principles, and parenting strategies based on caregivers' level of education, caregivers' social support network, the target child's age, and the target child's diagnosis?

A two-factor (one between-subjects one within-subjects) analysis of variance (ANOVA) was used to determine if there was a significant difference in caregiver knowledge due to participation in the HOT DOCS training program as measured by pre- and post-test scores on the HOT DOCS Knowledge Test for specific groups of participants. A separate analysis was conducted for each of the following independent (between-subjects) variables: education level of caregivers; social support of caregivers; age of target child; and diagnosis of target child. The within-subjects variable in each

analysis was time of testing (pretest vs. posttest); and the dependent variable was scores on the HOT DOCS Knowledge Test.

*Caregivers' Level of Education.* The between-subjects factor was level of caregiver education (L) and the within-subjects (repeated) factor was time (T) (i.e., pretest and posttest). The variable caregivers' level of education originally included six levels or categories of highest educational attainment. Due to significantly unequal distribution of participants across the six levels, the data for this variable were collapsed into four levels: high school diploma or less, technical training + 2 year college degree, 4 year college degree, and graduate degree. Two-hundred-forty-five participants completed and returned both the pretest and posttest Knowledge Test and reported their highest level of education attained on the Demographics Form. Means and standard deviations of pretest and posttest scores by level of caregiver education are reported in Table 7.

Table 7

*Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Caregivers' Education Level*

Education Level	<i>n</i>	Pretest		Posttest	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
HS diploma or less	55	14.96	2.37	15.73	2.16
Tech. training/2yr college	51	15.25	2.35	16.92	1.89
4yr college degree	81	16.83	1.72	18.30	1.52
Graduate degree	58	16.00	2.37	17.53	1.63
Marginal Means	245	15.76		17.12	

*Note.* *n* = 245



Results of the Shapiro-Wilk test indicated a violation of normality, for the pretest score, posttest scores, and the difference score from pretest to posttest. However, it has been shown through Monte Carlo studies (e.g., Norton, 1952) that analysis of variance is robust to violations of the normality assumption and this holds when group sizes are unequal. Levene's test was employed to determine if the homogeneity of variance assumption was violated. The test was statistically significant for pretest scores,  $F(3, 241) = 3.62, p = .014$ , and posttest scores,  $F(3, 241) = 2.75, p = .044$ , indicating that the variance in pretest and posttest scores was not equally distributed across levels of caregiver's level of education. The ratio of the largest (Graduate degree,  $1.539^2 = 2.369$ ) to smallest (4 Year College,  $1.232^2 = 1.520$ ) group variance was less than 3:1 ( $2.369/1.520 = 1.229$ ). Because ANOVA is robust against small to moderate disproportionate levels of inequality of variance between groups, the analyses were conducted as planned (Moore, 1995). The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

Results of the ANOVA are reported in Table 8. The data revealed a non-significant education level x time interaction effect  $F(3, 241) = 2.53, p > .05$ , a statistically significant main effect for time,  $F(1, 244) = 122.83, p < .001, \eta^2 = 0.34$ , and a significant main effect for caregivers' level of education  $F(3, 241) = 19.25, p < .001, \eta^2 = 0.19$ .

Table 8

*Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Caregivers' Education Level*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	244	358.56		
Education (L)	3	352.46	117.49	19.25*
S / L	241	6.10		
<u>Within subjects</u>	245	662.59		
Time (T)	1	219.12	219.12	122.83*
L x T interaction	3	13.54	4.51	2.53
ST/L	241	429.93	1.78	
Total	244	1021.15		

*Note.* \* $p < .01$

The non-significant interaction between caregiver educational level and time of testing (L x T) suggests that there was not a differential change in caregiver knowledge from pre- to posttest as measured by the HOT DOCS Knowledge Test due to the educational level of the caregivers. Follow-up of the significant main effect for Time (T), was done by examining the overall HOT DOCS Knowledge Test pretest and posttest mean scores (i.e., marginal means). The significant main effect for time revealed that regardless of educational level, the caregivers who participated in the HOT DOCS program scored significantly higher ( $p < .001$ ) on the HOT DOCS Knowledge Test upon completion of the program, posttest ( $M = 17.12$ ), as compared to their performance prior to the start of the program, pretest ( $M = 15.76$ ). This finding indicates that caregivers'

knowledge of child development, behavioral principles, and parenting strategies was greater at posttest time as compared to pretest time.

Follow-up of the significant main effect for level of education (L) was conducted using Bonferroni adjustment for multiple comparisons to compare mean difference scores on the Knowledge Test for the four levels of caregivers' education. Post-hoc Bonferroni tests indicated that caregivers' with a graduate degree scored significantly higher than caregivers with a high school diploma or less ( $p < .01$ ), but their performance did not differ significantly from that of caregivers with technical training/2-year college degree or a 4-year college degree ( $p > .05$ ). Caregivers with a 4-year college degree scored significantly higher than caregivers with a high school diploma or less ( $p < .01$ ) and caregivers with technical training/2-year college degree ( $p < .01$ ). Caregivers with a high school diploma or less did not significantly ( $p > .05$ ) differ from caregivers with technical training/2-year college degree. Refer to Figure 1 for a visual display of differences in mean scores for caregivers' level of education.

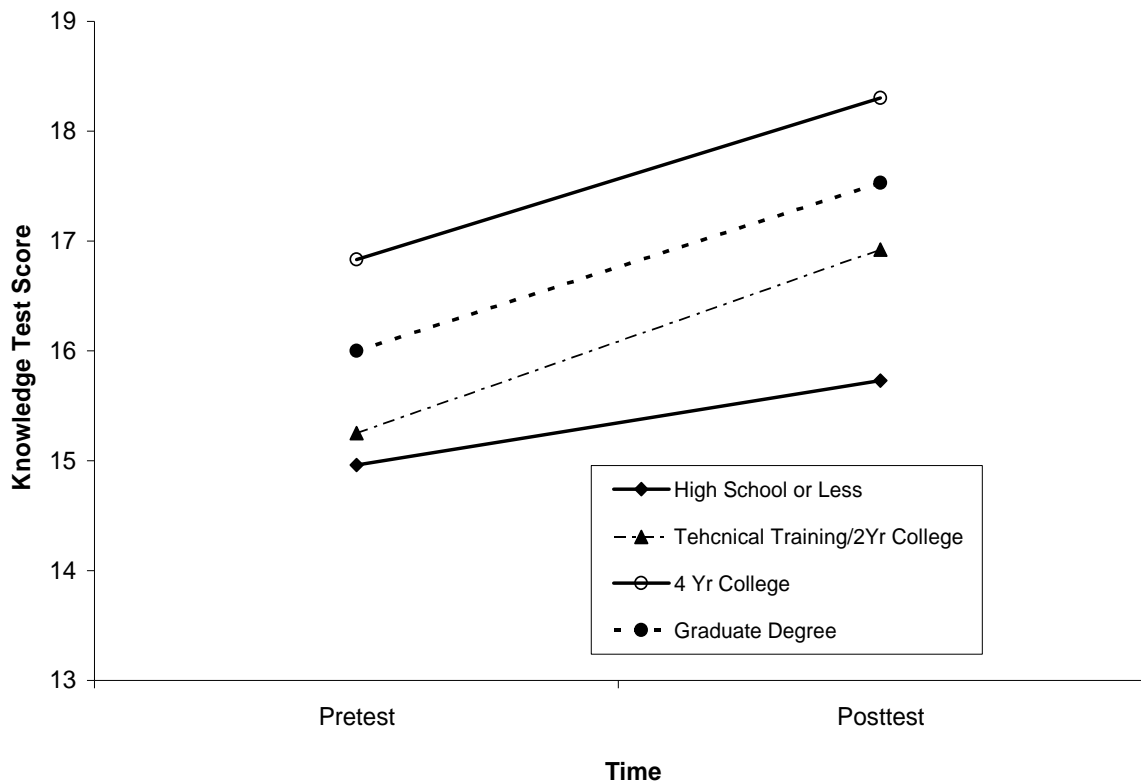


Figure 1. Mean Knowledge Test scores by caregivers' education level.  
 Note.  $n = 245$

Caregivers' Social Support. For the repeated measures ANOVA conducted to examine the differences between caregivers' pretest and posttest scores on the *Knowledge Test* by level of social support received, the between-subjects factor was caregivers' level of social support (A) and the within-subjects (repeated) factor was time (T) (i.e., pretest and posttest). Two-hundred-fifty participants completed and returned both the pretest and posttest Knowledge Test and were coded as attending the HOT DOCS training alone or attending with another caregiver (e.g., spouse, relative, friend, therapist).

In order for a caregiver to be coded as attending with another caregiver, both participants must have attended at least three sessions and signed the consent form.

Means and standard deviations of pretest and posttest scores by level of caregiver social support are reported in Table 9.

Table 9

*Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Caregivers' Social Support*

Social Support	<i>n</i>	Pretest		Posttest	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attended Alone	126	15.93	2.33	17.20	2.09
Attended Together	124	15.83	2.23	17.27	1.93
Marginal Means		15.88		17.24	

*Note.* *n* = 250

Results of the Shapiro-Wilk test did not indicate a violation of normality for the pretest score, posttest scores, and the difference score from pretest to posttest for either level of caregivers' social support. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of caregiver social support for pretest and posttest scores. Levene's test was not significant at the .05 level for pretest,  $F(1, 248) = 1.88, p = .172$ , nor posttest scores,  $F(1, 248) = 0.69, p = .407$ , indicating that the variance in scores was equally distributed across groups of caregiver social support at pretest and posttest. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

The ANOVA results reported in Table 10 revealed a non-significant social support x time interaction effect,  $F(1, 248) = 0.52, p > .05$ , a non-significant main effect

for caregivers' level of social support,  $F(1, 248) = 0.002$ ,  $p > .05$ , and a statistically significant main effect for time,  $F(1, 248) = 125.75$ ,  $p < .001$ .

Table 10

*Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Caregivers' Social Support Level*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	249	1842.80		
Support (A)	1	0.02	0.02	0.00
S/A	248	1842.80	7.43	
<u>Within subjects</u>	250	684.72		
Time (T)	1	230.06	230.06	125.75*
Ax T	1	0.94	0.94	0.52
ST/A	248	453.72	1.83	
Total	249	2527.52		

*Note.* \* $p < .01$

The observed non-significant interaction effect, type of social support by time of testing, indicates that there was not a differential performance of participant caregivers on the HOT DOCS knowledge test from pre- to posttest due to the level of support they received while attending the training program. The non-significant main effect for level of support also revealed that there was no difference in the overall performance on the knowledge test by caregivers regardless of whether they attended the training alone, or they were accompanied by another individual who was involved in providing care for the target child. Just as in the previous analysis, the significant main effect for time revealed

that regardless of caregivers' level of support, the caregivers who participated in the HOT DOCS program scored significantly higher ( $p < .001$ ) on the HOT DOCS Knowledge Test at posttest ( $M = 17.24$ ) than at pretest ( $M = 15.88$ ).

*Target Child's Age.* The between-subjects factor was target child's age (A) and the within-subjects (repeated) factor was time (T) (i.e., pretest and posttest). Two-hundred-twenty-eight participants completed and returned both the pretest and posttest Knowledge Test and reported their target child's age on the Demographics Form. Child's age was coded as being 18 to 35 months or 36 to 72 months (e.g., under three years of age or three years of age and over). Means and standard deviations of pretest and posttest scores by target child's age are reported in Table 11.

Table 11

*Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Target Child's Age*

Target Child's Age	N	Pretest		Posttest	
		M	SD	M	SD
18-35 Months of Age	113	16.02	2.40	17.35	2.02
36-72 Months of Age	115	15.82	2.14	17.21	2.04
Marginal Means		15.92		17.28	

*Note.*  $n = 228$

Results of the Shapiro-Wilk test did not indicate a violation of normality for the pretest score, posttest scores, and the difference score from pretest to posttest for either level of target child's age. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of target

child's age for pretest and posttest scores. Levene's test was not significant at the .05 level for pretest,  $F(1,226) = 0.71, p > .05$ , nor posttest scores,  $F(1,226) = 0.66, p > .05$ , indicating that the variance in scores was equally distributed across groups of target child's age at pretest and posttest. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 12, results revealed a non-significant interaction effect  $F(1,226) = 0.07, p > .05$ , a non-significant main effect for target child's age  $F(1,226) = 0.43, p > .05$ , and a statistically significant main effect for time,  $F(1,226) = 117.50, p < .001, \eta^2 = 0.34$ .

Table 12

*Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Target Child's Age*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>				
Child's age (A)	1	3.23	3.23	0.43
S/A	226	1690.52	7.48	
<u>Within subjects</u>				
Time (T)	1	210.64	210.64	117.50*
A x T	1	0.12	0.12	0.07
ST/A	226	405.14	1.80	
Total	227	2309.65		

*Note.* \*  $p < .01$



The observed non-significant interaction effect, target child's age by time of testing, indicates that there was not a differential performance of participant caregivers on the HOT DOCS knowledge test from pre- to posttest due to the age of their target child. The non-significant main effect for target child's age also revealed that there was no difference in the overall performance on the knowledge test by caregivers regardless of whether their target child was under three years of age or over three years of age. Just as in the previous analysis, the significant main effect for time revealed that regardless of target child's age, the caregivers who participated in the HOT DOCS program scored significantly higher ( $p < .001$ ) on the HOT DOCS Knowledge Test at posttest ( $M = 17.28$ ) than at pretest ( $M = 15.92$ ).

*Target Child's Diagnosis.* The between-subjects factor was target child's diagnosis (D) and the within-subjects (repeated) factor was time (T) (i.e., pretest and posttest). Two-hundred-twenty-four participants completed and returned both the pretest and posttest Knowledge Test and reported their target child's preexisting medical or psychological diagnosis on the Demographics Form. Child's diagnosis was coded as no diagnosis, autism spectrum disorder, medical/genetic disorder, speech/language impairment, or developmental delay. Means and standard deviations of pretest and posttest scores by target child's diagnosis are reported in Table 13.

Table 13

*Means and Standard Deviations of Pre- and Posttest Knowledge Test Scores by Target Child's Diagnosis*

Child's Diagnosis	N	Pretest		Posttest	
		M	SD	M	SD
No Diagnosis	97	15.60	2.27	17.12	2.03
Autism Spectrum	30	16.03	2.61	17.53	1.68
Medical/Genetic	21	16.52	1.97	16.81	2.44
Speech/Language	49	16.06	2.12	17.67	1.91
Developmental Delay	27	16.07	2.67	17.56	1.87
Marginal Means		15.90		17.32	

*Note.*  $n = 224$

Results of the Shapiro-Wilk test indicated a violation of normality, for the pretest score, posttest scores, and the difference score from pretest to posttest. Although the assumption of normal distribution of scores was violated for these levels of the independent variable, the analysis was conducted due to ANOVA's robustness against violations of normality. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of target child's diagnosis for pretest and posttest scores. Levene's test was not significant at the .05 level for pretest,  $F(4,219) = 0.505, p > .05$ , nor posttest scores,  $F(4,219) = 1.19, p > .05$ , indicating that the variance in scores was equally distributed across groups of target child's diagnosis at pretest and posttest. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 14, results revealed a non-significant interaction effect  $F(4, 219) = 2.08, p > .05$ , a non-significant main effect for target child's diagnosis  $F(4, 219) = 0.79, p > .05$ , and a statistically significant main effect for time,  $F(1, 219) = 75.87, p < .001, \eta^2 = 0.26$ .

Table 14

*Analysis of Variance of HOT DOCS Pre- and Posttest Knowledge Test Scores by Target Child's Diagnosis*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	223	1605.42		
Child's diagnosis (D)	4	22.74	5.68	0.79
S/D	219	1582.68	7.23	
<u>Within subjects</u>	224	551.22		
Time (T)	1	137.95	137.95	75.87*
D x T	4	15.10	3.78	2.08
ST/D	219	398.17	1.82	
Total	223	2156.64		

*Note.* \*  $p < .01$

The observed non-significant interaction effect, target child's diagnosis by time of testing, indicates that there was not a differential performance of participant caregivers on the HOT DOCS Knowledge Test from pre- to posttest due to a preexisting diagnosis of their target child. The non-significant main effect for target child's diagnosis also revealed that there was no difference in the overall performance on the knowledge test by caregivers regardless of whether their target child had a preexisting diagnosis or not.

### *Caregiver Perceptions of Severity of Child Behavior*

*Research Question #2a.* Do caregivers perceive their child as having more problem behavior than a normative sample prior to participation in the HOT DOCS program?

In order to describe and analyze caregiver perceptions of the severity of child problem behaviors before participation in the program, the frequency and percent of caregiver ratings of child behavior falling within specific descriptive categories on the CBCL administered at pretest were calculated. Frequencies and percents were calculated using the Internalizing and Externalizing Problems T-scores. The frequencies of scores falling within these ranges were compared to the number of scores expected to fall within each category according to the percentages under the normal curve (Achenbach, 2001).

On the CBCL, scores classified as normal or Non-Significant ranged from 0 to 64; scores classified as Borderline ranged from 65 to 70; and scores classified as Clinically Significant are those reaching 70 and above. In the normative population, 93.94% of scores fell within the Non-Significant range, 3.79% of scores fell within the Borderline range, and 2.27% of scores fell within the Clinically Significant range for the CBCL. To determine whether participant caregivers' ratings on the Internalizing and Externalizing scales deviated from what was expected for the normative population, data were subjected to a chi-square goodness of fit analysis. Chi-square analyses were performed between observed and expected frequencies of scores in each descriptive category for scores in the Internalizing and Externalizing subscales of the CBCL. Two-hundred-eleven participants completed and returned the CBCL rating scale at pretest. Means and

standard deviations of pretest scores for the Internalizing and Externalizing scales are reported in Table 15.

