

FROM THE CLINIC TO THE CLASSROOM:  
GENERALIZATION OF PARENT-CHILD INTERACTION THERAPY TREATMENT  
EFFECTS

By

CARMEN SAMYRA EDWARDS

A THESIS PRESENTED TO THE GRADUATE SCHOOL  
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTERS OF SCIENCE

UNIVERSITY OF FLORIDA

2012

© 2012 Carmen SaMyra Edwards

To my family, friends, and loved ones whose endless support and encouragement helped make reaching this milestone possible

## ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledge my advisor and the chair of this thesis, Stephen R. Boggs, Ph.D., ABPP, in addition to Regina Bussing, M.D. and Sheila M. Eyberg, Ph.D., ABPP for their continued support and guidance on this project. I would also like to thank the members of my committee, Dawn Bowers, Ph.D., David Janicke, Ph.D., and Deidre Pereira, Ph.D., as well as members of the Child Study Lab for their efforts and feedback. Finally, I would like to recognize the National Institute of Mental Health (R01 MH60632 and R01 MH072780) for providing the grants to fund this research.

## TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGEMENTS .....	4
LIST OF TABLES .....	6
ABSTRACT .....	7
CHAPTER	
1 INTRODUCTION.....	9
Presentation in the Classroom .....	10
Consequences of Disruptive Behavior .....	13
Treatments for Children with Disruptive Behavior Disorders .....	14
Parent-Child Interaction Therapy.....	15
2 METHODS .....	21
Participants .....	21
Measures .....	22
Prescreening Measures .....	22
Outcome Measures .....	24
Procedures.....	26
Pre-Screening and Treatment Procedures .....	26
Assessment of Classroom Behavior.....	27
3 RESULTS .....	29
Descriptive Data .....	29
Aim 1: Generalization for the Entire Sample .....	30
Aim 2: Differential Generalization across Diagnostic Groups .....	30
Power Analysis .....	32
4 DISCUSSION .....	37
Limitations .....	41
Future Directions.....	42
LIST OF REFERENCES .....	44
BIOGRAPHICAL SKETCH .....	49

## LIST OF TABLES

<u>Table</u>	<u>page</u>
2-1 Age, Sex, and Race of Study Participants .....	28
3-1 Outcome Measures (Pre- to Posttreatment Changes in Observed Classroom Behaviors for the Entire Sample) .....	33
3-2 Outcome Measures (Pre- to Posttreatment Changes in Teacher-Reported Classroom Behaviors for the Entire Sample).....	34
3-3 Outcome Measures (Pre- to Posttreatment Changes in Observed Classroom Behaviors for ODD-only, ADHD-only, and Comorbid ODD + ADHD Participants, Respectively) .....	35
3-4 Outcome Measures (Pre- to Posttreatment Changes in Teacher-Reported Classroom Behaviors for ODD-only, ADHD-only, and Comorbid ODD + ADHD Participants, Respectively) .....	36

Abstract of Thesis Presented to the Graduate School  
of the University of Florida in Partial Fulfillment of the  
Requirements for the Degree of Master of Science

FROM THE CLINIC TO THE CLASSROOM:  
GENERALIZATION OF PARENT-CHILD INTERACTION THERAPY  
TREATMENT EFFECTS

By

Carmen SaMyra Edwards

May 2012

Chair: Stephen Boggs

Major: Psychology

Parent-Child Interaction Therapy (PCIT) is an empirically-supported treatment for young children with disruptive behavior disorders and associated difficulties. The behavior problems associated with these disorders frequently impair functioning in more than one setting, making it desirable that treatment programs be designed to address problems both in the home and in the classroom. Although generalization of PCIT treatment effects from the clinic to the home are well established, studies examining generalization to the classroom are limited. The present investigation evaluated the generalization of PCIT treatment effects to the classroom using teacher-report and observational measures in a sample of 67 elementary school-aged children (Mean age = 4.45 years) diagnosed with ADHD-only (n=19), ODD-only (n=21), or comorbid ADHD/ODD (n=27). Scores obtained from teacher-report and observational measures were used to evaluate generalization for the entire sample of children, as well as differential generalization between diagnostic groups. Pre- to posttreatment changes in the percentage of observed inappropriate behaviors in the classroom were found for the total sample; however, no other changes were found on other teacher report or direct

observation measures either for the entire sample or within the three different diagnostic groups. Although these findings provide some indication of treatment generalization, additional strategies targeted towards reducing disruptive behavior in the classroom may be necessary to maximize generalized effects.

## CHAPTER 1 INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) and Oppositional Defiant Disorder (ODD) are among the most common childhood disorders observed in both clinical and community populations (American Psychological Association, 1994; Lochman & Salekin, 2003; Saddock & Saddock, 2007). Depending upon the nature of the population sample and methods of assessment, prevalence rates for ADHD and ODD have been reported to range anywhere from 2% - 7% and 2% - 30%, respectively (American Psychological Association, 1994; Farmer, Compton, Burns, & Robertson, 2002; Gadow & Nolan, 2002). In addition to high prevalence rates, the stability and chronicity of aggressive behavior problems observed during childhood further complicate the impairment often associated with a formally diagnosed disruptive behavior disorder (Hetherington, Parke, Gauvain & Locke, 2006; Lochman & Salekin, 2003; Saddock & Saddock, 2007).

Children diagnosed with ODD display an enduring pattern of negativistic, disobedient, and hostile behavior (American Psychological Association, 1994; Saddock & Saddock, 2007). The degree to which children with ODD defy authority and engage in disruptive behaviors is excessive in relation to the behavior of their non-deviant, same aged peers (Saddock & Saddock, 2007). It is not uncommon for these children to display frequent emotional outburst and blame others for their mistakes or misbehavior (American Psychological Association, 1994; Saddock & Saddock, 2007).

Unlike children with ODD who display deliberate defiance, the behavior problems exhibited by children diagnosed with ADHD are primarily characterized by uncontrollable hyperactivity, impulsivity, and/or inattention. A formal diagnosis of ADHD

requires significant impairment in two or more settings and usually remains undiagnosed until a child enters elementary school (American Psychological Association, 1994; Hetherington et al., 2006; Saddock & Saddock, 2007; Seib, 2009). Just as children with ODD, children diagnosed with ADHD are sometimes emotionally labile, as they have been observed to be explosive and easily irritated (Saddock & Saddock, 2007).