Table 15

*Means and Standard Deviations for Pretest Scores on the CBCL*

Scale	<i>M</i>	<i>SD</i>	Minimum	Maximum	Skewness	Kurtosis
Internalizing	56.69	11.078	29	86	-.114	-.050
Externalizing	60.09	11.654	32	92	.284	-.032

*Note.*  $n = 211$

A separate chi-square goodness of fit test was performed for the Internalizing scores and for the Externalizing scores at pretest time. The alpha-level used was  $\alpha = .01$ . Observed and expected frequency distributions for Internalizing and Externalizing subscale score comparisons are displayed in Table 16.

Table 16

*Observed and Expected Frequencies for CBCL Internalizing & Externalizing Subscale T-Scores*

Category	Expected <i>f</i>	Observed <i>f</i>	
		Internalizing	Externalizing
Non-Significant	198	124	107
Borderline	8	29	26
Clinically Significant	5	58	78

*Note.*  $n = 211$

The resultant overall test for the Internalizing scale was statistically significant,  $\chi^2(1, N = 211) = 645.59$ . Thus, a significant difference between the expected frequency

of scores in each descriptive category and the actual or obtained frequency of scores in each descriptive category for the CBCL Internalizing subscale was found. Caregivers perceived children in the sample to have higher frequencies of more severe internalizing problem behavior than would be expected for a normative sample. Specifically, significantly more target children's scores fell within the Clinically Significant and Borderline descriptive categories and significantly fewer children's scores fell within the Non-Significant descriptive category than were expected. Nearly 11 times the number of children expected to have scores in the Clinically Significant range were found in the sample. Effect size was calculated to describe the strength of the relationship between the expected and obtained values. The effect size for the chi-square calculation for scores on the Internalizing subscale was large ( $w = 1.787$ ), indicating that the differences between participants' perceptions of the severity of child problem behavior and expectations for a normative sample were not only statistically significant but also clinically meaningful.

The resultant overall test for the Externalizing scale also was statistically significant,  $\chi^2(1, N = 211) = 1148.12$ . Thus, a significant difference between the expected frequency of scores in each descriptive category and the actual or obtained frequency of scores in each descriptive category for the CBCL Externalizing subscale was found. Caregivers perceived a significantly higher proportion of children in the sample to have more severe externalizing problem behavior than would be expected for a normative sample. Specifically, significantly more target children's scores fell within the Clinically Significant and Borderline descriptive categories and significantly fewer children's scores fell within the Non-Significant descriptive category than were expected. The observed number of children in the sample whose Externalizing subscale scores fell

within the Clinically Significant range was nearly 16 times the number expected to fall within that range. Effect size was calculated to describe the strength of the relationship between the expected and obtained values. The effect size for the chi-square calculation for scores on the Externalizing subscale was large ( $w = 2.386$ ), indicating that the differences between participants' perceptions of the severity of child problem behavior and expectations for a normative sample were not only statistically significant but also clinically meaningful. A graphic comparison of observed and expected frequencies of T-scores for the Internalizing and Externalizing scales is shown in Figure 2.

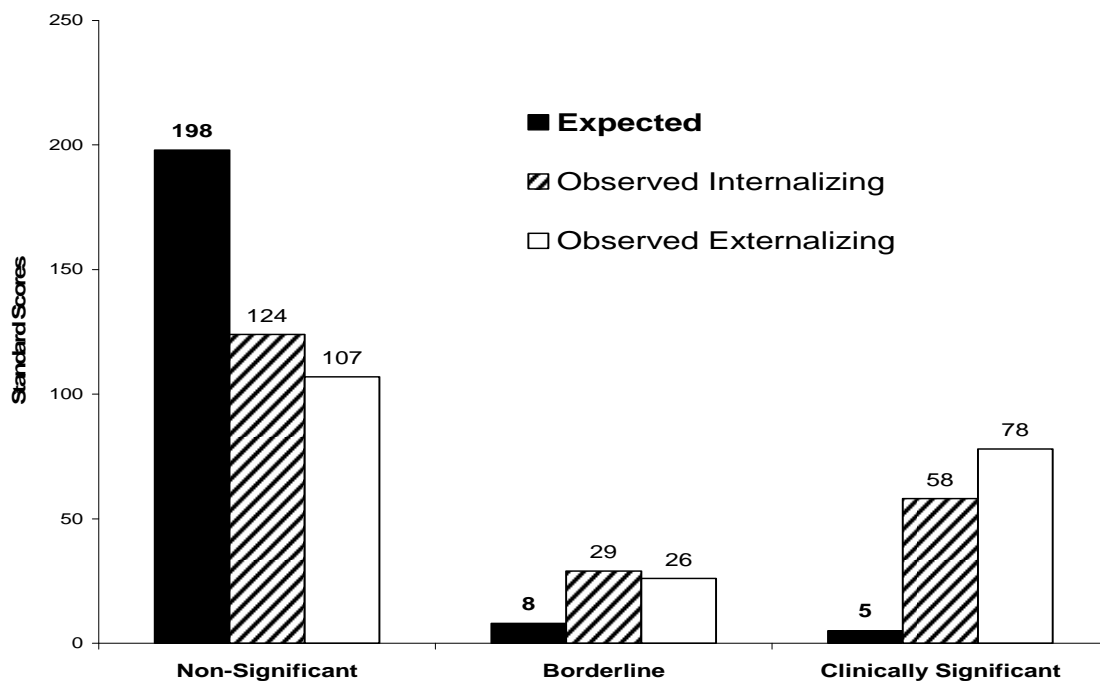


Figure 2. Number of expected and observed CBCL T-scores by descriptive category.  
 Note.  $n = 211$

*Research Question #2b.* Are there significant differences in caregiver perceptions of the severity of child problem behaviors based on caregivers' level of education, caregivers' social support network, and the target child's diagnosis?

One-factor repeated measures ANOVA were used to determine if there were differential perceptions among caregivers about the severity of children's problem behaviors on the pretest CBCL for specific groups of caregiver participant. A separate analysis was conducted for each of the following independent (group) variables: education level of caregiver (i.e., high school diploma or less, vs. technical training/2-year college degree, vs. 4-year college, vs. a graduate degree); caregiver social support networks (i.e., caregiver attending training alone vs. accompanied by another caregiver); and type of preexisting diagnosis of target child (i.e., no preexisting diagnosis, target child with autism spectrum disorders, developmental delays, speech/language impairments, or medical/genetic disorders). The independent variable, caregivers' level of education originally included six levels or categories of highest educational attainment. The data for this variable were collapsed into four levels: high school diploma or less, technical training + 2 year college degree, 4 year college degree, and graduate degree. The dependent variable for each analysis was the caregivers' rating of the severity of the target child's behavior using standard scores on the Internalizing and Externalizing scales of the CBCL at pretest.

Caregivers' Level of Education. Two-hundred-nine participants completed and returned the CBCL rating scale at pretest and reported their highest level of education attained on the Demographics Form. The between-subjects factor was level of caregiver education (L) and the within-subjects (repeated) factor was scale (C) (i.e., Internalizing and Externalizing). Means and standard deviations of CBCL Internalizing and Externalizing scale scores by caregivers' education level are shown in Table 17.



Results of the Shapiro-Wilk test did not indicate a violation of normality for the Internalizing and Externalizing T-scores at pretest on any of the six levels of caregiver education. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of caregiver education for Internalizing and Externalizing scores. Levene's test was not significant for the Internalizing scale,  $F(3, 205) = 0.17, p > .05$ , nor for the Externalizing scale,  $F(3, 205) = 1.34, p > .05$ , indicating that the variance in scores was equally distributed across groups of caregiver education on the Internalizing and Externalizing scales at pretest. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

Table 17

*Means and Standard Deviations of CBCL Internalizing and Externalizing Scores by Caregivers' Education Level*

Education Level	<i>n</i>	Internalizing		Externalizing	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High school or less	50	60.62	11.70	63.06	12.58
Tech. training/2yr college	43	57.19	11.94	60.98	12.36
4 yr college degree	70	55.26	9.92	59.13	10.80
Graduate degree	46	53.78	10.30	57.83	10.602
Marginal Means	209	56.71		60.25	

*Note.*  $n = 209$

As shown in Table 18, results of the ANOVA revealed a non-significant interaction effect  $F(3, 205) = 0.23, p > .05$ , a statistically significant main effect for

caregivers' education level  $F(3, 205) = 3.33, p = .021, \eta^2 = 0.05$  and a statistically significant main effect for scale,  $F(1, 205) = 27.30, p < .001, \eta^2 = 0.12$ .

The observed non-significant interaction effect, caregivers' level of education by scale, indicates that there were not differential ratings of children's Internalizing or Externalizing behaviors at pretest on the CBCL due to caregivers' level of education. Follow-up of the significant main effect for Scale (C), was done by examining the overall *CBCL* Internalizing and Externalizing mean scores (i.e., marginal means). The significant main effect for scale revealed that regardless of educational level, the caregivers who participated in the HOT DOCS program rated their target child's behaviors significantly higher ( $p < .001$ ) on the Externalizing scale ( $M = 60.25$ ) than on the Internalizing scale ( $M = 56.71$ ) at pretest. This finding indicates that caregivers' perceived their target children to have more severe levels of Externalizing behaviors than Internalizing behavior upon beginning the HOT DOCS program. On the CBCL, behaviors categorized as Externalizing include attention span, hyperactivity, rule-breaking, and aggression. Behaviors categorized as Internalizing include emotional reactivity, anxiety/depression, somatic complaints (e.g., stomach aches, headaches, overly concerned with neatness or cleanliness), and withdrawal.

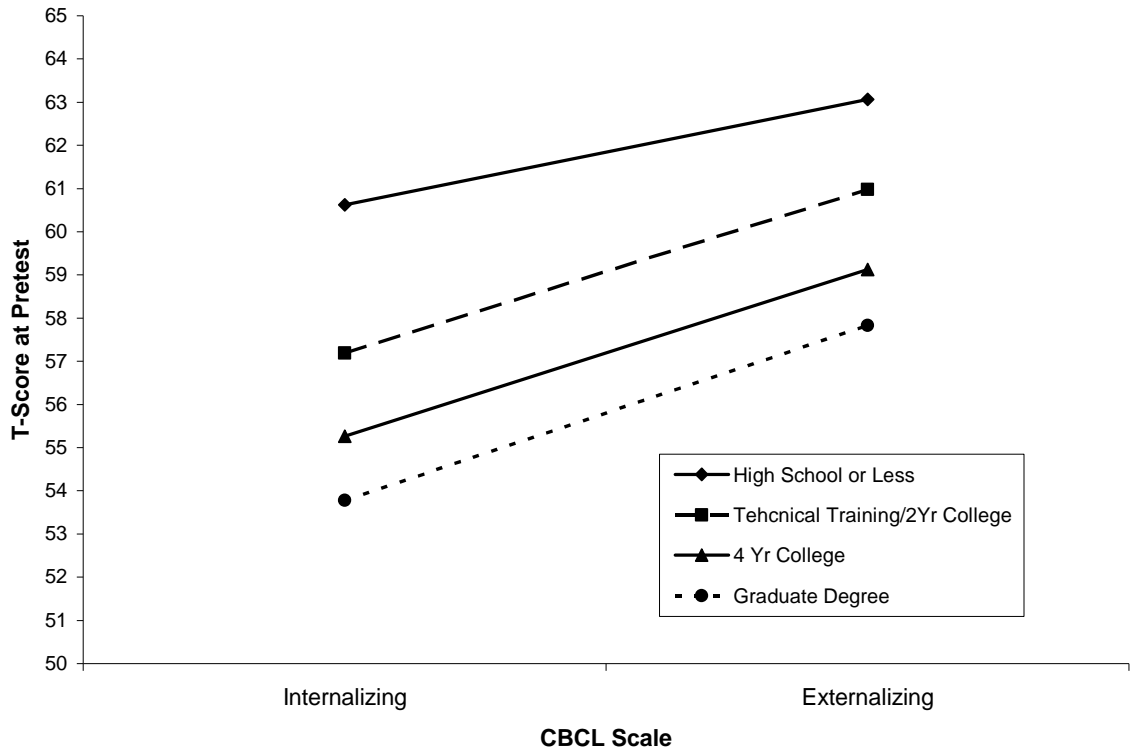
Table 18

*Analysis of Variance of Pre-Test CBCL Scores by Caregivers' Education Level*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	208	44083.21		
Education (L)	3	2047.07	682.36	3.33*
S/L	205	42036.14	205.05	
<u>Within subjects</u>	209	10780.83		
Scale (C)	1	1261.96	1261.96	27.30**
L x C interaction	3	41.27	13.76	0.30
SC/L	205	9477.60	46.23	
Total	208	54864.04		

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

Follow-up of the significant main effect for level of education (L) was conducted using Bonferroni adjustment for multiple comparisons to compare mean difference scores across the Internalizing scales for the four levels of caregivers' education. Post-hoc Bonferroni tests indicated that caregivers' with a graduate degree rated target children's behavior significantly lower than caregivers with a high school diploma or less ( $p < .01$ ), but did not differ significantly from the mean score of caregivers with technical training/2-year college degree or a 4-year college degree ( $p > .05$ ). There were no other significant differences ( $p > .05$ ) in mean difference scores between any of the other levels of caregivers' level of education. Refer to Figure 3 for a visual display of differences in mean Internalizing and Externalizing scale scores by caregivers' level of education.



*Figure 3.* Mean CBCL Internalizing and Externalizing subscale scores by caregivers' education level.  
*Note.*  $n = 209$

Caregivers' Social Support. Two-hundred-eleven participants completed and returned the CBCL rating scale at pretest and were coded by attendance rates either as attending the program alone or attending with another caregiver. The between-subjects factor was level of caregiver social support (P) and the within-subjects (repeated) factor was scale (S) (i.e., Internalizing and Externalizing). Means and standard deviations of CBCL Internalizing and Externalizing scale scores by caregivers' social support are shown in Table 19.

Table 19

*Means and Standard Deviations of CBCL Internalizing and Externalizing Scores by Caregivers' Social Support*

Social Support	<i>n</i>	Internalizing		Externalizing	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attended Alone	121	55.71	11.47	59.29	11.85
Attended Together	90	58.00	10.45	61.17	11.36
Marginal Means		56.69		60.09	

*Note.*  $n = 211$

Results of the Shapiro-Wilk test did not indicate a violation of normality for the Internalizing and Externalizing T-scores at pretest on either of the levels of caregiver social support. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of caregiver social support for Internalizing and Externalizing scores. Levene's test was not significant for the Internalizing scale,  $F(1, 209) = 0.31, p > .05$ , nor for the Externalizing scale,  $F(1, 209) = 0.29, p > .05$ , indicating that the variance in scores was equally distributed across groups of caregiver social support on the Internalizing and Externalizing scales at pretest. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 20, results revealed a non-significant interaction effect  $F(1, 209) = 0.09, p > .05$ , a non-significant main effect for caregivers' social support  $F(1, 209) = 2.13, p > .05$ , and a statistically significant main effect for scale,  $F(1, 209) = 25.03, p < .001, \eta^2 = 0.11$ .

Table 20

*Analysis of Variance of Pre-Test CBCL Scores by Caregivers' Social Support*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	211	44483.27		
Support (P)	1	448.02	448.02	2.13
S/P	209	44035.25	210.70	
<u>Within subjects</u>		10981.92		
Scale (C)	1	1174.09	1174.09	25.03*
P x C interaction	1	4.38	4.38	0.09
SC/P	209	9803.00	46.90	
Total	210	55465.19		

*Note.* \* $p < .01$

The observed non-significant interaction effect, caregivers' level of support by scale, indicates that there were no differential ratings of children's Internalizing or Externalizing behaviors at pretest on the CBCL due to the level of support they received while attending the training program. The non-significant main effect for level of support also revealed that there was no difference in the overall ratings on the CBCL at pretest by caregivers regardless of whether they attended the training alone, or they were accompanied by another individual who was involved in providing care for the target child. Just as in the previous analysis, the significant main effect for scale revealed that regardless of level of social support, the caregivers who participated in the HOT DOCS program rated their target child's behaviors significantly higher ( $p < .001$ ) on the Externalizing scale ( $M = 60.09$ ) than on the Internalizing scale ( $M = 56.69$ ) at pretest.

Target Child's Diagnosis. Two-hundred participants completed and returned the CBCL rating scale at pretest and reported the target child's preexisting diagnosis on the Demographics Form. The between-subjects factor was level of target child's preexisting diagnosis (D) and the within-subjects (repeated) factor was scale (S) (i.e., Internalizing and Externalizing). Means and standard deviations of CBCL Internalizing and Externalizing scale scores by target child's diagnosis are shown in Table 21.