Numerous studies have investigated the immediate and long term impairments associated with a diagnosis of ADHD or ODD, including but not limited to deficits affiliated with common comorbidities. Unfortunately, approximately 50% of clinic-referred children with ADHD eventually receive a comorbid diagnosis of ODD or Conduct Disorder (American Psychological Association, 1994). Studies conducted in this area have found that children who receive an early diagnosis of ODD and/or ADHD are at significantly higher risk for meeting diagnostic criteria for another developmental disorder later, particularly one associated with language impairment (Biederman et al., 1996; Matthys, Cuperus & Engeland, 1999). Investigators have reported that younger children who receive a comorbid diagnosis of ADHD and ODD not only report exacerbated symptoms in comparison to children who present with a single diagnosis, but that these children are also at greater risk for developing comorbid anxiety and depressive symptoms as the disruptive behavior progresses without treatment (Gadow & Nolan, 2002; Hetherington et al., 2006).

### **Presentation in the Classroom**

Children with disruptive behavior disorders also experience significant difficulty in school, as adequate interpersonal skills and the capacity to attend to structured material are essential to achieving academic success. In addition to the deficits associated with

the comorbidities previously mentioned, deficits in social competence are frequently observed in children diagnosed with disruptive behavior disorders. For preschoolers and elementary school-aged children, these deficits often result in peer rejection, being less popular, and having fewer friends in relation to their non-disruptive peers (Ginn, 2010). More specifically, children with ODD often have few, if any, friends and perceive interpersonal relationships as unsatisfactory (Saddock & Saddock, 2007). Typically, the symptoms of ODD are most evident during interactions with people whom the child knows well and tend to cause more distress to those around the child than to the child him or herself (Saddock & Saddock, 2007). Although maladaptive social exchanges are well documented, children diagnosed with ODD generally do not resort to the physical aggression or significantly destructive behavior observed in children diagnosed with a more severe Conduct Disorder (Saddock & Saddock, 2007).

As previously mentioned children with ADHD can be unpredictable and display emotional lability making it difficult for them to maintain and establish meaningful relationships with their peers (Saddock & Saddock, 2007). The adverse reactions of school administration to ADHD symptomology in the classroom and the lowering of self-regard because of perceived inadequacies often combine with the negative reactions of peers, sometimes making school an undesirable environment for children struggling with these difficulties (Saddock & Saddock, 2007). Early intervention for these deficits is imperative as Lochman & Salekin (2003) noted similar impairments in the social competence of aggressive and disruptive children during middle childhood. Problematic peer relations during childhood are often maintained throughout adolescence as children diagnosed with ODD and/or ADHD have been reported to experience severe

psychopathology, including but not limited to antisocial behavior and substance abuse, in the event that early intervention is not implemented (Farmer et al., 2002; Hetherington et al., 2006; Lochman & Salekin, 2003).

In addition to hindering a child's ability to establish healthy interpersonal relationships in school, the literature has shown that the presence of a disruptive behavior disorder also adversely impacts a child's behavior and academic performance in the classroom. Despite adequate intelligence, children diagnosed with ODD tend to perform poorly, or in more severe cases, even fail school (Saddock & Saddock, 2007). These children often withhold participation during group activities, resist external demands, and insist on solving problems without assistance (Saddock & Saddock, 2007).

Results obtained from classroom assessments and standardized achievement tests reveal that children with ADHD function one to two years below grade level despite average intelligence (Hetherington et al., 2006). Hyperactivity and impulsivity are reportedly among the most difficult ADHD symptoms for teachers to manage and often result in a child responding to questions before thinking or being acknowledged, frequently shifting ideas or activities, and failing to remain in their designated area (Hetherington et al., 2006). ADHD is also often characterized by a distinct attention deficit that impedes a child's ability to sustain their attention, concentrate, and complete tasks to their entirety (Saddock & Saddock, 2007; Hetherington et al., 2006). This attention deficit can sometimes be affiliated with the presence of a comorbid communication and/or learning disorder and substantially impedes the acquisition, retention, and display of knowledge in the classroom (Saddock & Saddock, 2007). In

regards to behavioral concerns, children diagnosed with ADHD also display problems adhering to rules and instructions with multiple steps (Hetherington et al., 2006). This deficiency in rule-governed behavior can best be accounted for by difficulties tracking and monitoring behavior over an extended period of time.

### **Consequences of Disruptive Behavior**

Similar to parents in the home setting, teachers of children with disruptive behavior disorders also report significant difficulty managing problematic behavior prior to the child receiving treatment. The deliberate defiance and aggression associated with ODD can be disruptive to both the teacher and other students in the classroom, as it often requires immediate disciplinary action on the teacher's behalf (Saddock & Saddock, 2007). The disciplinary intervention itself could possibly become a distraction and ultimately detract from the time allotted to adequately attend to the academic needs of other students in the classroom. Although the hyperactivity observed in children diagnosed with ADHD may also warrant disciplinary action, it is the impulsivity and inability to meet attentional demands that impede academic performance and could potentially result in school failure. The attentional and regulatory deficits observed in children with ADHD warrant considerable effort on the teacher's behalf in keeping the child engaged and interested in learning (Hetherington et al., 2006). Because teachers are responsible for facilitating the academic enrichment of both the disruptive child as well as the other children in the classroom, the amount of time and effort that a teacher can feasibly devote to addressing a child's disruptive behavior is limited in relation to what most parents and other care providers can readily invest. This lack of time and tolerance results in frequent suspensions and other disciplinary action, academic retention, placement in special education classrooms, and the administration of

prescription medications following school-mandated psychiatric evaluations (Hetherington et al., 2006).

### **Treatments for Children with Disruptive Behavior Disorders**

There is an extensive body of literature focused on available treatments for disruptive behavior problems in children. Brestan and Eyberg (1998) suggested that age is one of the best indicators of treatment match, as parent behavioral training has been shown to be most effective in treating younger children versus interventions based in cognitive developmental theory that are frequently used to address similar difficulties in adolescents. However, a 2002 review of evidenced based treatments for childhood psychopathology suggested that parent training-based interventions can be successfully implemented with children as old as 12 years (Farmer et al., 2002). Parent training programs are primarily designed to train parents to interact more effectively and respond more appropriately to their children and have been shown to be effective when delivered in isolation or when supplemented with prescription medication (Farmer et al., 2002).

The superiority of parent-behavioral training models has been demonstrated in numerous circumstances; however, other interventions such as social skills groups, community-based interventions, problem-solving skills training, and modified cognitive-behavioral approaches have advantages when treating young children with externalizing disorders (Farmer et al., 2002; Hetherington et al., 2006; Saddock & Saddock, 2007). As a means to update the 1998 Brestan and Eyberg review, Eyberg, Nelson, and Boggs (2008) conducted a systematic review of evidence-based psychosocial treatments for children and adolescents with disruptive behavior. These authors reported that only Parent-Child Interaction Therapy (Brinkmeyer & Eyberg,

2003), and four other evidence-based treatments (Helping the Noncompliant Child: Forehand & McMahon, 1981; Parent Management Training Oregon: Patterson, Reid, Jones & Conger, 1975; Triple –P: Sanders, 1999; Incredible Years: Webster-Stratton & Reid, 2003) had been implemented early enough to treat preschool aged children with disruptive behavior problems and perhaps prevent the long term consequences of untreated symptoms.

Although these early intervention findings are promising, it is important to note that only two of these treatment programs have demonstrated generalization of the child's behavior change to the classroom following clinic-based parent training (PCIT : Bagner, Boggs & Eyberg, 2010; Triple – P: McTaggart & Sanders, 2003). The remaining interventions reviewed were supplemented with teacher training or a classroom treatment component (Baker-Henningham, 2009; Carlson, Tret, Bender & Benson, 2011; Hutchings, Lane, Owens & Gwyn, 2004; Webster-Stratton, Reid & Stoolmiller, 2008) making it difficult to evaluate the generalization of treatment effects to the classroom in the absence of school-based interventions. These results, in addition to the vast number of school-aged children with disruptive behavior disorders referred for clinical treatment warrants further evaluation of the school-based outcomes of clinic-based parent-training interventions that may be implemented as early as possible with equal efficacy across settings, particularly within the classroom.

### **Parent-Child Interaction Therapy**

Parent-Child Interaction Therapy (PCIT) is an empirically-supported treatment for young children with disruptive behavior disorders. PCIT is theoretically based on social learning and attachment theories, as well as Baumrind's developmental research associating parenting practices with child outcomes (McNeil & Wagner, 2008). In

regards to structure, PCIT is comprised of components similar to those described in Hanf's (1969) two-stage treatment model and is designed to improve the overall quality of the parent-child interaction by placing heavy emphasis on the concepts of warmth, nurturance and setting conventional boundaries.

Treatment begins with the Child-Directed Interaction (CDI) phase in which the parent is instructed to follow the child's lead while engaging in an activity of the child's choice. This portion of treatment aims to restructure the parent-child relationship by allowing the child to be reinforced by positive parental attention, consequently enabling the child to develop a warm and secure attachment to their parent. Treatment then progresses to the Parent-Directed Interaction (PDI) phase in which the parent is encouraged to engage the child in an activity of their choice. The primary goal of this phase is to assist parents in setting disciplinary boundaries while simultaneously increasing low-rate prosocial behaviors. During this phase of treatment, parents are encouraged to use simple, yet direct, commands when directing their child's behavior. They are also introduced to a structured time out procedure designed to be implemented whenever the child fails to comply to parental demands. Parents are coached by trained therapists on the implementation of newly learned skills using a one-way mirror and a "bug-in-the-ear" communication device. Treatment is terminated when skills learned during the CDI and PDI phases of treatment have been mastered and the child consistently receives parent-rated, sub-clinical score on the Eyberg Child Behavior Inventory.

Positive treatment outcomes are frequently reported for children receiving PCIT (e.g., Eyberg et al., 2001; Matos, Torres, Santiago, Jurado, & Rodriguez, 2006).

Problem behaviors have been described to be within normal limits following PCIT as clinically and statistically significant improvements in both child disruptive behavior and non-compliance have been reported (Eidenstadt, Eyberg, McNeil, Newcomb & Funderburk, 1993; Eyberg, 1995; Eyberg & Robinson, 1982; Nixon, Sweeney, Erickson, & Touyz, 2003; Schuhmann, Foote, Eyberg & Boggs, 1998; Zangwill, 1984).

Improvements in child behavior have been shown to accompany improvements in parental distress and marital function, which is likely related to the maintenance of treatment effects observed in the target child (Boggs et al., 2004; Eyberg, Edwards, Boggs & Foote, 1998; Eyberg & Robinson, 1982). It is not uncommon for PCIT treatment effects to generalize beyond the clinic setting in which treatment was initially delivered, as positive outcomes have been observed in the home (Boggs, 1990; Harwood & Eyberg, 2006; Hood & Eyberg, 2003; Matos et al., 2006; Nixon, 2001; Nixon et al., 2003; Schuhmann et al., 1998; Seib, 2009) as well as with untreated siblings (Brestan, Eyberg, Boggs & Algina, 1997; Eyberg & Robinson, 1982). Some studies have even suggested some generalization of PCIT treatment effects to the classroom (Bagner et al., 2010; Funderburk et al., 1998; McNeil et al., 1991; Seib, 2009).

The enhancement of child prosocial behaviors and over-learning of compliance to parental commands could possibly account for changes observed in the child's behavior in the classroom (McNeil et al., 1991). The similarities between the consequences and rewards (i.e., social rewards and timeouts) provided by parents in the clinic and teachers in the classroom may enable the child to adapt more readily to classroom demands upon completing treatment (McNeil et al., 1991). Results obtained from observational measures utilized in studies examining classroom generalization have

noted improvements in the target child's ability to remain appropriately engaged in ongoing classroom activities (Bagner et al., 2010; McNeil et al., 1991; Seib, 2009). Bagner and colleagues (2010) noted additional improvements in observed inappropriate classroom behaviors including, but not limited to, crying, being out of a designated area, and engaging in aggressive and distracting behaviors. Results obtained from observational measures are supported by findings from the McNeil et al. study (1991) as they reported improvements in teacher reports of oppositional classroom behavior, as well as improvements in observed externalizing behaviors. Funderburk and colleagues (1998) evaluated the maintenance of the treatment effects noted in the McNeil et al. (1991) study. Results obtained from this study suggested that children with disruptive behavior disorders maintain gains noted on teacher-report and observational measures 12 months after treatment completion.