Table 21

*Means and Standard Deviations of CBCL Internalizing and Externalizing Scores by Target Child's Diagnosis*

Child's Diagnosis	N	Internalizing		Externalizing	
		M	SD	M	SD
No diagnosis	85	53.91	10.54	58.04	10.61
Autism spectrum	24	64.50	9.75	67.00	13.46
Medical/genetic	22	55.45	11.47	62.14	12.58
Speech/language	40	58.20	10.54	59.85	10.22
Developmental delay	29	58.31	11.97	61.48	12.65
Marginal Means		56.96		60.43	

*Note.* n = 200

Results of the Shapiro-Wilk test did not indicate a violation of normality for the Internalizing and Externalizing T-scores at pretest on any of the five levels of target child's preexisting diagnosis. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of caregiver education for Internalizing and Externalizing scores. Levene's test was not significant at

the .05 level for the Internalizing scale,  $F(4, 195) = 0.38, p > .05$ , nor for the Externalizing scale,  $F(4, 195) = 1.13, p > .05$ , indicating that the variance in scores was equally distributed across groups of target child's diagnosis on the Internalizing and Externalizing scales at pretest. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 22, results revealed a non-significant interaction effect  $F(4, 195) = 0.82, p > .05$ , a statistically significant main effect for target child's diagnosis  $F(4, 195) = 4.69, p < .001, \eta^2 = 0.09$ , and a statistically significant main effect for scale,  $F(1, 195) = 20.08, p < .001, \eta^2 = 0.09$ .

Table 22

*Analysis of Variance of Pre-Test CBCL Scores by Target Child's Diagnosis*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	199	42863.56		
Diagnosis (D)	4	3759.22	939.81	4.69*
S/D	195	39104.34	200.54	
<u>Within subjects</u>		10076.74		
Scale (C)	1	926.83	926.83	20.08*
D x C interaction	4	151.12	37.78	0.82
SC/D	195	8998.79	46.15	
Total	199	52940.30		

*Note.* \* $p < .01$

The observed non-significant interaction effect, target child's diagnosis by scale, indicates that there were no differential ratings of children's Internalizing or Externalizing



behaviors at pretest on the CBCL due to target child's preexisting diagnosis. Just as in the previous analysis, the significant main effect for scale revealed that regardless of target child's preexisting diagnosis, the caregivers who participated in the HOT DOCS program rated their target child's behaviors significantly higher ( $p < .001$ ) on the Externalizing scale ( $M = 60.43$ ) than on the Internalizing scale ( $M = 56.96$ ) at pretest.

Post-hoc comparisons of the main effect for child's diagnosis were performed using the Bonferroni adjustment for multiple comparisons. Caregivers of target children with no diagnosis rated the children's behavior across the Internalizing and Externalizing scales of the CBCL as being significantly lower ( $p < .01$ ) than caregivers of target children with a diagnosis of autism spectrum disorder (mean difference = 9.78 points). Since higher scores on the CBCL indicate more severe levels of problem behavior, this finding suggests that caregivers of children with a diagnosis of autism spectrum disorder perceived their children's behavior problems to be more severe than caregivers of children without a diagnosis before beginning the HOT DOCS program. No other significant differences were found between the remaining levels of target child's diagnosis. Refer to Figure 4 for a visual display of differences in mean scores on the Internalizing and Externalizing scales at pretest for various levels of target child's diagnosis.

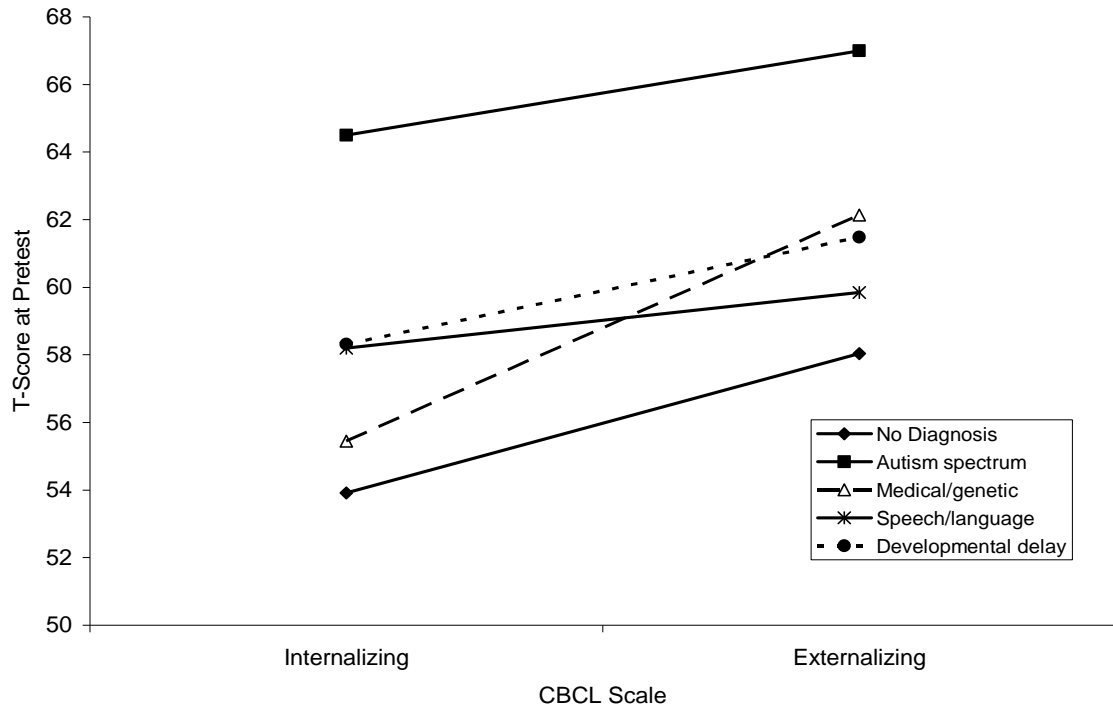


Figure 4. Mean CBCL Internalizing and Externalizing subscale scores by target child's diagnosis.

Note. Non-significant interaction effect.

### Changes in Child Problem Behavior

*Research Question #3a.* To what extent do caregivers perceive a decrease in child problem behavior following their participation in the HOT DOCS program?

In order to analyze potential changes in the severity of child problem behavior as perceived by caregivers from pretest and posttest, a two-factor repeated measures ANOVA was computed. The two within-subjects factors were type of scale, (A, Internalizing and Externalizing) and time, (T, pretest and posttest). Means and standard deviations of pretest and posttest rating scale scores on the two subscales of the CBCL are reported in Table 23.

Table 23

*Means and Standard Deviations of Pre- and Posttest CBCL Scores by Scale*

CBCL Scales	Pretest		Posttest	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Internalizing	58.51	9.59	54.70	11.01
Externalizing	63.37	11.76	57.89	11.40
Marginal Means	60.94		56.30	

*Note.*  $n = 84$

Results of the Shapiro-Wilk test indicated a violation of normality for the change from pretest to posttest for the Externalizing scale. Although the Shapiro-Wilk test indicated a violation of normality assumption for this dependent variable, the analysis was conducted due to ANOVA's robustness against violations of normality and acceptable levels of skew and kurtosis. The homogeneity of variance assumption was not examined because there were no between-subjects variables. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 24, results revealed a non-significant interaction effect  $F(1, 83) = 3.66, p > .05$ , a statistically significant main effect for time,  $F(1, 83) = 36.45, p < .001, \eta^2 = 0.31$ , and a significant main effect for scale  $F(1, 83) = 19.00, p < .001, \eta^2 = 0.19$ .

Table 24

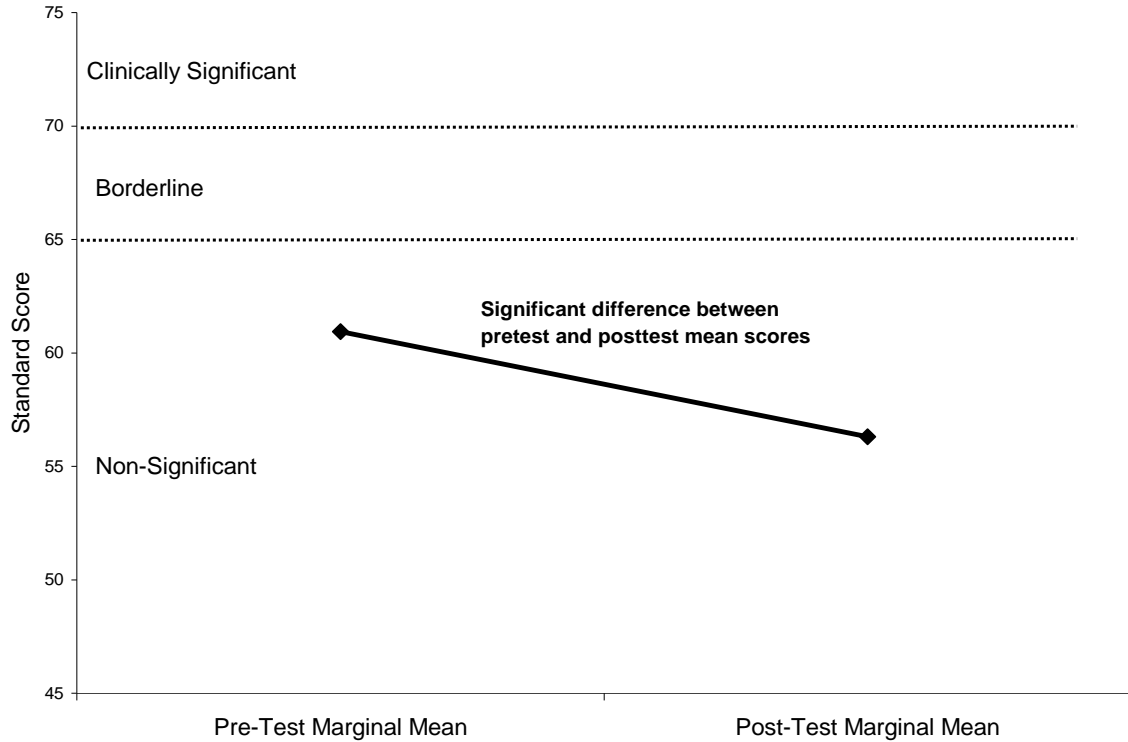
*Analysis of Variance of CBCL Pre- and Posttest Scores*

Source	<i>df</i>	SS	MS	F
Scale (A)	1	1360.05	1360.05	19.00*
Time (T)	1	1810.71	1810.71	36.45*
Subject (S)	83	28580.74	344.35	
A x T	1	58.33	58.33	3.66
Error (scale)	83	5942.45	71.60	
Error (time)	83	4122.79	49.67	
Residual error (SAT)	83	28580.74	344.346	
Total	83	28580.74		

*Note.* \* $p < .01$

The non-significant interaction effect, time of testing and scale of the CBCL, indicated that there was no difference in caregivers' ratings of target child's behavior due to time of testing or subscale of the CBCL. Follow-up of the significant main effect for Time (T), was done by examining the overall CBCL pretest and posttest mean scores (i.e., marginal means). The mean posttest score ( $M = 56.30$ ) was significantly lower than the mean pretest score ( $M = 60.94$ ). This finding indicates that across both scales of the CBCL, caregivers' perceived severity of children's problem behavior was greater at pretest time as compared to posttest time. On the CBCL, higher scores indicate more severe levels of problem behavior; therefore, a decrease in scores from pretest to posttest indicates caregivers perceived their target child to have significantly less severe levels of problem behavior following participation in the program. Refer to Figure 5 for a graphic

representation of the pretest and posttest mean scores for the Internalizing and Externalizing scales of the CBCL.



*Figure 5.* Pre- and posttest mean scores for CBCL scales.  
*Note.*  $n = 84$

Follow-up of the significant main effect for Scale (S), was done by examining the overall CBCL Internalizing and Externalizing mean scale scores (i.e., marginal means). The mean Internalizing scale score across time ( $M = 56.61$ ) was significantly lower than the mean Externalizing scale score across time ( $M = 60.63$ ). This finding indicates that for both the pretest and posttest, caregivers' perceived the severity of their target child's Externalizing problem behaviors was greater than the perceived severity for Internalizing problem behaviors. On the CBCL, behaviors categorized as Externalizing include attention span, hyperactivity, rule-breaking, and aggression. Behaviors categorized as

Internalizing include emotional reactivity, anxiety/depression, somatic complaints (e.g., stomach aches, headaches, overly concerned with neatness or cleanliness), and withdrawal.

*Research Question 3b.* Are there differential perceptions of child behavior change based on caregivers' social support network, the target child's diagnosis, and the target child's age?

A one-between-subjects, two-within-subjects repeated measures ANOVA was conducted to determine if there were differential perceptions of the change in the severity of children's problem behaviors from pretest to posttest on the Internalizing and Externalizing Scales of the CBCL for specific groups of participant caregivers. A separate analysis was conducted for each of the following independent (between-subjects) variables: social support network of caregiver (i.e., attending training alone or attending accompanied by another caregiver); type of preexisting diagnosis of target child (i.e., target child with no preexisting diagnosis, target child with any preexisting diagnosis); and age of target child (i.e., target child under three years of age vs. over three years of age). The independent between-subjects variable child's diagnosis originally included five levels or categories of preexisting diagnoses. Due to small numbers of scores falling within each of the existing categories, the data for this variable were collapsed into two levels: target child without a preexisting diagnosis and target child with any existing diagnosis. The dependent variable in each of the analyses was standard scores on the CBCL's completed by caregivers at pretest and posttest for the Internalizing and Externalizing scales.

Caregivers' Social Support. The between-subjects factor was caregiver social support (P, Attended alone vs. Attended together). The within-subjects (repeated) factors were time (T, pretest vs. posttest) and scale (C, Internalizing vs. Externalizing). Eighty-four participants completed and returned both the pretest and posttest CBCL and were coded based on attendance either as attending the program alone or attending with another caregiver. Means and standard deviations of pretest and posttest rating scale scores on the two subscales of the CBCL for each level of caregivers' social support are reported in Table 25.

Table 25

*Means and Standard Deviations of Pre- and Posttest CBCL Scores by Caregivers' Social Support*

Social Support	<i>n</i>		Internalizing		Externalizing	
			Pretest	Posttest	Pretest	Posttest
Attended Alone	52	<i>M</i>	57.79	54.69	62.75	57.88
		<i>SD</i>	9.83	11.36	12.07	11.41
Attended Together	32	<i>M</i>	59.69	54.72	64.38	57.91
		<i>SD</i>	9.22	10.61	11.36	11.56
Marginal Means			58.11	54.70	63.37	57.89

*Note.* *n* = 84

Results of the Shapiro-Wilk test indicated a violation of normality for the change from pretest to posttest for the Internalizing and Externalizing scales. Although the Shapiro-Wilk test indicated a violation of normality assumption for this dependent variable, the analysis was conducted as planned due to ANOVA's robustness against

violations of normality and acceptable levels of skew and kurtosis. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of caregiver social support for pretest and posttest scores on the Internalizing and Externalizing scales. Levene's test was not significant for pretest Internalizing scores,  $F(1, 82) = 0.00, p > .05$ , posttest Internalizing scores,  $F(1, 82) = 0.23, p > .05$ , pretest Externalizing scores,  $F(1, 82) = 0.50, p > .05$ , nor posttest Externalizing scores,  $F(1, 82) = 0.30, p > .05$ , indicating that the variance in scores was equally distributed across groups of caregiver social support at pretest and posttest for both scales of the CBCL. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 26, results revealed a non-significant support by time by scale interaction effect  $F(1,83) = 0.02, p > .05$ , a non-significant support by time interaction effect  $F(1,83) = 1.21, p > .05$ , a non-significant support by scale interaction effect  $F(1,83) = 0.01, p > .05$ , a non-significant main effect for caregiver support  $F(1,82) = 0.18, p > .05$ , a statistically significant main effect for time,  $F(1,83) = 37.61, p < .001, \eta^2 = 0.31$ , and a statistically significant main effect for scale,  $F(1,83) = 17.56, p < .001, \eta^2 = 0.18$ .



Table 26

*Analysis of Variance of CBCL Pre- and Posttest Scores by Caregiver's Level of Social Support*

Source	<i>df</i>	SS	MS	F
<u>Between subjects</u>	83	28580.74		
Support (P)	1	63.19	63.19	0.18
Residual between	82	28517.55	347.78	
<u>Within subjects</u>	87	4520.48		
Time (T)	1	1863.69	1863.69	37.61*
P x T interaction	1	59.84	59.84	1.21
Scale (C)	1	1272.39	1272.39	17.56*
P x C	1	0.39	0.39	.01
P x T x C	1	0.36	0.36	0.02
Residual within	82	1323.81	16.14	
Total	83	33101.22		

*Note.* \* $p < .01$

The non-significant interaction effects for each combination of the variables time of testing, scale of the CBCL, and caregivers' level of social support while attending the HOT DOCS program, indicated that there was no difference in caregivers' ratings of target child's behavior due to time of testing, the subscale of the CBCL, or caregivers' level of support. The non-significant main effect for Scale (S), indicated that across both levels of caregivers' support, caregivers' perceptions of their target child's behavior were the same across pretest and posttest times, regardless of the scale of the CBCL (e.g.,

Internalizing vs. Externalizing). The non-significant main effect for Support (P), indicated that caregivers' perceptions of their target child's behavior were the same for both scales of the CBCL across pretest and posttest times, regardless of caregivers' level of support.

Follow-up of the significant main effect for Time (T), was done by examining the overall CBCL pretest and posttest mean scores (i.e., marginal means). The mean posttest score ( $M = 56.30$ ) was significantly lower than the mean pretest score ( $M = 60.75$ ). This finding indicates that across both scales of the CBCL, regardless of caregivers' level of social support, caregivers' perceived severity of children's problem behavior was greater at pretest time as compared to posttest time. On the CBCL, higher scores indicate more severe levels of problem behavior; therefore, a decrease in scores from pretest to posttest indicates caregivers perceived their target child to have significantly less severe levels of problem behavior following participation in the program.