In spite of the significance of these findings, further investigation into generalization to the classroom of PCIT outcomes is warranted. Of the four studies previously reviewed, only one included children with a primary diagnosis of ADHD (Funderburk et al., 1998). Unfortunately, this study included only one ADHD-only and one ODD-only child in a treatment group comprised of 12 participants making it difficult to examine the effect that PCIT had on isolated ADHD and ODD behaviors in the classroom. In addition, Bagner and colleagues (2010) failed to incorporate teacher reports of classroom behavior into their analysis. Although observational measures can be of value when assessing the impact of potential teacher bias, the observers used in this study were only able to assess the child's behavior during the limited times of the observation sessions. Supplementing such data with teacher-reports may provide

investigators with an account of externalizing symptoms from someone better acquainted with the child and their typical behavioral patterns.

Discrepancies between participant characteristics and study design in addition to the utilization of different modes of assessment across studies make it difficult to compare findings and to determine what diagnostic subgroups might be expected to demonstrate behavioral improvements in school. The current investigation examines the generalization of PCIT treatment effects to the classroom in a larger sample of preschool aged children diagnosed with ODD-only, ADHD-only, and ADHD + ODD using both teacher-report and observational measures. Specific aims and corresponding hypothesis are as follows:

**Aim 1:** The first aim of this study was to examine the generalization of PCIT treatment effects to the classroom in a sample of children formally diagnosed with a disruptive behavior disorder.

- Results obtained from previous studies lead us to expect decreases in the percentage of off-task and inappropriate behaviors as measured using direct observation methodology.
- We also expected to see decreases in the intensity and number of teacher perceived problematic behaviors, as well as decreases in the frequency of teacher reported ADHD symptoms.

**Aim 2:** The second aim of the study was to determine if the generalization of treatment effects to the classroom varied as a function of the child's diagnosis.

- All three diagnostic groups (ADHD-only, ODD-only, and comorbid ODD and ADHD) were expected to show improvements in the intensity and number of perceived problematic behaviors as reported by their teachers.
- Children diagnosed with ODD-only or ADHD+ODD were expected to display decreases in the percentage of observed inappropriate and off task behaviors.

- Children diagnosed with ADHD-only or ADHD+ODD were expected to display teacher-reported decreases in the number of ADHD Predominantly Inattentive and Predominantly Hyperactive-Impulsive Type symptoms.
- A decrease in the percentage of observed noncompliant behaviors was expected to be observed in children diagnosed with ODD-only.

## CHAPTER 2 METHODS

### **Participants**

Participants were 67 children who had corresponding pre- and posttreatment data on at least one of the measures of classroom behavior used in the current study. These participants were recruited from two larger studies examining the efficacy of PCIT in preschoolers diagnosed with ODD and ADHD, respectively. Children were between the ages of 3 and 6 years old and were enrolled in school or daycare when recruited for participation. The following inclusion criteria was required for enrollment in the larger studies: (a) a standard score of 70 or higher on the Peabody Picture Vocabulary Test-Third Edition (PPVT-III; Dunn & Dunn, 1997) and the Wonderlic Personnel Test (WPT; Dodrill, 1981) had to be obtained by children and parents, respectively, to meet cognitive screening requirements (b) absence of a major sensory or mental impairment (i.e. an autism spectrum or pervasive developmental disorder) in the child's psychological history, and (c) a child diagnosis of ADHD and/or ODD according to the Diagnostic Interviewing Schedule for Children (NIMH DISC-IV-P; Shaffer Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) and designated subscales of the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000, 2001). It should be noted that a diagnosis of ADHD was corroborated by both parent and teacher reports obtained during prescreening procedures. In regards to medication status, children enrolled in the larger study examining the effects of PCIT on ODD symptomology were allowed to remain on a stable dose of medication taken for behavioral or attentional difficulties as long as the medication regimen was initiated at least one month prior to beginning treatment. Families for the larger study examining PCIT and ADHD were excluded from

participation if the child was taking medication for ADHD symptoms at the time of screening. Participants were referred for treatment by pediatricians, psychologists, and other health care professionals. Local schools, churches, and community organizations, such as Head Start, were also sources of participant recruitment.

Inclusion in the current study required that participants complete treatment and have all pre- and posttreatment data available on at least one measure of classroom behavior. Children in the present sample were predominantly male (70.1%) and had a mean age of 4.45 years ( $SD = .84$ ). The current sample was primarily Caucasian (77.6%), as the remaining participants (22.4%) were self-identified as non-Caucasian minorities. In regards to diagnostic distribution, 21 (31.3%) of participants received a sole diagnosis of ODD, 19 (28.4%) were diagnosed with ADHD-only, and the remaining 27 (40.3%) received a comorbid diagnosis of ODD and ADHD (Table 2-1).

## **Measures**

### **Prescreening Measures**

**Child Behavior Checklist.** This a measure comprised of two forms administered to children in separate age ranges (CBCL; Achenbach & Rescorla, 2000, 2001). The first is a parent-rated, 120-item form used to assess the frequency of behavioral and emotional problems in children ages 1.5 to 5 years old (CBCL/1.5-5; Achenbach & Rescorla, 2000). The second form measures similar behaviors in children ages 6-18 years of age (CBCL/6-18; Achenbach & Rescorla, 2001). Both forms consist of DSM-IV oriented scales and syndrome scales, the latter of which also has associated global scales. Items on the CBCL are rated on a 3-point Likert scale ranging from Not True (0) to Very True (1) or Often (2). Test-retest reliability is adequate as demonstrated by values ranging from .74 (DSM-oriented Attention-Deficit/Hyperactivity Problems scale -

ages 1.5-5) to .94 (Global Externalizing Scale – ages 6-18). Chronbach's alpha internal consistency coefficients are adequate as well ranging from .72 (Anxiety Problems) to .91 (Conduct Problems) on the form used to assess children ages 6-18 years old. The form for children ages 1.5-5 years has a Chronbach's alpha of .96 for the Externalizing scale. DSM-IV oriented scales were used to help determine participant diagnosis while the Externalizing scale was utilized as a measure of treatment outcome.

**Diagnostic Interview Schedule for Children.** is a structured diagnostic interview administered to parents of children as young as 4 years of age (NIMH DISC IV-P; Shaffer et al., 2000). The interview consist five separate modules designed to assess ADHD, ODD, Conduct Disorder, Separation Anxiety Disorder, and Major Depressive Disorder, respectively. These modules can be administered together or in isolation and have produced one week test-retest reliability coefficients ranging from .54 (ODD and Conduct Disorder) to .79 (ADHD) in a sample of parents with children ages 9-17 years old (Shaffer et al., 2000).

**Peabody Picture Vocabulary Test- Third Edition.** is a picture-based measure of receptive language in children ages 2 years, 6 months old and older (PPVT-III; Dunn & Dunn, 1997). The PPVT-III is a well standardized measure and has been observed to be highly correlated with Full Scale IQ scores obtained on the third edition of the Weschler Intelligence Scale for Children. Split half reliability and test-retest reliability coefficients for this measure range from .86 to .97 and .91 to .94, respectively.

**Wonderlic Personnel Test.** is a 50-item test designed to screen the intellectual abilities of adults (WPT; Dodrill, 1981). The WPT was highly correlated with Full Scale IQ scores obtained on the Weschler Adult Intelligence Scale (.93) in a sample of 120

normal adults. This correlation was not significantly affected by differences in age, sex, education, level of intelligence, or emotional adjustment. This scale was used a screening measure for participation in the current study.

### **Outcome Measures**

**Conner's Teacher Rating Scale – Revised: Long Version.** is a 59-item teacher rating scale that measures ADHD behaviors and the symptomology of common comorbid disorders including, but not limited to, ODD. Administration of the CTRS-R:L is appropriate for children ages 3 to 17 years old (CTRS-R:L; Conners, Sitarenios, Parker, & Epstein, 1998). Items are ranked on a 4-point Likert scale ranging from Not True At All (0) to Very Much True (3). The CTRS-R:L is comprised of nine subscales, two of which were utilized in the current study (DSM-IV-TR ADHD Predominantly Inattentive Type and DSM-IV-TR ADHD Predominantly Hyperactive-Impulsive Type). Convergent and discriminant validity for the subscales used in this study have been demonstrated by Conners and colleagues (Conners et al., 1998). Test-retest reliability coefficients for the CTRS: R-L range from .60 to .90. The CTRS: R-L has also demonstrated adequate internal consistency with coefficients ranging from .75 to .90.

**Revised Edition of the School Observation Coding System.** is an interval coding system used to record externalizing classroom behaviors in preschool and elementary school aged children (REDSOCS; Jacobs, Boggs, Eyberg, Edwards, Durning, & Querido, 2000). Observations are conducted on three separate occasions during structured class times. Each of the three observation sessions are divided into ten second intervals with three minute breaks between every six intervals resulting in a total of ten minutes, or sixty intervals, of coding time. During these observations, three aspects of behavior are evaluated and coded: (a) the appropriateness of a child's

behavior (Appropriate vs. Inappropriate), (b) compliance to teacher commands (Comply vs. Non-comply vs. No Command Given), and (c) the child's ability to remain engaged in the ongoing activity (On-Task vs. Off-Task vs. No Task). These categories have shown significant correlations with the CTRS-R:L and successfully discriminate children referred for treatment of school problems from their randomly selected classmates (Jacobs et al., 2000). For the purpose of this study, extra precaution was taken to ensure that classroom observers had no previous contact with the participant to prevent the possible occurrence of atypical behavior in the event that the child recognized the observer. It was also of importance to ensure that the observer remained blind to the participant's diagnosis to prevent potential bias when coding classroom behavior. Observations were conducted by undergraduate research assistants who on at least one of the three visits were accompanied by a graduate research assistant for coding inter-rater reliability. Cohen's kappa inter-rater reliability coefficients for this sample ranged from .63 (Comply) to .88 (No Task).

**Sutter-Eyberg Student Behavior Inventory- Revised (SESBI-R;** Eyberg & Pincus, 1999) is a 38-item teacher rating scale of school-oriented externalizing behavior in children. The SESBI-R can be appropriately administered to children ages 2 through 16 and consists of two subscales. The Intensity scale is used to evaluate the frequency of disruptive behaviors in the classroom on a 7-point Likert scale ranging from Never (1) to Always (7). Internal consistency for the Intensity scale is .98 and test-retest reliability, as established with a normative pre-school sample, was .87, (Querido & Eyberg, 2003). The second subscale of the SESBI-R is the Problem Scale. The Problem scale is comprised of closed-ended questions used to assess teacher tolerance and the degree

to which the child's behavior is perceived to be problematic in the classroom. Independent scores are calculated for each of these subscales. In addition to these subscales, factor analysis conducted by Eyberg et al., (1998) revealed an Oppositional Behavior factor and an Attention Problems factor, enabling teachers to assess concurrent ADHD symptomology as well. Separate scores are not calculated for these factors; however, the Oppositional Behavior factor has been shown to significantly predict school conduct referrals and suspensions while the Attention Problems factor significantly predicts future referrals for school-oriented learning problems (Lea, 2001). Only the Intensity and Problem scales were included for analysis in the current investigation.

## **Procedures**

### **Pre-Screening and Treatment Procedures**

Upon completing the informed consent process, families recruited for participation took part in a pre-screening assessment consisting of a clinical interview and the completion of a demographic questionnaire. Parents were then administered the Wonderlic and DISC-IV-P and were asked to complete several measures of child behavior including the ECBI and the CBCL. Children participating in the study were administered the PPVT-III as a means to further evaluate study eligibility. Prior to initiating treatment, teachers of study participants were mailed a series of measures including the CTRS: R-L and the SESBI-R. Data obtained from these measures were used as baseline measurements of externalizing behaviors in the classroom.

Families were delivered treatment via weekly therapy sessions conducted by two advanced graduate students. Therapists were trained on PCIT protocol and adhered strictly to the official PCIT treatment manual when delivering treatment (Eyberg and

Child Study Laboratory, 1999). Participants recruited from the larger study examining the effects of PCIT on ADHD were randomly assigned to individual or group treatment, the latter of which typically involved the participation of two to three families. On the other hand, all children recruited from the study examining the maintenance of PCIT received individualized treatment.

### **Assessment of Classroom Behavior**

Teachers of the children enrolled in the current study were administered a series of measures regarding the child's behavior and level of functioning in the classroom at pre- and posttreatment. These measures included the CTRS-R:L and the SESBI-R. Upon receiving parental consent, teacher consent, and permission from school administration, a series of REDSOCS observations were conducted. These observations were conducted prior to initiating and upon the completion of treatment and occurred during times in which the class was expected to engage in structured activities. The observations occurred on three separate days at both pre and posttreatment. The teacher report measures were physically collected at the conclusion of the pre and post treatment observation series or were mailed back to the Child Study Lab at the University of Florida. Teachers were paid \$25.00 for their participation.