*Target Child's Diagnosis.* The between-subjects factor was target child's diagnosis (D, No existing diagnosis and Existing diagnosis). The within-subjects (repeated) factors were time (T, pretest and posttest) and scale (C, Internalizing and Externalizing). Seventy-nine participants completed and returned both the pretest and posttest CBCL and reported the target child's preexisting diagnosis on the Demographics Form. Means and standard deviations of pretest and posttest rating scale scores on the two subscales of the CBCL for each level of target child's preexisting diagnosis are reported in Table 27.

Table 27

*Means and Standard Deviations of Pre- and Posttest CBCL Scores by Target Child's Diagnosis*

Child's Diagnosis	<i>n</i>	Internalizing		Externalizing		
		Pretest	Posttest	Pretest	Posttest	
No Existing diagnosis	30	<i>M</i>	55.73	50.10	61.67	53.80
		<i>SD</i>	9.40	9.80	10.78	9.23
Existing diagnosis	49	<i>M</i>	60.98	58.24	65.18	60.71
		<i>SD</i>	9.10	10.69	12.14	12.00
Marginal Means			58.99	55.15	63.85	58.09

*Note.*  $n = 79$

Results of the Shapiro-Wilk test indicated a violation of normality for the change from pretest to posttest for the Internalizing and Externalizing scales. Although the Shapiro-Wilk test indicated a violation of normality assumption for this dependent variable, the analysis was conducted as planned due to ANOVA's robustness against violations of normality and acceptable levels of skew and kurtosis. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of target child's preexisting diagnosis for pretest and posttest scores on the Internalizing and Externalizing scales. Levene's test was not significant for pretest Internalizing scores,  $F(1, 77) = 0.04, p > .05$ , posttest Internalizing scores,  $F(1, 77) = 0.13, p > .05$ , pretest Externalizing scores,  $F(1, 77) = 1.83, p > .05$ , nor posttest Externalizing scores,  $F(1, 77) = 3.76, p > .05$ , indicating that the variance in scores was equally distributed across groups of target child's diagnosis at pretest and posttest for both

scales of the CBCL. The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 28, results revealed a non-significant diagnosis by time by scale interaction effect  $F(1, 77) = 0.07, p > .05$ , a non-significant diagnosis by time interaction effect  $F(1, 77) = 3.66, p > .05$ , a non-significant diagnosis by scale interaction effect  $F(1, 77) = 0.61, p > .05$ , a statistically significant main effect for target child's diagnosis,  $F(1, 77) = 8.37, p = .005, \eta^2 = 0.10$ , a statistically significant main effect for time,  $F(1, 77) = 39.54, p < .001, \eta^2 = 0.34$ , and a statistically significant main effect for scale,  $F(1, 77) = 18.45, p < .001, \eta^2 = 0.19$ .

The non-significant interaction effects for each combination of the variables time of testing, scale of the CBCL, and target child's preexisting diagnosis, indicated that there was no difference in caregivers' ratings of target child's behavior due to time of testing, the subscale of the CBCL, or target child's diagnosis.

Follow-up of the significant main effect for Scale (S), was done by examining the overall CBCL Internalizing and Externalizing mean scale scores across time (i.e., marginal means). The mean Internalizing scale score across time and target child's diagnosis ( $M = 57.07$ ) was significantly lower than the mean Externalizing scale score across time and target child's diagnosis ( $M = 60.97$ ). This finding indicates that for both the pretest and posttest, across levels of target child's diagnosis, caregivers' perceived the severity of their target child's Externalizing problem behaviors was greater than the perceived severity for Internalizing problem behaviors. On the CBCL, behaviors categorized as Externalizing include attention span, hyperactivity, rule-breaking, and aggression. Behaviors categorized as Internalizing include emotional reactivity,

anxiety/depression, somatic complaints (e.g., stomach aches, headaches, overly concerned with neatness or cleanliness), and withdrawal.

Table 28

*Analysis of Variance of CBCL Pre- and Posttest Scores by Target Child's Diagnosis*

Source	<i>df</i>	SS	MS	F
Between subjects	78	26935.90		
Diagnosis (D)	1	2640.00	2640.00	8.37*
Residual between	77	24295.90	315.53	
Within subjects	82	4734.12		
Time (T)	1	1994.08	1994.08	39.54*
D x T interaction	1	184.40	184.40	3.66
Scale (C)	1	1237.00	1237.00	18.45*
D x C interaction	1	40.75	40.75	0.61
D x T x C interaction	1	1.16	1.16	0.07
Residual within	77	1276.73	16.58	
Total	78	31670.02		

*Note.* \* $p < .01$

Follow-up of the significant main effect for Time (T), was done by examining the overall CBCL pretest and posttest mean scores (i.e., marginal means). The mean posttest score ( $M = 56.62$ ) was significantly lower than the mean pretest score ( $M = 61.42$ ). This finding indicates that across both scales of the CBCL, regardless of target child's diagnosis, caregivers' perceived severity of children's problem behavior was greater at pretest time as compared to posttest time. On the CBCL, higher scores indicate more

severe levels of problem behavior; therefore, a decrease in scores from pretest to posttest indicates caregivers perceived their target child to have significantly less severe levels of problem behavior following participation in the program.

Follow-up of the significant main effect for Diagnosis (D) was done by examining the overall CBCL mean scores for each level of target child's diagnosis (i.e., marginal means). The mean CBCL score across time for target children without a preexisting diagnosis ( $M = 55.33$ ) was significantly lower than the mean CBCL score across time for target children with a preexisting diagnosis ( $M = 61.43$ ). This finding indicates that for both the pretest and posttest, across the Internalizing and Externalizing scales, caregivers' whose target child did not have a preexisting diagnosis perceived the severity of their target child's behaviors to be less severe than did caregivers' whose target child had a preexisting diagnosis.

Target Child's Age. The between-subjects factor was target child's age (A, Under 36 months vs. 36 months and over). The within-subjects (repeated) factors were time (T, pretest vs. posttest) and scale (S, Internalizing vs. Externalizing). Eighty-four participants completed and returned both the pretest and posttest CBCL and reported the target child's age on the Demographics Form. Means and standard deviations of pretest and posttest rating scale scores on the two subscales of the CBCL for each level of target child's age are reported in Table 29.

Table 29

*Means and Standard Deviations of Pre- and Posttest CBCL Scores by Target Child's Age*

Social Support	<i>n</i>	Internalizing		Externalizing		
		Pretest	Posttest	Pretest	Posttest	
18-35 Months of Age	43	<i>M</i>	57.91	55.14	62.98	58.53
		<i>SD</i>	10.83	10.65	12.72	12.53
36-72 Months of Age	41	<i>M</i>	59.15	54.24	63.78	57.22
		<i>SD</i>	8.19	11.50	10.81	10.19
Marginal Means			58.51	54.70	63.37	57.89

*Note.*  $n = 84$

Results of the Shapiro-Wilk test indicated a violation of normality for the change from pretest to posttest for the Internalizing and Externalizing scales of the CBCL. The violation of the normality assumption was assessed by examining the skewness and kurtosis for the pretest score, posttest score, and change in scores on both scales for each level of target child's age. Although the Shapiro-Wilk test indicated a violation of normality assumption for this dependent variable, the analysis was conducted as planned due to ANOVA's robustness against violations of normality and acceptable levels of skew and kurtosis. The homogeneity of variance assumption was assessed by examining results of the Levene's test of equality of error variance for levels of target child's preexisting diagnosis for pretest and posttest scores on the Internalizing and Externalizing scales. Levene's test was not significant for posttest Internalizing scores,  $F(1, 80) = 0.45$ ,  $p > .05$ , indicating that the variance in scores was equally distributed across groups of target child's diagnosis at posttest on the Internalizing scale.

Levene's test was statistically significant for pretest Internalizing scores,  $F(1, 80) = 9.47, p = .003$ , pretest Externalizing scores,  $F(1, 80) = 6.11, p = .016$ , and posttest Externalizing scores,  $F(1, 80) = 6.10, p = .016$ , indicating that the variance in scores was not equally distributed across levels of target child's age for these levels of the dependent variable. However, further analysis of group variances for pretest and posttest scores on the Internalizing and Externalizing scales across levels of target child's age revealed acceptable levels of variance. The ratio of the largest (pretest Internalizing scale for target children under 36 months,  $12.952^2 = 167.757$ ) to smallest (pretest Internalizing scale for target children under 36 months,  $9.423^2 = 88.800$ ) group variance was less than 3:1 ( $167.757 / 88.800 = 1.889$ ). Because ANOVA is robust against small to moderate disproportionate levels of variance, analyses were conducted as planned (Moore, 1995). The sphericity assumption was not applicable as there were only two levels of the within-subjects variable.

As shown in Table 30, results revealed a non-significant age by time by scale interaction effect  $F(1,80) = 0.02, p = .891$ , a non-significant age by time interaction effect  $F(1,80) = 2.35, p = .130$ , a non-significant age by scale interaction effect  $F(1,80) = 0.00, p = .981$ , a non-significant main effect for target child's age,  $F(1,80) = 0.24, p = .629$ , a statistically significant main effect for time,  $F(1, 80) = 31.17, p < .001, \eta^2 = 0.32$ , and a statistically significant main effect for scale,  $F(1, 80) = 22.12, p < .001, \eta^2 = 0.22$ .



Table 30

*Analysis of Variance of CBCL Pre- and Posttest Scores by Target Child's Age*

Source	<i>df</i>	SS	MS	F
Between subjects	81	28011.15		
Age (A)	1	82.27	82.27	0.24
Residual between	80	27928.88	349.11	
Within subjects	85	4812.40		
Time (T)	1	1891.18	1891.18	31.17*
A x T interaction	1	116.21	116.21	2.35
Scale (S)	1	1538.33	1538.33	22.12*
A x S interaction	1	0.04	0.04	0.00
A x T x S interaction	1	0.30	0.30	0.02
Residual within	80	1266.34	15.83	
Total	83	32823.55		

*Note.* \* $p < .01$

The non-significant interaction effects for each combination of the variables time of testing, scale of the CBCL, and target child's age, indicated that there was no difference in caregivers' ratings of target child's behavior due to time of testing, the subscale of the CBCL, or target child's age. The non-significant main effect for Age (A), indicated that caregivers' perceptions of their target child's behavior were the same for both scales of the CBCL across pretest and posttest times, regardless of target child's age.

Follow-up of the significant main effect for Scale (S), was done by examining the overall CBCL Internalizing and Externalizing mean scale scores (i.e., marginal means).

The mean Internalizing scale score across time and target child's age ( $M = 56.61$ ) was significantly lower than the mean Externalizing scale score across time and target child's age ( $M = 60.63$ ). This finding indicates that for both the pretest and posttest, across levels of target child's age, caregivers' perceived the severity of their target child's Externalizing problem behaviors was greater than the perceived severity for Internalizing problem behaviors. On the CBCL, behaviors categorized as Externalizing include attention span, hyperactivity, rule-breaking, and aggression. Behaviors categorized as Internalizing include emotional reactivity, anxiety/depression, somatic complaints (e.g., stomach aches, headaches, overly concerned with neatness or cleanliness), and withdrawal.

Follow-up of the significant main effect for Time (T), was done by examining the overall CBCL pretest and posttest mean scores (i.e., marginal means). The mean posttest score ( $M = 56.30$ ) was significantly lower than the mean pretest score ( $M = 60.94$ ). This finding indicates that across both scales of the CBCL, regardless of target child's age, caregivers' perceived severity of children's problem behavior was greater at pretest time as compared to posttest time. On the CBCL, higher scores indicate more severe levels of problem behavior; therefore, a decrease in scores from pretest to posttest indicates caregivers perceived their target child to have significantly less severe levels of problem behavior following participation in the program.

#### *Caregivers' Overall Perceptions of the HOT DOCS Program*

*Research Question #4.* What are caregivers' overall perceptions of the HOT DOCS parent training program?

Caregivers' ratings of satisfaction with the HOT DOCS program were analyzed using descriptive statistics. A total of 262 caregivers completed the Program Evaluation Survey. As shown in Table 31, the overall majority of participants (98.9%) *Agreed* or *Strongly Agreed* that the HOT DOCS program met their expectations. More specifically, participants *Agreed* or *Strongly Agreed* that the program was beneficial to their families (100%), the trainers were knowledgeable and effective instructors (100%), caregivers were able to utilize the strategies with their children (99.6%), the Parenting Tips were beneficial (100%), the Special Play strategies promoted positive interactions with children (98.9%), the information learned in HOT DOCS changed caregivers' parenting practices (98.9%), and that the program positively impacted children's behavior (97.7%).

Of the eight statements used to gauge participants' perceptions of the usefulness of the program, only two statements were marked as *Strongly Disagree* by one participant each. In general, these two statements related to the caregiver's ability to change their parenting practices using the strategies taught and changes in children's behavior at home. These data indicate that for one caregiver, this level of intervention was not matched appropriately to the level of severity of problem behavior the child demonstrated in the home. The highest percentage of responses endorsed by caregivers as being in the *Disagree* or *Strongly Disagree* categories were on items related to caregivers' ability to effectively implement program strategies in the home and the subsequent lack of improvement in child behavior following participation in the program.

Table 31

*Ratings of Participant Satisfaction with the HOT DOCS Training Program*

	<i>Strongly Agree</i>		<i>Agree</i>		<i>Disagree</i>		<i>Strongly Disagree</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
The HOT DOCS program was beneficial to my family	218	83	44	17	0	0	0	0
The presenter(s) were knowledgeable and effective in communicating this topic	241	92	21	8	0	0	0	0
I am able to utilize these strategies with my children	216	82	45	17	1	<1	0	0
The Parenting Tips are beneficial to me	221	84	41	16	0	0	0	0
The Special Play Activities promoted interactions with my child	188	72	71	27	3	1	0	0
The information I learned in HOT DOCS has changed my parenting practices	185	71	74	28	2	1	1	<1
HOT DOCS strategies have positively impacted my child's behavior	176	67	80	31	5	2	1	<1
Overall, the HOT DOCS program met my expectations	219	84	40	15	3	1	0	0

*Note. n = 262*

Question #9 on the survey asked participants, “How are you using the information you learned in HOT DOCS?” and provided eight options for participants to endorse. Participants were directed to check all boxes that applied. The response options for all items on the survey were derived from a thematic analysis of free responses to the same questions provided by participants in a pilot study conducted with previous HOT DOCS cohorts. Response choices for Question #9 included use of Parenting Tips, use of Special Play Activities, use of prevention strategies, use of the problem-solving chart, sharing information with others, improvements in daily interactions or relationships, change in parenting attitude, and “Other”.

As shown in Table 32, the majority of participants (96%,  $n = 248$ ) endorsed the response option, “using a specific skill.” Other response options showed similar endorsement rates, 90% of participants ( $n = 232$ ) endorsed “improved daily interactions or relationships,” 88% ( $n = 227$ ) endorsed “shared information with others,” 86% ( $n = 223$ ) endorsed “used prevention strategies,” and 81% ( $n = 81$ ) endorsed “change in parenting attitude.” For caregivers who endorsed “Other,” specific verbatim responses included, “I have learned that I, as a mother, have to organize myself so I can be an example for my kids;” “It helped my spouse and I be on the same page since we both attended the class together;” and “I understand now how I was reinforcing behavior negatively through avoidance so I have been able to focus on problem-solving to predict and prevent.”

Table 32

*How are you using the information you learned in HOT DOCS?*

Response Options	<i>n</i>	%
Use of Parenting Tips	248	96.1
Improvements in daily interactions or relationships	232	89.9
Sharing information with others	227	88.0
Use of prevention strategies	223	86.4
Change in parenting attitude	210	81.4
Use of Special Play Activities	203	78.7
Use of the problem-solving chart	171	66.3
Other	50	19.4

*Note. n = 258*

To respond to question #10 on the survey, “Have you shared information from HOT DOCS with...?” participants were instructed to check the boxes of all the people with whom they had shared information. As shown in Table 33, approximately 79% of participants ( $n = 203$ ) indicated that they had shared information with family members or relatives; 78% of participants ( $n = 201$ ) indicated that they had shared information with friends; 72% of participants ( $n = 184$ ) indicated that they had shared information with their spouse or partner. Approximately 39% of participants ( $n = 99$ ) indicated sharing information with a professional, such as an early interventionist, therapist, or teacher while only 13% of participants ( $n = 33$ ) reported sharing information with their pediatrician. Approximately 12% of participants ( $n = 30$ ) reported sharing information with “other” people, specifically indicating that they had shared information with patients

or clients ( $n = 8$ ) or co-workers ( $n = 8$ ). Verbatim responses from participants who indicated sharing information with “others” also included, “Everyone! I carry HOT DOCS fliers everywhere I go!” and “People I have seen with children with behavior problems.” Less than 1% of participants ( $n = 2$ ) indicated that they had not yet shared information with others.

Table 33

*Have you shared information from HOT DOCS with...?*

Response Options	<i>n</i>	%
Other family members or relatives	203	79.0
Friends	201	78.2
Spouse or Partner	184	71.6
Interventionist/Therapist/Teacher	99	38.5
Pediatrician	33	12.8
Other	30	11.7
Have not shared information	2	0.8

*Note. n = 257*

Question #11 on the survey, asked participants, “What can we do to improve HOT DOCS?” Responses options provided included nothing, the program is fine as it is; more time for instruction; offer classes in alternate locations; and “other.” As shown in Table 34, nearly 50% of participants ( $n = 113$ ) indicated that no improvements can or should be made to HOT DOCS and that the program was fine as it was. Approximately 30% of participants ( $n = 69$ ) indicated that the program could be improved by offering classes in alternate locations while 29% of participants ( $n = 67$ ) indicated that the

program would benefit from increasing the time for training and instruction.

Approximately 22% of participants ( $n = 51$ ) indicated “other” and offered such suggestions for improvement as offering classes at different times of day, on the weekends, or in the summer; specifying training and instruction by child’s age, disability, or severity of behavioral problems; and allowing more time for discussion between participants and for instructors to address individual behaviors and concerns. One participant responded, “I would have liked to share pictures of kids earlier in the classes because you get to hear so much about them.”

Table 34

*What can we do to improve HOT DOCS?*

Response Options	<i>n</i>	%
Nothing, fine as is	113	49.6
Offer classes in alternate locations	69	30.3
Increase time for instruction	67	29.4
Other	51	22.4

*Note.*  $n = 228$

Question #12 on the survey ( $n = 235$ ), asked “What did you value most about taking the HOT DOCS class?” Response options included learning specific parenting skills, support and interaction with other caregivers in similar situations, provision of materials without cost, learning skills to problem-solve child’s challenging behavior, and “other.” As shown in Table 35, the majority of the participants ( $n = 224$ ) who responded to this item (95%) indicated that they valued specific skills they acquired the most. Approximately 83% of participants ( $n = 195$ ) indicated that they valued problem-solving



skills; 68% of participants ( $n = 160$ ) indicated that they valued support and interaction with other caregivers; and 66% of participants ( $n = 154$ ) indicated that they valued the provision of materials (e.g., toys, manuals, timers). Approximately 13% of participants ( $n = 31$ ) indicated “other” aspects they valued most, including provision of food, knowledge and compassion from instructors, and decreased stress and frustrations with an increase in hope. Verbatim responses provided by these participants included, “It helped me to see I need to choose my battles,” “It was nice to be reminded to stop and take 5 minutes to focus on your child. It's easy to forget when you get busy!” “I was raised by old school parents and I needed an alternative in handling bad behavior,” “I learned that even though I was fixing the behavior at that moment I wasn't fixing the problem,” and “I got a sense of temporacy with behaviors, I know they will be resolved now.”

Table 35

*What did you value most about taking the HOT DOCS class?*

Response Options	<i>n</i>	%
Learning specific parenting skills	224	95.3
Learning skills to problem-solve child's challenging behavior	195	83.0
Support and interaction with other caregivers	160	68.1
Provision of materials without cost	154	65.5
Other	31	13.2

*Note.*  $n = 235$

### *Summary*

Results of this study revealed a significant and meaningful increase in caregivers' knowledge of child development, behavioral principles, and parenting strategies as a result of participation in HOT DOCS. Statistically significant differences in changes in participant knowledge between groups of caregivers based on caregivers' level of education, caregivers' social support, target child's age, or target child's preexisting diagnosis were not observed for this participant sample.

Data analyses suggested that prior to beginning HOT DOCS, caregivers' perceptions of the severity of their target child's problem behaviors significantly exceeded what was expected in a normative population for both internalizing and externalizing behaviors. Results did not indicate differential perceptions of severity of target child's behavior based on caregivers' level of education, caregivers' level of social support, or target child's preexisting diagnosis.

Results indicated that upon completion of the HOT DOCS program, caregivers' reported a significant and meaningful reduction in their perceptions of the severity of their target child's challenging behaviors as compared to perceptions prior to beginning the program. No significant differences were found in the changes in caregivers' perceptions based on caregivers' level of social support, target child's preexisting diagnosis, or target child's age.

Participants indicated high levels of satisfaction with the HOT DOCS program, with the majority of participants indicating that the program met their expectations and provided useful skills and techniques. Most participants reported that they are using the specific parenting skills and problem solving techniques taught in the program; that they

have shared the information they learned with family, friends, and/or co-workers; that they desired more time for instruction (e.g., more sessions, longer classes); and that they valued the knowledge and support from instructors and were encouraged by other caregivers struggling with situations similar to their own.

## CHAPTER 5

### Discussion

#### *Overview*

In response to the increasing number of young children displaying early-emerging challenging behavior, professionals have increased their efforts to find evidence-based interventions to address child and caregiver needs. The current study served as an investigation of caregivers' perceptions of the effectiveness of the Helping Our Toddlers Developing Our Children's Skills (HOT DOCS) parent training program in addressing challenging behaviors in young children. This study evaluated the impact of specific components of the parent training program on caregivers' knowledge, attitudes, and perceptions of their target children's behavior. The study also investigated differential outcomes for various groups of participants based on specific demographic variables, including caregivers' level of education and social support and target children's age and preexisting diagnosis.

This chapter begins with a discussion of the unique demographics of this study's participant sample and a comparison of the sample demographics with the local population as well as with previous studies of established parent training programs. Following the examination of the participant samples' characteristics, a discussion of the significance of the results of analyses for each research question is presented. The chapter

will conclude with statements regarding implications for practitioners, limitations of the study, and directions for future research.

### *Demographic Characteristics*

#### *Rates and Patterns of Caregiver Attendance*

Rates and patterns of caregiver attendance and attrition were analyzed and compared with findings from previous studies of group-delivered behavioral parent training. Overall patterns of attendance and rates of attrition found in this study were similar to those found in previous research (Eyberg et al., 2001; Feinfield & Baker, 2004; Kazdin, 1997; Sanders et al., 2000) and in the pilot study of HOT DOCS (Williams, 2007). Of the 465 caregivers attending the first session of HOT DOCS training, 334 caregivers completed the program (e.g., attended three or more sessions and signed IRB), resulting in an overall attrition rate of 28%. In the pilot study of HOT DOCS, the rate of attrition was approximately 23% (Williams, 2007). Eyberg and colleagues (2001) reported similar rates of attrition in an evaluation of the Parent-Child Interaction Therapy (PCIT) intervention. Specifically, of the original twenty participants, 13 completed the training, resulting in a 30% attrition rate. Feinfield and Baker (2004) reported lower levels of attrition in an evaluation of a multimodal, manually guided group treatment for parents of children with challenging behavior. Of the 56 caregivers enrolled in the program, four dropped out of the treatment group and five dropped out of the waitlist control group, resulting in an overall attrition rate of 16%.

Several previous studies of group parent training interventions have reported significantly lower attrition rates than found in this study (Barkley et al., 2000; Reid et al., 2001; Webster-Stratton & Hammond, 1997). Several of the programs reporting low

rates of caregiver drop-out have provided participants with incentives for attendance and completion of the program. For example, in an evaluation of the Incredible Years parent training program, Reid, Webster-Stratton, and Beauchaine (2001) reported attrition rates of less than 10%. Parents participating in this study were given \$50 for participation in each pre-, post-, and follow-up assessment. Other training programs offered individualized, child-focused intervention services to program completers (Barkley et al., 2000; Sanders, 1999), which seemed to serve as an additional incentive for attendance.

Several unique features of the HOT DOCS program may influence the rates and patterns of attendance for this specific program and a better understanding of these features may be useful to program developers in decreasing rates of attrition. Although the rate of attrition for HOT DOCS (28%) is similar to previously published research on group-delivered parent training (16-30%; Eyberg et al., 2001; Fienfield & Baker, 2004; Williams, 2007), from a clinical or practical viewpoint, the program developers will likely want to maximize participant attendance and use of resources, meaning decreasing the drop-out rate.

The first of these unique features is that the program is provided to caregivers free of charge. Caregivers may view the program as less important than similar programs or therapies offered for a fee or charged to insurance. Another feature, which may contribute to participant drop-out, is that the program is designed for caregivers of typically developing children displaying challenging behaviors. The program may be viewed by caregivers of children with severe medical, genetic, developmental, or behavioral disorders or syndromes as too basic or simplistic to meet their child's complex social and behavioral needs. Conversely, because there are no inclusion or exclusion criteria for

participation in HOT DOCS (e.g., preexisting diagnosis, clinically significant scores on standardized instruments), each class contains caregivers of children with a wide range of disorders, symptoms, and severities of challenging behaviors. Those caregivers who are attending in order to address or prevent low levels of challenging behaviors in children without preexisting diagnoses may drop-out after hearing other caregivers describe the severe and complex needs of their children who do have preexisting medical or behavioral diagnoses. As with other parent training programs (Bor, Sanders, & Markie-Dadds, 2002; Eyberg et al., 2001; Webster-Stratton, 1998), caregivers who drop-out of the HOT DOCS program may do so due to pressure from everyday stressors, including difficulties with childcare, transportation, and scheduling. Finally, caregivers dropping out of the program before completion may be facilitated by the provision of the full HOT DOCS manual to caregivers during the first session. Caregivers, who are struggling with the stressors mentioned previously, may believe that they can simply read through the entire manual on their own and do not need to continue attending weekly sessions. Future studies of the HOT DOCS program should include follow-up phone calls or focus groups with caregivers who do not complete the program in order to identify the barriers these caregivers experience.

In addition to the factors discussed previously, which may contribute to caregiver attrition, there are several features of HOT DOCS, which may help protect against participant drop-out. First, HOT DOCS actively encourages and recruits participation from male caregivers by using examples and videos in the training materials featuring male caregivers and by including male trainers to deliver the HOT DOCS program. Previous studies have demonstrated that involving fathers in any treatment plan or

program results in decreased attrition and better long-term outcomes than plans or programs focusing only on mothers (Tiano & McNeil, 2005). In addition to actively recruiting male caregivers, HOT DOCS encourages the attendance of multiple caregivers for each target child, stressing the ecological model by including extended family, friends, and other support systems in an effort to increase motivation and encouragement for caregivers to attend weekly sessions. Unlike existing parent training programs, HOT DOCS uses the same curriculum and materials to train child care professionals as it does to train caregivers. This feature allows caregivers to attend parent training sessions with their early interventionists, therapists, or case workers, thereby providing an additional support network for caregivers and encouraging consistency of skills and techniques across all adults involved in the target child's life.

Another feature that may help decrease drop-out is the comparatively short duration of the HOT DOCS program. Existing behavioral parent training programs typically require caregivers to attend between 12 and 36 sessions (Barkley et al., 2000; Lundahl, Risser, & Lovejoy, 2006; Webster-Stratton & Taylor, 2001), while HOT DOCS consists of 6 weekly sessions and a two-month follow-up booster session (Armstrong, Lilly & Curtiss, 2006). Although previously discussed as a possible explanation for increased caregiver drop-out, providing the HOT DOCS program free of charge to all participants has made the program available to a large proportion of low SES families in the community. Funding provided by the Children's Board of Hillsborough County covers the cost of the trainers' fees, materials, supplies and food for participants, as well as participant registration fees, removing the financial barriers to participation in parent training programs identified by previous research (Barkley et al., 2000; Webster-Stratton



& Taylor, 2001). By eliminating registration fees for families, access increases for all families who are willing and able to participate.

Finally, another feature unique to the HOT DOCS program is that this program has not only been translated to Spanish to address language barriers of Hispanic/Latino caregivers, HOT DOCS was also culturally adapted to the Hispanic/Latino community (Curtiss et al., 2009). As identified in previous research, training provided in Spanish by native Spanish trainers makes Hispanic/Latino families feel more accepted, valued, and understood (Forehand & Kotchick, 1996; Smagner & Sullivan, 2005), which in turn may decrease the likelihood of caregiver drop-out prior to program completion. Research has also suggested that matching therapist-client cultural values has a greater impact on program completion and treatment outcomes than matching therapist-client language or ethnicity alone (Cabrera et al., 2002; Lewis & O'Brien, 1987; Meyers, 1993).

#### *Comparison of Caregiver Demographics with the Local Community and Previous Studies*

Demographic information for the caregivers serving as participants in this study and their target children were compared with local demographic information provided by the United States Census Bureau for Hillsborough County through the 2005-2007 American Community Survey (United States Census Bureau, <http://factfinder.census.gov>, retrieved May 23, 2009) and with demographic information for participant samples from previous research of group-delivered parent training programs. Significant differences were identified between the HOT DOCS participant sample, the local community, and previous parent training participant samples in terms of participant gender/relationship to target child, race/ethnicity, level of education, type of insurance, which is used as a rough

estimate of socio-economic status (SES), caregivers' social support, and target child's preexisting diagnoses.

*Caregivers' Gender/Relationship to Target Child.* Most of the existing research on parent training programs has focused on female caregivers, specifically mothers of children with problem behavior (Bagner & Eyberg, 2003; McNeill, Watson, Hennington, & Meeks, 2002; Phares, Fields, Kamboukos, & Lopez, 2005; Reid et al., 2001; Singer, Ethridge, & Aldana, 2007). The gender and relationship with target child of participants in this study differs notably from previous research on parent training interventions, specifically by encouraging participation of fathers, non-related caregivers, and child service professionals. Participants in the sample were 74% female and 26% male, including 86% biological, adoptive, or foster parents, 10% professionals (i.e., early interventionists, service coordinators, pediatric and psychiatry residents), 4% grandparents, and 1% other relatives. The proportion of male to female participants in this study was similar to the results of the pilot study, which reported 68% female participants and 32% male participants (Williams, 2007).

In comparison, research on the Incredible Years parent training program indicates the majority of participants were mothers (98-100% mothers, small number of grandmother/aunt and fathers), including three studies with 100% female participants (Hartman et al., 2003; Reid, Webster-Stratton, & Baydar, 2004; Reid et al., 2001). One study on the Incredible Years program reported a significant proportion (43%) of fathers as participants (Webster-Stratton & Hammond, 1997). Research on the effectiveness of the PCIT parent training intervention has been conducted mainly with mothers or other female caregivers (Boggs et al., 2004; Hood & Eyberg, 2003) with the exception of a

study specifically designed to target father's participation in PCIT (Bagner & Eyberg, 2003). The majority of studies targeting children with ADHD have not reported data specifying the gender of parents and caregivers participating in training programs (Barkley et al., 2000; Weinberg, 1999). However, one study of the Defiant Children Parenting Program reported 100% of participants being mothers (Anastopoulos et al., 1993). In contrast to the majority of studies of behavioral parent training including the current study, investigations of the Triple P-Positive Parenting Program (Sanders, 1999) have reported participation by both parents of target children (Bor, Sanders, & Markie-Dadds, 2002; Sanders et al., 2000).

The inclusion of a notably high proportion of male caregivers in HOT DOCS is significant for a number of reasons demonstrated in recent research on the importance of including fathers in behavior parent training (Lamb, 1997; Lundahl, Tollefson, Risser, & Lovejoy, 2008; Palkovitz, 1996; Parke & Brott, 1999). Results of studies investigating the effects of father involvement generally agree that while participation of male caregivers does not necessarily predict considerably better outcomes for children and families, when fathers are involved attrition rates are lower, maintenance of treatment gains persisted longer, and perceived parental competence was higher, compared to families without father participation (Lundahl, Tollefson, Risser, & Lovejoy, 2008). Other research has demonstrated that involving both parents in behavioral parent training enhances success following program completion by encouraging consistency in parenting skills across mothers and fathers (Tiano & McNeil, 2005).

*Caregivers' Race/Ethnicity.* As compared to adults residing in Hillsborough County in 2005-2007, the participant sample in this study consisted of 11% fewer

caregivers reporting their ethnicity as Caucasian (47% in HOT DOCS versus 58% in Hillsborough county), 19% more caregivers reporting their ethnicity as Hispanic (41% HOT DOCS versus 22% Hillsborough county), and 9% fewer caregivers reporting their ethnicity as Black/African American (6% HOT DOCS versus 15% Hillsborough county). The participant sample is proportionate to Hillsborough county demographics for the percent of caregivers reporting their race/ethnicity as Asian (2% HOT DOCS versus 3% Hillsborough county). These results suggest that the HOT DOCS program provided early intervention services to caregivers from a racial/ethnic group, which has been underserved by previous parenting programs, specifically Hispanic and/or Spanish-speaking caregivers (Hershcell, Calzada, Eyberg, & McNeil, 2002). However, these results also suggest a disproportionately low percentage of Black/African American caregivers participating in the HOT DOCS program. The underrepresentation of Black/African American caregivers in the HOT DOCS program is likely related to the lack of families from this race/ethnic category that self-refer and/or are referred by professionals to participate. The high percentage of sample participants reporting their race/ethnicity as Hispanic as compared to local norms is likely explained by the provision of the culturally adapted HOT DOCS classes delivered in Spanish.

Participant race/ethnicity for this study also was compared with demographic information from other parent training programs, including the Incredible Years (Webster-Stratton, 2001), PCIT (Eyberg, 1988), Triple P-Positive Parenting Program (Sanders, 1996), Defiant Children Parenting Program (Barkley et al., 2000) and others. Compared with participants completing other training programs, the participant sample of caregivers completing HOT DOCS was composed of fewer White caregivers (47%

versus an average of 51-98%) and more non-White caregivers (51% versus an average of 2-49%) (Barkley et al., 2000; Fienfield & Baker, 2004; Sanders et al., 2004). Specifically, the HOT DOCS participant sample included nearly eight times the percentage of Hispanic caregivers (41%) as previous studies (generally about 5% across parenting programs). Similar to findings from the current study, one previous study of PCIT had a notably larger percentage of Hispanic participants compared to the majority of existing parenting research (McCabe, Yeh, Garland, Lau, & Chavez, 2005). Just as HOT DOCS was translated to Spanish to increase Hispanic caregiver participation, McCabe and colleagues (2005) modified and translated the original PCIT program to meet the unique needs of Mexican-American families. However, as previously discussed, HOT DOCS was not only translated to Spanish, but was culturally adapted to meet more than just the language needs of the Hispanic/Latino community (Curtiss et al., 2009).