Table 2-1. Age, Sex, and Race of Study Participants

		Study A (n = 21)	Study B (n = 46)	TOTAL (N = 67)
Age *		M = 3.91 SD = .831	M = 4.71 SD = .727	M = 4.45 SD = .840
Sex	Male	61.9%	73.9%	70.1%
	Female	38.1%	26.1%	29.9%
Race	Caucasian	90.5%	71.7%	77.6%
	Minority	9.5%	28.3%	22.4%

\*p < .001

## CHAPTER 3 RESULTS

Descriptive analyses and hypotheses testing were conducted using IBM Statistical Package for Social Sciences<sup>®</sup> (SPSS – PASW 18.0), whereas all power analyses were conducted using G-Power 3 software<sup>®</sup> (Erdfelder, Faul & Buchner, 1996). All variables evaluated in this study were assessed for normality. Variables were considered to be normally distributed if the absolute value of skewness and kurtosis did not exceed 1.5 and both the Kolmogorov-Smirnov and Shapiro-Wilk test of normality were significant beyond the .05 level. Visual depictions of variable distribution such as histograms with normal distribution curves, Q-Q scatter plots, and box-and-whisker plots were also used to supplement results obtained from the efforts previously mentioned. According to these criteria, all variables were judged to be normally distributed with the exception of variables representing the percentage of observed non-compliance at pre- and post-treatment (Pre REDSOCS Non-Comply and Post REDSOCS Non-Comply). Because of the restricted range in raw non-compliance scores, no transformations were implemented as they would have further distorted the data and may have produced misleading findings.

### **Descriptive Data**

Preliminary analyses were conducted to assess for significant differences in gender, ethnicity, and age between children recruited from the two larger studies examining ODD and ADHD, respectively. Goodness of fit chi square analyses were performed to detect differences between the gender and ethnicity of children recruited from the two studies. Results from those analyses revealed no significant differences between the two groups; however, results obtained from an independent samples t-test

indicated that children recruited from the larger study evaluating ODD were significantly younger than children recruited from the ADHD study,  $t(64) = -3.817, p = .001$ . An alpha criterion level of .05 was used to assess significance in the previous analyses. See Table 2-1 for demographic data.

### **Aim 1: Generalization for the Entire Sample**

Paired-samples t-tests were performed to assess generalization for the entire sample on all teacher-report and observational measures of classroom behavior. Results revealed a significant decrease in the percentage of observed inappropriate behaviors in the classroom following treatment across all children,  $t(46) = 3.669, p = .001$ . As described in the REDSOCS manual (Ginn, Seib, Boggs & Eyberg, 2009), inappropriate behaviors were defined as a composite of whining, crying, yelling, cheating, demanding attention, negativism, self-stimulation, distracting behavior, talking out of turn, destructive or aggressive behavior, and being out of the assigned area. No additional evidence of treatment generalization was revealed in analyses conducted on the entire sample (Table 3-1 and Table 3-2).

### **Aim 2: Differential Generalization across Diagnostic Groups**

Prior to performing the primary analyses, between-subject analyses of variances (ANOVA) were performed to assess for any differences that may have existed between the three diagnostic groups at baseline. Bonferroni post hoc analyses were performed to supplement these findings by specifying which diagnostic groups differed significantly from one another. At baseline, teachers of children with a single diagnosis of ODD endorsed fewer ADHD Predominantly Inattentive Type symptoms than did teachers of children with ADHD-only,  $F(2, 38) = 5.206, p = .01$  on the CTRS. ODD-only children were also rated as displaying significantly fewer ADHD Hyperactive-Impulsive Type

Symptoms by their teachers on the CTRS than both children with a single or comorbid diagnosis of ADHD at baseline,  $F(2, 38) = 5.003, p = .012$ . With regards to the frequency and intensity of perceived problematic behaviors in the classroom, teachers rated ODD-only children as being significantly less problematic,  $F(2, 37) = 6.209, p = .005$ , and engaging in significantly fewer disruptive behaviors,  $F(2, 37) = 9.777, p = .001$ , than children with a single or comorbid diagnosis of ADHD on the SESBI-R. Finally, pre-treatment REDSOCS data revealed a significant difference between the ODD-only children and those with a single or comorbid diagnosis of ADHD such that the ODD-only children were observed to engage in a significantly higher percentage of non-compliant behaviors,  $F(2, 55) = 21.366, p = .001$ .

To examine differential generalization across diagnostic groups, separate 3 (ODD-only, ADHD-only, comorbid ODD and ADHD) x 2 (pre-treatment, post-treatment) analyses of variance were conducted for each of the REDSOCS behavior coding categories (Inappropriate, Non-Comply, and Off-Task), the SESBI Intensity scale, SESBI Problem scale, CTRS Inattentive Type scale, and CTRS Hyperactivity/Impulsive Type scale. As a means to correct for preexisting differences between diagnostic groups, analyses of covariance (ANCOVA) were conducted in place of ANOVAs for variables that produced significant pretreatment differences during the preliminary analyses. There were no significant group x time interactions for any measure, suggesting the absence of differential generalization between diagnostic groups. However, a significant group main effect was noted for the CTRS such that children with a diagnosis of ODD-only were overall rated as displaying ADHD Predominantly Hyperactive-Impulsive Type symptoms less frequently than children diagnosed with

ADHD-only,  $F(2, 27) = 4.064$ ,  $p = .029$ . A significant effect of time was also noted in the percentage of observed inappropriate behaviors on the REDSOCS,  $F(1, 44) = 12.063$ ,  $p = .001$ , corroborating results obtained from the paired samples t-tests (Table 3-3 and Table 3-4).

### **Power Analysis**

Analyses were conducted in G Power<sup>®</sup> to determine if the sample size was sufficient to detect a significant effect with at least 80% power. With regards to assessing generalization for the entire sample, the total sample ( $N = 67$ ) was not large enough to detect significance with 80% power. Results obtained from power analyses conducted on the sample sizes of the three diagnostic groups revealed similar results, as those samples were also too small in addition to being unequal in size. Further review of effect sizes and sample means suggest that increasing sample size alone may not produce significant results for most measures, as the non-significant changes from pre- to posttreatment were often minimal.

Table 3-1. Outcome Measures (Pre- to Posttreatment Changes in Observed Classroom Behaviors for the Entire Sample)

	Pre (n = 47)		Post (n = 47)		t	r	p
	M	SD	M	SD			
Inappropriate	28.26	16.88	19.53	13.29	3.669	.276	.001*
Non-Comply	6.67	10.89	5.78	10.64	1.017	.041	.314
Off-Task	26.78	18.13	23.07	12.07	1.316	.120	.180

\* p < .001

Table 3-2. Outcome Measures (Pre- to Posttreatment Changes in Teacher-Reported Classroom Behaviors for the Entire Sample)

	Pre			Post		t	r	p
	n	M	SD	M	SD			
CTRS Inattentive	32	67.69	13.99	64.59	13.06	1.728	.114	.094
CTRS Hyperactive-Impulsive	32	68.22	13.37	66.69	13.07	.616	.058	.542
SESBI Intensity	36	141.56	48.78	149.78	47.69	-1.171	-.085	.250
SESBI Problem	36	18.14	10.74	18.50	10.82	1.316	-.017	.180

Table 3-3. Outcome Measures (Pre- to Posttreatment Changes in Observed Classroom Behaviors for ODD-only, ADHD-only, and Comorbid ODD + ADHD Participants, Respectively)

	Pre						Post						F	$\eta^2$	p
	ODD (N=19)		ADHD (N=16)		ADHD+ODD (N=19)		ODD (N=19)		ADHD (N=16)		ADHD+ODD (N=19)				
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Inappropriate*	22.25	11.39	22.25	11.39	31.68	18.99	14.26	9.12	14.26	9.12	24.04	17.38	.114	.005	.892
Non-Comply	26.24	22.11	26.24	22.11	2.74	2.50	16.95	16.56	16.95	16.56	2.31	2.45	.168	.008	.846
Off-Task	24.58	15.00	24.58	15.00	28.98	20.52	19.78	8.08	19.78	8.08	24.04	17.38	.228	.010	.797

\*p < .001

Table 3-4. Outcome Measures (Pre- to Posttreatment Changes in Teacher-Reported Classroom Behaviors for ODD-only, ADHD-only, and Comorbid ODD + ADHD Participants, Respectively)

	Pre									Post						F	$\eta^2$	p
	ODD			ADHD			ADHD+ODD			ODD		ADHD		ADHD+ODD				
	n	M	SD	n	M	SD	n	M	SD	M	SD	M	SD	M	SD			
CTRS Inattentive	9	58.89	13.75	9	73.56	12.32	13	70.38	11.77	59.00	12.56	68.78	16.09	65.85	11.12	.039	.003	.962
CTRS Hyperactive-Impulsive*	9	60.32	15.11	9	73.56	12.78	13	71.92	6.26	55.11	12.01	74.67	12.67	68.15	8.54	.773	.231	.387
SESBI Intensity	9	7.00	8.21	12	21.86	8.09	14	17.83	11.06	12.00	13.40	20.08	7.25	20.14	11.54	.097	.006	.908
SESBI Problem	8	106.21	51.43	13	172.33	35.47	14	148.21	31.85	112.89	59.39	171.00	22.92	151.86	44.36	.084	.005	.920

\*p < .05

## CHAPTER 4 DISCUSSION

The present study examined the generalization of PCIT treatment effects to the classroom in a sample of children diagnosed with ODD and/or ADHD. Although it was encouraging to see some posttreatment means trending in the desired direction, overall teachers reported no significant changes in externalizing behavior problems in the classroom. Similar results were obtained from an observational measure of classroom behavior; however, observational data did suggest significant improvements in the percentage of inappropriate classroom behaviors observed across the entire group of treated children. These behaviors included being aggressive and destructive, talking out of turn, being out of the designated area, and other behaviors that were considered distracting and not conducive to an enriched learning experience in the classroom. Overall, these results suggest that in this sample, PCIT alone may have had only minimal effects on the presentation of disruptive behaviors in the classroom in children formally diagnosed with ADHD and/or ODD.

We first hypothesized that teachers would report significant improvements in the intensity and number of perceived problematic behaviors as reported on the SESBI-R. We also expected teachers to endorse fewer ADHD symptoms in children who completed treatment. Neither of these hypotheses were supported, as teachers actually reported no changes in either the intensity or number of teacher perceived problematic behaviors in the classroom. These findings are contradictory to previous findings suggesting significant decreases in teacher reports of disruptive, oppositional behavior in the classroom following PCIT (McNeil et al., 1991). This may be attributed to differences in the diagnoses of children in the two studies. The present study included

more children with ADHD-only and comorbid ADHD than in the sample studied by McNeil et al. (1991). In fact, the latter study included no children diagnosed only with ADHD. Findings from the current study could be an indication that clinic-based PCIT may not be sufficient to significantly influence the classroom behavior of children with ADHD symptoms. Further research is needed to clarify the discrepancy between the findings of these two studies and pinpoint why generalization may not have been evident in the current sample.

Observers unknown to the child and blind to the child's diagnosis did report decreases in the percentage of inappropriate classroom behaviors across the entire group of treated children. However, direct observation measures failed to detect significant decreases in the percentage of non-compliant and off-task behaviors in the classroom for these same children. The lack of generalization of treatment effects to the percentage of observed non-compliant behaviors could possibly be explained by the low frequency of commands given by teachers during our standard observation sessions. The opportunity to comply to teacher commands could vary considerably depending upon the task at hand or the individual characteristics of the teacher. Children were generally presented with only one to four opportunities to comply to teacher commands during the typical ten minute observation session, consequently making changes in the rate of compliance to commands difficult to detect.

The absence of a significant decrease in the percentage of observed off-task behaviors not only failed to support our hypothesis regarding observed classroom behavior for the entire sample, but was also different from previous findings of generalized effects to the classroom (Bagner et al., 2012; Seib, 2009). Bagner and

colleagues (2010) reported results similar to Seib (2009) with regard to finding significant decreases in off task behavior in their samples. Just as with teacher-reports, the discrepancy between findings regarding observed off task behavior may be accounted for by the exclusion of ADHD-only participants in those studies. In addition, in the previous studies, children with ADHD symptoms may have been receiving pharmacological interventions that could improve their ability to respond to behavioral treatment. This may suggest that PCIT in isolation may not be as effective at influencing classroom off task behavior when the more severe attentional impairments associated with unmedicated ADHD are present.