Percentages of various racial/ethnic groups found in the current study is similar to those found in the pilot study of HOT DOCS, which also identified disproportionately low representation of African American/Black participants and disproportionately high representation of White and Hispanic when compared to demographic data for the local community at that time (Williams, 2007). Although initially discouraging, the findings in this study identifying the underrepresentation of Black/African American caregivers in the HOT DOCS program provide practitioners with a specific target for recruiting participants for future HOT DOCS trainings. This might be accomplished through increased advertising and recruitment directly targeted at reaching this racial/ethnic group as well as through making adjustments in scheduling of future classes, such as offering

the trainings at locations within the Black/African American communities, or offering classes taught by African American/Black instructors.

*Caregivers' Level of Education.* When compared to adults residing in Hillsborough county, according to census data from 2005-2007, the participant sample consisted of a similar percent of participants reporting their highest level of education as a high school diploma (20% HOT DOCS versus 29% Hillsborough county) and as a two-year college degree (12% HOT DOCS versus 10% Hillsborough county). However, the participant sample consisted of 11% fewer caregivers reporting their level of education as less than high school (4% HOT DOCS versus 15% in Hillsborough county), 10% more caregivers reporting their highest level of education as a four-year college degree (29% HOT DOCS versus 19% in Hillsborough county), and 15% more caregivers reporting their highest level of education as a graduate degree (24% HOT DOCS versus 9% in Hillsborough county). The disproportionality between sample participants and the local community was also observed in the pilot study of HOT DOCS (Williams, 2007).

In general, participants in the HOT DOCS program have a disproportionately high level of education, which may be explained by the program's affiliation with the University of South Florida (USF) and surrounding medical facilities. Many participants in the program are students or faculty at USF or physicians in local clinics or hospitals. The unexpectedly high mean level of education of HOT DOCS participants may be explained by the preventative nature of the program. As previously discussed, HOT DOCS is designed to address challenging behaviors in typically developing children. This program, unlike existing parenting programs (e.g., Incredible Years, Triple-P, PCIT), does not focus recruiting and advertising efforts entirely on caregivers with identified

risk-factors, such as low education levels, low SES, and/or minority groups. However, this may be a finding that encourages the HOT DOCS program developers to actively seek out caregivers from these especially needy populations (e.g., low-income, low educational attainment, minority group identification) to participate in the HOT DOCS program.

Previous studies of parenting programs have reported similar patterns of higher than expected educational attainment (Fienfield & Baker, 2004; Hartman, Stage, & Webster-Stratton, 2003). These studies have hypothesized that the higher mean educational levels may be explained by the additional financial and social supports available to families with higher levels of educational attainment. Researchers have suggested that these resources allow parents to participate in and complete training programs, while parents with lower educational attainment are often unable to attend and complete training sessions due to issues associated with socioeconomic status, such as lack of transportation, childcare, and time. As previously discussed, the HOT DOCS program has implemented measures to prevent financial and social barriers from preventing at-risk families from accessing the HOT DOCS program, such as offering the program free of charge, offering classes on evenings, and encouraging caregivers to bring supporting adults with them to the classes.

*Type of Insurance.* The use of type of insurance as an indicator for socioeconomic status (SES) in this study prohibits precise comparisons with local population statistics, which report SES using ranges of annual household income, often in combination with other social or educational variables (Reyno & McGrath, 2006). However, general comparisons of the proportion of the study sample reporting having Medicaid insurance

or no insurance, which were response categories used by the program developers to indicate lower SES, were compared with Hillsborough County estimates of families with children under 18 years of age with household incomes falling below the poverty level (United States Census Bureau, <http://factfinder.census.gov>, retrieved May 23, 2009). Approximately one-third (34%) of HOT DOCS participants reported having no insurance or Medicaid insurance compared to 14% of families in Hillsborough County classified as being below the poverty level. This comparison indicates that the HOT DOCS parent training program was delivered to a higher percentage of low-SES families than would have occurred simply by chance. Since previous research has shown that children of parents who are considered low-SES or low-income have a greater chance of developing more severe levels of challenging behavior (Gross et al., 1999; Keenan & Wakschlag, 2000; Qi & Kaiser, 2003), the large proportion of participants falling within this category can be considered a positive finding. Percentages of the participant sample reporting having Medicaid or no insurance were similar to participant demographics in the pilot study of HOT DOCS (Williams, 2007).

*Caregivers' Social Support.* As with type of insurance, the use of whether caregivers attended HOT DOCS with another caregiver or attended alone as an indicator for caregivers' social support in this study prohibits precise comparisons with local population statistics, which report social support using single-parent status as heads of households. However, general comparisons between the participant sample and data from the local community indicated that a lesser proportion of caregivers attended HOT DOCS with another caregiver than the percentage of married families in the local community. Specifically, 49% of participants attended with another caregiver, while data for



Hillsborough County indicated that 65% of families with children under 18 years of age are two-parent households and another 16% of families have grandparents who live in the household (United States Census Bureau, <http://factfinder.census.gov>, retrieved May 23, 2009). These comparisons indicate that while approximately 81% of local families have multiple adults caring for children in the home, only 49% of caregivers in the participant sample attended HOT DOCS with another caregiver.

This discrepancy may be explained by the lack of childcare provided by the HOT DOCS program, which requires that caregivers arrange for childcare during the seven class sessions. As evidenced by participant responses on the HOT DOCS Program Evaluation Survey found in this study and in the pilot study (Williams, 2007), many caregivers have indicated that a major improvement to the HOT DOCS program would be to offer childcare during class sessions. Availability of childcare has also been indicated as a barrier to participation in parent training programs in previous research (Lundahl, Risser, & Lovejoy, 2006; Maughan et al., 2005). The proportionately low number of participants attending HOT DOCS without another caregiver as their support, despite the high proportion of local families with multiple caregivers in the home, may be occurring because one of the caregivers must stay home to watch the children while the other attends the parent training classes. If it is a goal of the program to increase the number of caregivers who attend with other adults as social support, HOT DOCS developers may need to consider ways to overcome the barrier of childcare. Possible strategies would be to provide childcare at the training facility during class time or to provide caregivers with resources to find and pay for childcare services outside of the training sessions.

*Target Child's Preexisting Diagnosis.* Preexisting diagnoses of target children of participants in this study also were compared with demographic information from previous research. A large percentage (41%) of target children in this study did not have a preexisting medical, psychological, or behavioral diagnosis as reported by caregiver participants at the time of participation. In contrast, the majority of previous studies of parent training programs have specified inclusion criteria requiring that target children have preexisting mental, emotional or behavioral diagnoses to participate in study. Few published, evidence-based interventions target parents of children with non-clinical levels of challenging behavior (Lundahl et al., 2006; Maughan et al., 2005; Schumann et al., 1998). Several investigations of the Incredible Years parent training program and several studies of PCIT specify that children must have preexisting diagnosis of Oppositional Defiant Disorder (ODD) and/or Conduct Disorder (CD) (Harman, Stage, & Webster-Stratton, 2003; Webster-Stratton & Hammond; 1997). Parent training research conducted by Barkley and colleagues (2000) stipulated that all children included in the studies met diagnostic criteria for ADHD.

These findings indicate that the HOT DOCS parent training program provided early intervention services as preventative measures for children exhibiting non-clinical levels of challenging behaviors. As indicated by several decades of research, intervention provided before challenging behaviors reach chronic and severe levels is more likely to effectively treat and prevent negative lifelong emotional and behavioral impact (Marchant et al., 2004; Walker et al., 1998; Webster-Stratton, 1998). Although the target children of participants in this sample had fewer preexisting diagnoses than previous research on other parent training programs, this study had a much lower percentage of

target children without a preexisting diagnosis than found in the pilot study of HOT DOCS. In the pilot study, the majority of target children (66%) did not have a preexisting diagnosis (Williams, 2007) compared to 41% of target children in the current study having a preexisting diagnosis. Although the percentage of target children with autism spectrum disorder diagnoses did not differ between the two studies of HOT DOCS (12% in the current study vs. 14% in the pilot study), the current study consisted of a higher percentage of children with speech-language impairments (12% current study vs. 5% pilot study) and developmental delays (18% current study vs. 4% pilot study) than found in the pilot study. The increase in the percentage of target children have preexisting diagnoses may be due to more referrals to the HOT DOCS program from child service professionals (e.g., pediatricians, interventionists, therapists) who have participated in the HOT DOCS program and are currently treating children with diagnosed conditions.

The participant sample for this study represented previously underserved or understudied portions of the population. Specifically, this study included higher than expected numbers of male caregivers, Hispanic/Latino caregivers, caregivers with higher than average educational attainment, caregivers with low socio-economic status, and caregivers of children without preexisting diagnosis. Therefore, the implications of the unique demographic characteristics of the participant sample will be related to the results of the specific research questions presented below when applicable.

#### *Caregiver Knowledge*

*Research Question 1a.* What is the impact on caregiver knowledge of child development, behavioral principles, and parenting strategies as a result of participation in the HOT DOCS parent training program?

Results of this study indicated a significant increase in participants' scores on the HOT DOCS Knowledge Test from pretest to posttest. Although the difference in mean score from pretest to posttest differed by fewer than two correct answers, the effect size of the statistical difference was large, indicating significant and meaningful increases in the number of correct answers provided by participants. The items used on the test represent specific concepts, skills, or practices guided by the theoretical framework of the HOT DOCS parent training program. Knowing and understanding these skills and concepts may be considered ideal outcomes of the parent training program. Therefore, an increase in the number of items correct may be cautiously interpreted as an indicator of successful delivery of the specific skills and concepts.

Changes in caregiver knowledge as indicated by these results are similar to outcomes reported in previous research of parent training interventions (Anastopoulos et al., 1993; Weinberg, 1999). Anastopoulos and colleagues (1993) identified changes in parent knowledge as a dependent variable in their investigation of a six-week parent training program for parents of children with ADHD. Results of their study reported significant increases in parent knowledge from pre- to posttest using a knowledge test created by the researchers specifically for this purpose and measured by counting the number of items correct on the test. Weinberg (1999) also reported significant increases in parent knowledge of the features of ADHD and behavioral management strategies following participation in a behavioral parent training program. However, in this study, changes in parent knowledge were measured using parent ratings of their own knowledge of ADHD on a 7-point Likert-type scale (e.g., "very little" to "very comprehensive"). This measure of parent knowledge would be more accurately defined as parent

perceptions of their knowledge gains, rather than actual new information acquired through participation in the training program.

The statistically significant results found in this study have several significant limitations to interpretation. Participants answered approximately 16 of the 20 questions correctly before beginning the HOT DOCS training (mean pretest score = 15.88). Given the high score at pretest, results indicated that the test itself was flawed in its design. The 20 questions were either too easy or the True/False design allowed participants to accurately guess the correct answers (Frisbie, 1974). Several features of the HOT DOCS Knowledge Test prevented further interpretation of the increase in scores. Specifically, due to the small number of items on the test (e.g., 20 items), the lack of reliability and validity data available for the measure, and the lack of variation in response type (e.g., all true/false), further analyses were restricted. Due to these limitations, the statistically significant results found in this study should be interpreted cautiously and used more for informing program developers about changes that need to be made to the measurement instrument rather than used to make inferences and draw conclusions about the effectiveness of the HOT DOCS parent training program.

These results present several possible modifications that could be made to the Knowledge Test in order to strengthen its design and therefore increase the test's usefulness in informing program evaluation research (Frisbie, 1974; Hogan & Murphy, 2007; Smith, 2006). First, the items could be reformatted into multiple choice questions, which might prevent participants from simply guessing answers for each item. Second, there should be more questions per topic area in order to allow for more in depth analysis of knowledge gains, such as a factor analysis. Adding more items per subject area would

also allow for a check of content-related validity and reliability. Third, the items on the test should be rewritten or revised to be more challenging for participants at pretest.

Before exposure to the curriculum, participants should not be able to correctly answer the majority of test items. Finally, the revised measurement instrument should be evaluated by a panel of experts and evaluated through pilot testing with caregivers.

*Research Question 1b.* Is there a difference in participant caregivers' performance on the HOT DOCS Knowledge Test due to participation in the HOT DOCS training program based on caregivers' level of education, caregivers' social support network, the target child's age, and the target child's diagnosis?

Results of this study found no differential performance of participant caregivers on the HOT DOCS Knowledge Test from pre- to posttest due to participant classification by specific demographic variables. The demographic variables targeted in this research question were caregivers' level of education (i.e., high school diploma or less, vs. technical training/2-year college degree, vs. 4-year college, vs. a graduate degree); caregivers' level of social support (i.e., caregiver attending training alone vs. accompanied by another caregiver(s)); target child's age (i.e., target child under three years of age vs. target child over three years of age); and target child's diagnosis (i.e., no preexisting diagnosis, target child with autism spectrum disorders, developmental delays, speech/language impairments, or medical/genetic disorders). This finding suggests that unlike previous research (Knapp & Deluty, 1989; Oltmanns et al., 1977; Reyno & McGrath, 2006; Strain, Young, & Horowitz, 1981; Webster-Stratton & Hammond, 1990), all participants who completed the HOT DOCS parent training program appeared to

benefit equally in terms of knowledge gains, regardless of caregivers' level of education and support and target child's age and diagnosis.

The lack of statistically significant differences found in this study should be interpreted cautiously due to the small sample size, which was further impacted by unequal numbers of participants within each level of the demographic variables. The unequal distribution of participants in each level of the caregivers' level of education variable required that the four lowest levels of educational attainment be collapsed into two levels (i.e., less than high school + high school diploma, technical training + 2 year college degree). By collapsing these levels, data analyses were strengthened, but the practical application of investigating specific differences in participant outcomes based on individual levels of caregiver education was lost.

These findings should also be interpreted with caution due to the method of data collection employed by the program developers, especially in the definitions of the demographic variables of caregivers' level of social support and target child's diagnosis. Caregivers' level of social support was uniquely defined for the purposes of this study in terms of participant attendance, either attending the program alone or with another caregiver. In the majority of literature and research available on parent training programs, the construct of social support is most often measured by such variables as marital status (Kazdin & Wassell, 1999; Smith et al., 2005), father involvement in parenting or parent training (Holden, Lavigne, & Cameron, 1990; Smith, Landry, & Swank, 2000), ratings of perceived social supports using standardized scales, and more recently, specific measures of resiliency and protective factors (Luthar, 2006; Singer et al., 2007). These differences

in definitions and basic constructs make it difficult to compare the results of this study with the existing research base.

The method of defining the variable of target child's diagnosis also limits the interpretations and implications of the results of this study. Individual participant data for this variable were collected by the program developers based entirely upon parent or caregiver report. On the HOT DOCS Demographics Form for Caregivers, the item which provides data on the target child's diagnosis prompts participants to "Circle all that apply: No diagnosis, ADHD, Developmental Delay, Autism spectrum disorder (Autism, PDD, Asperger's syndrome, etc.), Speech/Language, Other." Participants were prompted to write in "other" diagnoses in the space provided. Data were entered directly from the Demographics Form as written by participants. Diagnoses supplied by participants were not verified by medical records or formal documentation. A suggested modification to program procedures would be to design a method of verifying target child's diagnoses as provided by caregivers.

In addition to the limitations produced by parent reported information for this variable, it is also difficult to make comparisons between the findings of this study and the available research base on outcomes of parent training programs because of the large proportion (41%) of target children in this study whose challenging behaviors fell below the threshold required to meet formal diagnostic criteria. As previously discussed in the section comparing demographic variables of the current sample with previous studies, the majority of behavior parent training programs require target children to have already been diagnosed with a behavioral, educational, and/or medical diagnosis prior to their caregivers' entry into the training program (Barkley et al., 2000; Harman, Stage, &



Webster-Stratton, 2003; Lundahl et al., 2006; Maughan et al., 2005; Schumann et al., 1998; Webster-Stratton & Hammond; 1997).

The lack of differential outcomes for participants in this study based on various caregiver and child variables may be cautiously interpreted as evidence that the design of the HOT DOCS curriculum and the method of content delivery facilitates knowledge gains for the majority of caregivers who complete the training program. Regardless of caregivers' level of education or social support and target child's age and diagnosis, caregivers made significant and meaningful gains in knowledge following completion of the HOT DOCS program.

#### *Caregiver Perceptions of Severity of Child Behavior*

*Research Question 2a.* Do caregivers perceive their child as having more problem behavior than a normative sample prior to participation in the HOT DOCS program?

It was anticipated that participants would report high levels of perceived challenging behavior in their target children. Expectations of high levels of problem behavior were based on the method of participant recruitment. Caregivers either self-referred to the program after seeing community advertisements or hearing about the program from friends or were referred to the program following a comprehensive psychoeducational evaluation of their child.

Previous studies of parent training programs for children with challenging behavior have used parent reported data such as the Child Behavior Checklist (CBCL; Achenbach, 2001) and Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) to evaluate the effectiveness of their programs. Many studies have cited inclusion criteria for participation in the study, stipulating that caregivers must have children who score in

the clinically significant range on these measures (Bagner & Eyberg, 2003; Barkley et al., 2000; Harman, Stage, & Webster-Stratton, 2003; Webster-Stratton & Hammond, 1997). Because many of the published studies of parent training programs have inclusion criteria such as these, the overall frequencies of caregivers' reported perceptions of child behavior as being more severe and problematic is higher than expected for a normative sample of the general population. Although the current study did not base participant inclusion on pretest behavior rating scale scores, it was hypothesized that most of the caregivers seeking to participate in the program would report that their children had more severe levels of problem behavior than a normative sample.

Results of this study supported this hypothesis by indicating that participants reported significantly more severe levels of child problem behavior at pre-test than was predicted for a normative sample of the population. Statistical analyses revealed that 11-16 times as many caregivers in the participant sample perceived their child's problem behaviors to be within the clinically significant range on both the Internalizing and Externalizing subscales of the CBCL than was expected given the percentages reported for the normative population (Achenbach, 2001). These results indicate that the majority of caregivers who elected to participate in HOT DOCS perceived their children as having clinically significant levels of problem behavior prior to beginning the training program. This finding is important for the program developers to know that they are recruiting the population of participants for which the curriculum was designed. Specifically, the majority of participants have target children who display challenging behaviors that are of great concern to caregivers, but do not necessarily meet thresholds to receive psychological, behavioral, or medical/genetic diagnoses.

*Research Question 2b.* Are there significant differences in caregiver perceptions of the severity of child problem behaviors based on caregivers' level of education, caregivers' social support network, and the target child's diagnosis?

Results of this study indicated that caregivers' perceptions of the severity of their target child's problem behaviors did not differ depending on caregivers' level of education, caregivers' level of support, or target child's diagnosis. Follow-up analyses of the non-significant overall findings indicated that in terms of caregivers' level of education, caregivers' with a graduate degree rated target children's behavior significantly lower than did caregivers with a high school diploma or less. As found in previous studies, caregivers with more resources, including their level of educational attainment, tend to have more positive views of their children's behaviors and more positive beliefs about their ability to address these behaviors (Kazdin & Wassell, 1999; Smith et al., 2005; Webster-Stratton & Hammond, 1990). No other significant differences were found between the remaining levels of caregivers' education.

Follow-up analyses also indicated that caregivers of target children with no diagnosis rated their children's behavior as being significantly less severe than did caregivers of target children with a diagnosis of autism spectrum disorder. It is hypothesized that parents of children with a diagnosis of autism spectrum disorder are more aware of the severity of their child's challenging behavior because they have attended various evaluation and treatment appointments with child service professionals, in which these behaviors are observed and measured in great detail (Mansell & Morris, 2004; Singer, Ethridge, & Aldana, 2007). It has also been shown that parents of children with behavioral/developmental diagnoses, such as autism spectrum disorder, experience

high levels of stress and anxiety about their child's development (Holden et al., 1990; Schumann et al., 1998). The finding from this study that caregivers of children with autism spectrum disorders rated the severity of their children's problem behavior significantly higher than did parents of children without a diagnosis or with other specific diagnoses may be a reflection of this group of caregivers' increased awareness of children's behavior, as well as a reflection of the increased severity of challenging behavior displayed by children with autism spectrum disorders (Briegel, Schneider & Schwab, 2008; Lardieri, Blacher, & Swanson, 2000; Smith, Landry, & Swank, 2005).

#### *Changes in Child Problem Behavior*

*Research Question 3a.* To what extent do caregivers perceive a decrease in child problem behavior following caregiver participation in the HOT DOCS program?

Comparisons of pretest and posttest caregiver ratings of child problem behavior using the CBCL have frequently been used in research on behavioral parent training programs as indicators of program effectiveness (Barkley et al., 2000; Cartwright-Hatton, McNally, & White, 2005; Connolly, Sharry & Fitzpatrick, 2001; Feinfield & Baker, 2004; Hartman et al., 2003; Nixon et al., 2003; Reid et al., 2001; Thompson, Ruma, Schuchmann, & Burke, 1996; Webster-Stratton, 1998; Webster-Stratton & Hammond, 1997). Most studies presented significant decreases in the severity of child behavior from pretest to posttest as reported by caregivers.

Results of this study indicate significant reductions in the severity of child problem behavior as perceived by caregivers. It could not be determined from the data available whether child behavior actually improved or, as suspected in previous studies, changes in scores were due to reductions in parent stress and increases in parenting

competency (Maughan et al., 2005; Singer, Ethridge, & Aldana, 2007; Smith, Landry, & Swank, 2005) . Despite frequent use of the CBCL in behavioral parent training research, significant limitations have been identified by the majority of researchers using CBCL as an outcome measure. The primary limitation is that the CBCL measures child behaviors through parent report and not through direct observation (Connolly, Sharry & Fitzpatrick, 2001; Feinfield & Baker, 2004; Thompson et al., 1996; Webster-Stratton, Reid, & Hammond, 2004). Thus, pretest and posttest comparisons might really be measuring increases in parent perceptions of competence, increases in parent perceptions of social support or normality of child problem behavior, or decreases in parenting stress and not actual changes in child behavior.

Several studies have overcome this limitation by supplementing the use of parent report ratings of child behavior with direct observations of child behavior, which is thought to provide a more accurate measure of changes in child problem behavior by eliminating the potentially confounding self-report bias (Barkley et al., 2000; Hartman et al., 2003; Nixon et al., 2003; Reid et al., 2001). HOT DOCS program developers should consider including direct observation of target child's behavior to provide more direct and valid measures of behavior change following caregiver participation in the program, which could be accomplished through individual home visits including videotaped observations of caregivers' skills, children's behaviors, and caregiver-child interactions.

Results should be interpreted with caution due to a relatively low return rate for posttest rating scales (41%). Several modifications to HOT DOCS program procedures were enacted following the results of the pilot study with the goal of increasing the low return rate of posttest CBCL rating scales. In the pilot study, approximately 25% of

participants who completed the CBCL rating scale at pretest also completed the CBCL rating scale at posttest. At that time, the posttest scales were mailed home to participants two months after program completion and prompted to return the scales in a prepaid envelope. In order to address this weakness, the program developers created a *Booster Session* held two months after completion of the final class session. During the booster session participants returned to the training location to review the skills and techniques taught in the class, discuss victories and ongoing challenges in implementing specific skills at home, and to support one another in continuing to use the HOT DOCS problem solving strategies. Before leaving the booster session, all participants complete a CBCL in addition to other measures of program outcomes. Following the implementation of the booster session, the return rate of CBCL rating scales increased nearly two-fold. The return rate for the current study (41%) is more acceptable in terms of statistical significance than the return rate for the pilot study (<25%). Continued efforts should be made by the program developers to ensure that more participants who complete the program provide outcome data at the two-month follow-up.

*Research Question 3b.* Are there differential perceptions of child behavior change based on caregivers' social support network, the target child's diagnosis, and the target child's age?

Results of this study indicated that caregivers' perceptions of the change in severity of their target child's problem behaviors from prior to beginning the HOT DOCS program to 2-months after completion did not differ depending on caregivers' level of support, target child's diagnosis, or target child's age. Follow-up analyses of the overall non-significant findings indicated that in terms of target child's diagnosis, caregivers'

whose target child did not have a preexisting diagnosis perceived their target child's behaviors to be less severe than did caregivers' whose target child had a preexisting diagnosis. As previously discussed, these results follow expected patterns, given that children with a diagnosis by definition have more significant and severe levels of problem behavior than do children who display normal levels of developmentally appropriate challenging behavior. There were no significant differences found in this study between the changes in perceptions by caregivers depending on their level of social support or their target child's age.

These results also should be interpreted guardedly, given the low (41%) and possibly disproportionate return rate of posttest CBCL rating scales, as previously discussed. It is not known as a result of this study, whether those participants who attended the booster session and completed a posttest rating scale were qualitatively and/or quantitatively different from those participants who did not return for the booster session nor return behavior rating scales in the mail. It is possible that the caregivers who return have target children with more intense challenging behaviors and therefore return to the booster session in pursuit of additional help and support. If this were the case, the posttest sample would be composed of caregivers of target children with a higher mean level of challenging behaviors than those caregivers who may have felt the booster was unnecessary because their child's behavior had so drastically improved. Further research is needed to answer these questions and modifications to program procedures could be useful in increasing the return rate of posttest scales from all participants.

### *Caregivers' Overall Perceptions of the HOT DOCS Program*

*Research Question 4.* What are caregivers' overall perceptions of the HOT DOCS parent training program as measured by the HOT DOCS Program Evaluation Survey for Caregivers?

Results of a previous evaluation of participant satisfaction with the HOT DOCS program (Armstrong, Hornbeck et al., 2006) using surveys and focus groups along with the results of the pilot study of the HOT DOCS program (Williams, 2007) indicated that caregivers reported high levels of satisfaction with program. In light of these findings and modifications made to the program following suggestions from previous participants, it was expected that participants in the current study also would report high levels of satisfaction. With few exceptions, the majority of caregivers (98%) indicated that they *Agreed* or *Strongly Agreed* that the HOT DOCS program met their expectations, was beneficial to their families, and positively impacted their behavior as caregivers. The few statements on the survey with which caregivers *Disagreed* or *Strongly Disagreed* related to the ability to implement specific skills at home and the program's impact on child behavior. These findings are not surprising, given that many parent training interventions struggle with accomplishing transfer of skills taught in the classroom to the home setting (Eyberg, 1998; Sanders, 1999). In light of the overwhelmingly positive response to these items, those few participants who were not satisfied with the program were provided individual consultation and possible referrals for further assessment and treatment strategies. These results were interpreted as exceptions to a program perceived as effective, rather than proof that the program is not effective.



The majority of caregivers reported that they were using the skills learned in the program at home or in the community (96%), they had experienced improvements in their daily interactions and relationships with family members (90%), they had shared the information they learned with others (88%), including spouses, family, and friends, they had used specific prevention strategies learned in class (86%), and had noticed a change in their parenting attitude (81%). When asked to provide suggestions for improvements to future HOT DOCS classes, 50% of caregivers answered “Nothing, the program is fine as is,” 30% of caregivers suggested offering classes in alternate locations or at different times of day, and 29% of caregivers answered “More time for instruction,” (e.g., more classes, longer sessions, booster sessions). These results support caregiver ratings of satisfaction with the program, by indicating that there were no significant changes or improvements that should be made to the program. When asked what they valued most from the training, the majority of caregivers indicated the specific skills taught in the sessions (95%), other caregivers indicated they valued learning problem-solving skills (83%), support and interaction with other caregivers (68%), and provision of materials without cost (66%).

Decades of research have demonstrated that high levels of treatment acceptability and satisfaction are predictors of more positive treatment outcomes, increased treatment adherence, and a greater likelihood of generalization of effects outside of the treatment setting (Eckert & Hintze, 2000; Elliott, Tureo, & Gresham, 1987; Foster & Mash, 1999; Wolf, 1978). Research on the impact of treatment acceptability suggests that when participants believe that the method of treatment was appropriate, fair, and reasonable (Kazdin, 1981), the likelihood of their following the treatment plan, demonstrating

positive outcomes, and generalizing skills to various settings is greater than when participants indicate lower levels of treatment acceptability and social validity (Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; Kratochwill, Elliott, Loitz, Sladeczek, & Carlson, 2003; Nastasi & Truscott, 2000). Therefore, the high ratings of participant satisfaction with the HOT DOCS parent training program reported in this study suggest that caregivers are more likely to demonstrate positive outcomes following their participation in the program than they would if the overall reports of participant satisfaction were lower.

#### *Implications for Practitioners*

The results of this study suggest several implications for practitioners. First, as in the pilot study of HOT DOCS (Williams, 2007), the current investigation of participants' perceptions of the effectiveness of the HOT DOCS parent training program suggested that following participation in the program, participants increased their knowledge of child development, behavioral principles, and parenting strategies; perceived a decrease in the severity of challenging behaviors in their target children; and reported high levels of satisfaction with the program. These findings are consistent with several decades of previous research on other parent training programs in demonstrating the effectiveness of behavioral parent training as an intervention (Eyberg, 1988; Feinfield & Baker, 2004; Kazdin, 1995; Webster-Stratton, 1998). The effectiveness of using a group-delivered parent training program to address early-emerging challenging behavior allows psychologists to serve as indirect service providers or consultants, enabling them to provide information and skills to caregivers, which they can use to problem-solve and address their own children's behavior. The indirect provision of services is in stark

contrast with the traditional medical model of service delivery, in which children are referred to a professional, an evaluation is conducted, and depending on the results, the professional directly applies treatment to the child in a one-on-one format. While this traditional treatment model has been shown to be effective in producing desired outcomes it has also been shown to be less cost-effective and have poorer long-term outcomes than group-delivered, consultation model treatment strategies (Kazdin & Kendall, 1998; Knitzer, 2007; Kumpfer & Alvarado, 2003).

Results of this study also provide practitioners with an early intervention program that has been successfully delivered to previously underserved portions of the population, specifically, Hispanic or Spanish-speaking families and caregivers from low SES families. These early findings suggest that the HOT DOCS training program can be utilized as an intervention for challenging behaviors in young children by Hispanic or Spanish-speaking families. The disproportionately high enrollment of Hispanic families is likely explained by the translation and cultural adaptation of both printed materials and orally delivered presentations into Spanish (Curtiss et al., 2009).

HOT DOCS has also been made available to a large proportion of low SES families because it funded by a grant from the Children's Board of Hillsborough county and offered free of charge to all interested families in the local community. All materials and supplies are provided for caregivers, removing previously identified financial barriers to participation in parent training programs (Barkley et al., 2000; Webster-Stratton & Taylor, 2001). These results offer preliminary support for practitioners' use of the HOT DOCS program to address the needs of chronically underserved and at-risk populations

(e.g., low SES, minority racial/ethnic group) using a group-delivered parent training program that maximizes available resources.

### *Limitations*

The current research study has a number of significant limitations. The first is the use of a preexisting database, which did not allow the researcher control over data collection procedures and the type of data originally collected. The researcher had to use data as collected by the program developers for purposes of reporting to their funding agency and not necessarily for the purposes of evaluating the intervention's effectiveness. The program developers created several measurement instruments, which met their specific needs for program evaluation but did not provide sufficient data to allow this study to make direct comparisons to previous evaluations of well-established behavioral parent training programs. Specifically, the HOT DOCS program developers defined the caregivers' social support variable in terms of attendance to classes with or without another caregiver. As previously discussed, this unique definition does not allow for comparisons between the HOT DOCS participant sample and previous research samples or local community demographic information, as these sources most often define social support through concepts such as marital status, or perceptions of access to social resources.

Another variable, which through the method of data collection presented weaknesses to the current study, was the exclusive use of parent report to gather data about target children's preexisting diagnoses. Relying simply on parent report has been shown to result in over- or under- reporting of children's symptoms and diagnoses (Connolly, Sharry & Fitzpatrick, 2001; Feinfeld & Baker, 2004; Thompson et al., 1996;

Webster-Stratton, Reid, & Hammond, 2004). The use of type of insurance as an indicator of caregivers' SES also presented problems in the current study in terms of interpreting results and making comparisons with other parent training research.

The second limitation is that this study utilized a one group pretest-posttest design, which has several threats to internal validity of the study, including history, maturation, testing, instrumentation, mortality, and regression toward the mean. To overcome this limitation, future research should incorporate the use of a waitlist control comparison group, which would provide data simultaneously with participants enrolled in the HOT DOCS program. The addition of a waitlist control group would allow researchers and/or program developers to more accurately evaluate the outcomes of participation in the program by controlling for the threats to validity mentioned above.

A third limitation is the low return rate of several outcome measures, specifically, posttest CBCL behavior rating scales. Given the low return rate of several outcome measures as identified in the pilot study (Williams, 2007), several modifications were made to HOT DOCS program procedures with the goal of increasing the overall return rate of participant measures. The modification included the addition of a Booster Session, as previously discussed. Additionally, a modification to procedures following the pilot study included the development of *Reminder Notes* and *Way to Go* cards, which were prepared by HOT DOCS trainers before each session listing either the specific forms each participant needed to complete, or congratulating participants on having turned in all material up to that point. Notes were printed on postcard paper and distributed at the beginning of each session. Distribution of the notes allowed the trainers to publicly recognize and praise those participants who had turned in all required measures and

directly remind participants which measures they had not yet completed. It is noted that following the modifications made to the program procedures the return rate of posttest measures increased dramatically from the pilot study (26%) to the current study (41%), however, the overall return rate of posttest behavior rating scales in the this study was still remarkably low.

Perhaps the most significant limitation to this study was the use of non-standardized instruments used to gather outcome data (Knowledge Test, Program Evaluation Survey). These instruments were designed by the authors of the HOT DOCS parent training program, thus, reliability and validity data are not available for these instruments. Program developers should select standardized outcome measures to collect data or should follow guidelines for designing and validating the existing tools currently used for HOT DOCS program evaluation to address these limitations.

#### *Directions for Future Research*

Although this study provided information about the utility of changes made to HOT DOCS curriculum and procedures in response to the pilot study outcomes (e.g., addition of a booster session to increase posttest return rates) (Williams, 2007), the results of the this study generated additional questions and limitations, which need to be addressed in future research studies. The information gained from the results of this study gives the HOT DOCS program developers an opportunity to continue to refine and improve the HOT DOCS program and the measures, tools, and procedures used to evaluate the effectiveness of this program. Program developers should focus on redesigning the HOT DOCS Knowledge Test and revising the definitions and data collection procedures for critical demographic variables, such as caregivers' social

support, caregivers' socio-economic status, and target child's preexisting diagnoses. In order to facilitate comparisons with existing parent training research, the program developers may wish to redefine the variables of social support, SES, and diagnosis in a manner similar to how they have been defined in the literature to date (Lundahl, Risser, & Lovejoy, 2006; Maughan et al., 2005).

Future research should address the relatively high rate of attrition (28%) and low return rate of posttest measures (41%) identified in this study. For example, researchers could conduct follow-up surveys, phone interviews, and/or focus groups to collect further evidence investigating caregivers' patterns and rates of attendance and attrition. For example, researchers should investigate why caregivers sign up for class and do not attend; why caregivers attend one or two sessions but do not complete training; and why a large percent of caregivers did not return posttest rating scale packets. Additional analyses specifically focusing on rates and patterns of attendance in relation to outcome variables should be conducted. For example, did participants who attended specific sessions (e.g., sessions 3, 4 and 5) show greater gains in knowledge or problem solving skills and did they perceive their children's skills as improving more than participants who attended different sessions (e.g., 1, 2, and 6).

As previously discussed, future evaluations of the HOT DOCS program should incorporate the use of a comparison or control group and revised or replaced outcome measures with demonstrated reliability and validity. In the process of revising and redesigning outcome measures, future research should focus on a more thorough investigation of the problem-solving behavioral principles incorporated into the HOT DOCS program, since this is a unique feature of the HOT DOCS program not addressed

in the majority of existing behavioral parent training programs. Specifically, an outcome measure assessing caregiver satisfaction with and knowledge of the functions of behavior and the problem solving process should be included. This investigation should focus more specifically on to what extent caregivers learn and are able to implement the problem solving process.

Although the results of specific investigations of differential outcomes for caregivers based on various social and demographic variables indicated a lack of observed differences, the results of this study provided researchers with preliminary information about the effectiveness of the HOT DOCS program, which should be interpreted cautiously, given the limitations in data collection previously discussed. Results indicated fairly equivalent outcomes for various demographic groups, including caregivers with differing levels of education and social support networks and caregivers of children of various ages with diverse preexisting diagnoses. Further research is needed to investigate differences in outcomes for participants based on these demographic variables once the variables have been redefined to more closely match the definitions and data found in the existing literature base.

### *Conclusion*

This study continues to expand the knowledge and evidence base of a potentially effective, cost-efficient, and participant-endorsed prevention/intervention program for young children with early emerging, challenging behaviors. Results of this study suggest caregivers perceived positive outcomes for themselves and their children after participating in the HOT DOCS program regardless of caregivers' level of education and social support and target child's age and diagnosis. Indicators of successful outcomes



included increases in caregiver knowledge, high levels of satisfaction with the program, and reductions in the perceived severity of child behavior problems. Results also indicated several modifications that could be made to the program to improve participant outcomes and increase the validity and reliability of program evaluations, including changes to measurement instruments (e.g., Knowledge Test, Program Evaluation Survey, lack of direct observation of caregiver/child behaviors) and data collection procedures (e.g., waitlist control group; definitions of social support, SES, child's diagnosis; low rate of return of posttest rating scales). Overall, the HOT DOCS parent training program appears to be a promising early intervention program that could be delivered in group format to caregivers from a variety of social and cultural groups to address early emerging challenging behaviors in young children with and without diagnosed conditions.

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## Appendices

## Appendix A

### HOT DOCS Parent Training Curriculum

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

Appendix B

HOT DOCS Demographics Form for Caregivers (English version)



**HOT DOCS**  
Demographic Questions for Caregivers



ID Code:			
Your Country of Origin:		Your Zip Code:	
Your Age:		Your Gender:	Male    Female
Referred Child's Age:		Child's Gender:	Male    Female
Child's Diagnosis: <i>Circle/Write all that apply, medical, genetic, behavioral</i>	NONE Autism spectrum disorder Developmental Delay	Speech/Language Delay ADHD Other? _____	
Age(s) of your other children:			
Does your child have health insurance? <i>Circle one response</i>	Private insurance	Medicaid	No insurance
Are you the child's: <i>Circle one response</i>	Mother/Father Grandmother/Grandfather Foster Mother/Father	Aunt/Uncle/Brother/Sister Adoptive Mother/Father Other: _____	
What ethnic group do you identify with? <i>Circle one response</i>	African American/Black Caucasian American/White Latino/Hispanic	Asian American Native American/Alaskan Other: _____	
What is your highest level of education? <i>Circle one response</i>	Less than high school Completed high school Technical school degree	Two-year college degree Four-year college degree Graduate degree	

Appendix C

HOT DOCS Demographics Form for Caregivers (Spanish version)



**HOT DOCS**  
**Preguntas Demográficas**



<b>Código de Identificación:</b>		<b>Su país de origen:</b>	
<b>Estado Civil:</b>	Casado      Soltero Divorciado      Separado Otro:	<b>Su código postal:</b>	
<b>Edad del guardian:</b>		<b>Su género:</b>	Masculino Femenino
<b>Edad del niño:</b>		<b>Género del niño:</b>	Masculino Femenino
<b>Diagnóstico del niño:</b> <i>Circule/escriba todo lo que aplica, medico, genetico, comportamiento</i>	Ninguno Autismo Atraso en el desarrollo	Atraso en el habla ADHD Otros: _____	
<b>Edades de sus otros niños:</b>			
<b>¿Tiene seguro medico su niño?</b> <i>Circule su respuesta</i>	Seguro Privado	Medicaid	No tiene seguro
<b>¿Cual es su relación con el niño?:</b> <i>Circule su respuesta</i>	Madre/Padre Abuela/Abuelo Madre/Padre Temporal	Tía/Tío/Hermano/Hermana Madre/Padre Adoptivo Otro: _____	
<b>¿Con cual grupo étnico se identifica?</b> <i>Circule su respuesta</i>	Afro-Americano/Negro Caucásico/Blanco Latino/Hispano	Asiático Americano Nativo Americano/Alaska Otro: _____	
<b>¿Cuál es su nivel de educación?</b> <i>Circule su respuesta</i>	Educación primaria Secundaria completa Carrera Técnica	Dos años universitarios Cuatro años universitarios Graduado profesional	

## Appendix D

### HOT DOCS Knowledge Test (English version)



# HOT DOCS Pre-Test Survey



ID Code: \_\_\_\_\_

Date: \_\_\_\_\_

1. Developmental milestones are skills like walking and talking that most children achieve at expected ages.	True	False
2. Challenging behavior must be punished immediately so that children will know how to behave.	True	False
3. Young children may communicate what they want through their actions rather than their words.	True	False
4. Using positive words refers to praising children for making good decisions.	True	False
5. When children learn how to express their feelings in words, their tantrums often increase.	True	False
6. Providing children with learning opportunities and a safe and secure environment promotes healthy brain development	True	False
7. Showing children how to do new things helps them more than just telling them what to do.	True	False
8. When reading to young children, adults should be sure to read each word on the page.	True	False
9. Children with delayed development may need extra time and practice to learn skills that are important for school.	True	False
10. It is okay to spank your child if he or she hits another child.	True	False
11. Flexible sleeping and eating schedules help children regulate their behavior throughout the day.	True	False
12. Once you understand the function of a child's behavior, you can develop a plan to prevent problem behavior and help children develop new skills.	True	False
13. The ideal time to intervene with a temper tantrum is right when it is happening.	True	False
14. Adults can teach children how to behave in public places (church, grocery store, library) by practicing expected behaviors before leaving home.	True	False
15. Use of the following strategies may prevent challenging behavior: timers, busy bags, and First-Then boards.	True	False
16. When children do not follow directions it is best to ignore them until they decide to follow the directions.	True	False
17. Positive attention builds healthy relationships with children and prepares them for success in school.	True	False
18. Children should not be praised for doing the things you expect them to do, such as picking up toys or sitting at the table.	True	False
19. Adults who are stressed have more difficulty tolerating children's challenging behavior.	True	False
20. It is more effective to address challenging behaviors with children when they are older and able to talk back to you.	True	False

## Appendix E

### HOT DOCS Knowledge Test (Spanish version)



# HOT DOCS Encuesta Previa



Código de ID: \_\_\_\_\_

Fecha: \_\_\_\_\_

1. Las etapas del desarrollo se refieren a las habilidades importantes que el niño debe alcanzar a una edad esperada, como hablar y caminar.	Verdadero	Falso
2. Los problemas de conducta deben ser castigados inmediatamente para que el niño sepa lo que debe hacer.	Verdadero	Falso
3. Los niños pequeños comunican lo que quieren a través de acciones en vez de usar sus palabras.	Verdadero	Falso
4. Usar palabras positivas se refiere a elogiar al niño cuando ha tomado una decisión correcta.	Verdadero	Falso
5. Cuando los niños aprenden a expresar sus sentimientos con palabras sus rabietas aumentan.	Verdadero	Falso
6. Darle a los niños oportunidades para aprender y un entorno seguro promueve un desarrollo saludable.	Verdadero	Falso
7. Enseñándole al niño como hacer cosas nuevas le ayuda más que simplemente decirle como hacerlo.	Verdadero	Falso
8. Cuando se le lee a los niños los adultos deben de estar seguros de leer cada palabra de la página.	Verdadero	Falso
9. Los niños con problemas del desarrollo necesitan tiempo extra y practica para aprender habilidades importantes para la escuela.	Verdadero	Falso
10. Está bien darle una nalgada al niño cuando él le pega a otro niño.	Verdadero	Falso
11. Dormir y comer con un horario ayuda a los niños a comportarse bien durante el día.	Verdadero	Falso
12. Una vez que yo entiendo la función del comportamiento problemático del niño, yo puedo desarrollar un plan que ayude al niño a desarrollar habilidades nuevas.	Verdadero	Falso
13. El momento ideal para intervenir en una rabieta es exactamente cuando está sucediendo.	Verdadero	Falso
14. Los adultos pueden enseñarle a los niños en como comportarse en lugares públicos (eje: iglesia, biblioteca, tienda) practicando el comportamiento antes de salir de la casa.	Verdadero	Falso
15. Utilizar cronómetros, bolso o mochila pasatiempo y tabla de primero/luego son formas de prevenir problemas de conducta.	Verdadero	Falso
16. Cuando los niños no hacen caso inmediatamente es mejor ignorarlos hasta que ellos hagan caso a lo que se les pidió.	Verdadero	Falso
17. Una atención positiva con el niño crea una relación saludable y lo prepara para que sea exitoso en la escuela.	Verdadero	Falso
18. Los niños no deben ser elogiados por hacer cosas que usted espera de ellos como recoger los juguetes o sentarse a comer.	Verdadero	Falso
19. Los adultos que están estresados tienen más dificultad en tolerar a los niños con conductas desafiantes.	Verdadero	Falso
20. Es más fácil redirigir el comportamiento desafiante cuando los niños son más grandes y pueden hablar.	Verdadero	Falso

## Appendix F

### HOT DOCS Program Evaluation Survey for Caregivers (English version)



#### HOT DOCS Program Evaluation

ID Code _____
---------------

		Strongly Agree	Agree	Disagree	Strongly Disagree
1.	The HOT DOCS program was beneficial to my family and/or my professional practice.				
2.	The presenter(s) were knowledgeable and effective in communicating this topic.				
3.	I am able to utilize these strategies with my children and/or in my professional practice.				
4.	The Parenting Tips are beneficial to me.				
5.	The Special Play Activities promoted interactions with my child and/or children I serve in my professional practice.				
6.	The information I learned in HOT DOCS has changed my parenting or professional practices.				
7.	HOT DOCS strategies have positively impacted my child's behavior or the behavior of children I serve in my professional practice.				
8.	Overall, the HOT DOCS program met my expectations.				

9. How are you using the information you learned in HOT DOCS?
- I used the Parenting Tips (e.g., calm voice, positive words, follow through)
  - I used Special Play time with my child
  - I used Prevention Strategies (e.g., timer, natural endings, prompts, first-then board, etc.)
  - I used the Problem Solving Chart to understand my child's behavior (triggers, consequences, etc.)
  - I shared what I learned with others
  - The information helped me improve daily interactions and my relationship with my child
  - I have changed my parenting attitude (e.g., I'm calmer, more in control, less frustrated)
  - Other (please specify): \_\_\_\_\_
10. Have you shared the information from HOT DOCS with (check all that apply)
- Spouse or partner
  - Other family members
  - Friends
  - Interventionist, therapist, or teacher
  - Pediatrician
  - Other (please specify): \_\_\_\_\_
  - I did not share the information with other people
11. What can we do to improve HOT DOCS? (check all that apply)
- Nothing, the class is fine as it is
  - Increase instruction time (e.g., more classes, longer classes, booster sessions)
  - Offer course at alternate locations (e.g., downtown, Brandon, West Tampa, Lakeland)
  - Other (please specify): \_\_\_\_\_
12. What did you value most about taking the HOT DOCS class? (check all that apply)
- I learned specific parenting skills (e.g., preventions, new responses, positive words, calm voice)
  - The positive support and interactions with other caregivers in similar situations as mine
  - The course materials were provided for free (e.g., manual, toys, timers)
  - I learned the skills to problem solve my child's challenging behavior
  - Other (please specify): \_\_\_\_\_

## Appendix G

### HOT DOCS Program Evaluation Survey for Caregivers (Spanish version)



#### Evaluación del Programa HOT DOCS

Código \_\_\_\_\_

		Totalmente de acuerdo	De acuerdo	En desacuerdo	Totalmente en desacuerdo
1.	El programa de HOT DOCS le ayudó a mi familia y/o a mi práctica profesional.				
2.	Los presentadores estaban preparados y comunicaban bien el tema				
3.	Siento que puedo utilizar estas estrategias con mi hijo y/o mi práctica profesional.				
4.	Los consejos para los padres fueron de gran ayuda para mí.				
5.	El juego especial fomentó interacción con mi hijo y/o con los niños a los cuales brindo servicios en mi práctica profesional.				
6.	La información que aprendida en HOT DOCS ha cambiado sus prácticas como padre o práctica profesional.				
7.	Las estrategias de HOT DOCS han impactado positivamente en el comportamiento de mi hijo o en el comportamiento de los niños a los cuales les brindo mis servicios de práctica profesional.				
8.	De manera general, el programa de HOT DOCS llenó mis expectativas.				

9. *¿Cómo está utilizando la información que ha aprendido en HOT DOCS?*
- Utilizo los Consejos para Padres (ej., voz calmada, palabras positivas, superviso el cumplimiento de las actividades)
  - Utilizo los momentos de Juegos Especiales con mi hijo
  - Utilizo las Estrategias de Prevención (ej. Cronómetro, finales naturales, avisos, tarjetas de primer-después, etc.)
  - Utilizo el cuadro de Solución de Problemas para entender el comportamiento de mi hijo (antecedentes, describir la conducta, consecuencias, etc.)
  - Comparto lo que he aprendido con otros
  - La información me ha ayudado a mejorar mi relación e interacción con mi hijo
  - He cambiado mis actitudes para la crianza de los niños (ej. Estoy más calmada, más en control, menos frustrada)
  - Otros (por favor especifique): \_\_\_\_\_
10. *¿Ha compartido la información de HOT DOCS con alguien? (marque todos los que aplican)*
- Esposo/a o compañero/a
  - Otros miembros de la familia
  - Amigos
  - Intervencionistas, terapeutas, o maestros
  - Pediatra
  - Otros (por favor especifique): \_\_\_\_\_
  - No he compartido la información con otras personas
11. *¿Que podemos hacer para mejorar HOT DOCS? (marque todos los que aplican)*
- Nada, la clases están bien tal y como están
  - Aumentar la duración de la instrucción (ej. Más clases, clases que duran mas tiempo, sesiones de reforzamiento)
  - Ofrecer la clase en lugares alternativos (ej. downtown, Brandon, West Tampa, Lakeland)
  - Otros (especifique): \_\_\_\_\_
12. *¿Qué fue lo más valioso para Usted del programa de HOT DOCS? (marque todos los que aplican)*
- Aprendí habilidades específicas para la crianza de los niños (ej. Prevenciones, nuevas respuestas, palabras positivas, voz calmada, etc.)
  - El apoyo positivo y las interacciones con otros padres o proveedores en situaciones similares a la mía.
  - Los materiales del curso proveídos de manera gratuita (ej. manual, juguetes, cronómetros)
  - Aprendí las habilidades para resolver los problemas de comportamiento de mi hijo
  - Otros (por favor especifique): \_\_\_\_\_



## Appendix H

### Relation between Research Questions and Variables

Question	Dependent Variable	Design
What is the impact of participation in the HOT DOCS program on parent knowledge?	HOT DOCS <i>Knowledge Test</i>	Pre- and Posttests
Do caregivers' perceive their child as having more problem behavior than a normative sample prior to participation in HOT DOCS?	CBCL	Pretest
Do child's problem behaviors decrease following parent participation in HOT DOCS?	CBCL	Pre- and Posttests
What are caregivers' overall perceptions of their participation in the HOT DOCS parent training program?	HOT DOCS <i>Program</i> <i>Evaluation Survey</i> <i>for Caregivers</i>	Posttest

### About the Author

Jillian L. Williams is a Nationally Certified School Psychologist (NCSP) and a doctoral intern in Pediatric School Psychology at the University of South Florida. She currently conducts research on the effectiveness of a parent training program based on the principles of behaviorism and problem-solving. Ms. Williams completed her doctoral internship in the Department of Pediatrics at USF, conducting developmental evaluations, planning and implementing early intervention strategies with families, providing professional development trainings, and serving as project director and as a facilitator of the Helping Our Toddlers, Developing Our Children's Skills (HOT DOCS) parent training program. Ms. Williams received a Bachelor's degree from the University of Maryland, Baltimore County in 2001, Master's and Certificate of Advanced Studies degrees from Towson University in 2005, completed an APPIC internship at the Louisiana School Psychology Internship Consortium (LAS\*PIC) in Baton Rouge, Louisiana in 2004-2005, and received an Educational Specialist degree from USF in 2007.