Aim 2 was focused on assessing differential generalization across diagnostic groups using both teacher report and observational measures of classroom behavior. We hypothesized that teachers would report decreases in the intensity and number of perceived problematic behaviors for all three diagnostic groups. Teachers were also expected to report decreases in the presentation of ADHD symptoms in children with a single or comorbid diagnosis of ADHD following PCIT. Neither of these hypotheses were supported, as none of the reported decreases were large enough to reach significance. Although these findings differ from those obtained by McNeil and colleagues (1991) and those obtained by Seib (2009) on an observational measure of off task behaviors, they are similar to findings obtained from teacher-reports in the Seib (2009) study.

With regard to observed classroom behavior, we expected to see decreases in the percentage of off-task and inappropriate behaviors in children with a single or comorbid diagnosis of ODD, as well as a decrease in the percentage of non-compliant behaviors

observed in children diagnosed with ODD-only. Our study provided evidence for a decrease in the percentage of observed inappropriate behaviors in children with a single or comorbid diagnosis of ODD; however, it failed to support our hypotheses regarding the percentage of non-compliant behaviors observed in children diagnosed with ODD-only. As previously mentioned, the lack of generalization of treatment effects to the percentage of observed non-compliant behaviors could possibly be explained by the low frequency of commands given and the limited opportunity for children to comply to commands in the classroom. The lack of change in the percentage of observed off task behaviors is different from the outcome of previous PCIT studies, and as discussed above, may be explained by the exclusion of ADHD participants receiving a concurrent pharmacological intervention in the present sample.

Despite failure to find differential generalization of PCIT treatment effects across diagnostic groups, it was interesting to note that overall, teachers' perceptions of students and their behavior in the classroom varied as a function of the child's diagnosis. At pretreatment, teachers of children with a single diagnosis of ODD endorsed fewer ADHD Predominantly Inattentive Type symptoms than did teachers of children with ADHD-only. ODD-only children were also rated as displaying significantly fewer ADHD Hyperactive-Impulsive Type Symptoms by their teachers than both children with a single or comorbid diagnosis of ADHD. With regards to the frequency and intensity of perceived problematic behaviors in the classroom, teachers rated ODD-only children as being significantly less problematic and engaging in significantly fewer disruptive behaviors than children with a single or comorbid diagnosis of ADHD. Finally, pretreatment REDSOCS data revealed a significant difference between the ODD-only

children and those with a single or comorbid diagnosis of ADHD such that the ODD-only children were observed to engage in a significantly higher percentage of non-compliant behaviors. Although the primary focus of Aim 2 was to determine if pre- to posttreatment changes varied as a function of the child's diagnosis, it would be interesting to see if differences in classroom presentation could be used to tailor treatment by selecting teacher-reported problem behaviors specific to the target child and their diagnosis to be addressed during treatment. More specifically, coaching parents to ignore problematic behaviors similar to those exhibited in the classroom during pretreatment observations and to praise positive opposites of these behaviors in the clinic and at home may help facilitate generalization of change to the classroom.

In light of efforts to enhance teacher-reports by supplementing them with observational reports of classroom behavior, it is important to recognize that teachers' awareness of the child's treatment status could potentially influence ratings of classroom behavior. Unrealistic expectations of treatment outcome and stigmatizing perceptions of the target child are just two examples of how teacher bias could adversely affect their perceptions of classroom behavior. It is also not uncommon for participants to have different teachers by the time they complete treatment. Consequently, significant improvements that would have been clearly noticeable to a teacher who has spent a substantial amount of time with the target child may be more subtle when reported by a teacher who may not know the child as well.

### **Limitations**

It is important that the limitations of this study be considered when interpreting the findings. Because this study was a secondary data analysis, it was impossible to compare our findings to those of a randomized no treatment control group. Thus we are

unable to determine if the improvements in directly observed inappropriate behavior were due to PCIT or to the passage of time alone. It is also important to acknowledge differences between the two larger studies from which participants were recruited. The study examining the efficacy of PCIT with children with ODD allowed participants to maintain a stable medication regimen. On the other hand, children taking prescription medication for externalizing symptoms were excluded from participation in the study examining PCIT and ADHD. Excluding these participants made it difficult to assess the additive benefits that prescription medications may have had on the effects of PCIT on treating isolated ADHD symptoms.

With regard to the design of the present study, the small and unequal sizes of the diagnostic groups may have hindered our ability to detect possible generalization of treatment effects. These limitations could also explain our failure to replicate findings obtained from previous studies. Obtaining larger, equally distributed samples would allow more power to detect differences between groups and produce results that may be more widely generalizable.

### **Future Directions**

Further investigation is essential to determine strategies that may facilitate the generalization of PCIT treatment effects to the classroom. Despite several similarities, ADHD and ODD have distinct characteristics and present differently in the school setting. This observation was further supported by our finding regarding differences in teachers' perceptions of classroom behavior pretreatment. Because of this, it has been proposed to treat ADHD and ODD as separate entities, with prescription medication being the gold standard treatment for ADHD and behavioral therapy being optimal for children diagnosed with ODD (Saddock & Saddock, 2007; Hetherington et al., 2006)

Additional research is needed to determine if prescription medication may facilitate generalized change to the classroom for children whose behaviors are too severe to be treated with PCIT alone.

It would also be interesting to examine how the implementation of a supplementary, yet compatible school-based intervention, such as Teacher-Child Interaction Therapy (Macintosh, 2010) or The Level System (McNeil & Filcheck, 2004), would influence the generalization of treatment effects to the classroom. Training both parents and teachers on the underlying principles of PCIT could possibly promote consistency in the way in which parents and teachers deliver rewards and punishments in the home and classroom settings. Increased consistency among parents and teachers may make it easier for the child to adhere to rules and regulations in the classroom, because the consequences associated with deviating from classroom limits will be similar to those implemented in the home.

In the event that a complimentary school-based intervention is unavailable, pretreatment teacher-reports and direct observation data collected during classroom observations could be used to tailor treatment in a manner that would address the behaviors that are perceived to be most problematic in the classroom setting. Future research should investigate the most effective and efficient ways to tailor clinic-based PCIT for maximum impact in the child's school environment.

## LIST OF REFERENCES

- Achenbach, T.M. (1991). Manual for the child behavior checklist/4-18, YSR, ad TRF profiles. Burlington, VT: University of Vermont Department of Psychiatry.
- Achenbach, T.M., & Rescorla, L.A. (2000). Manual for ASEBA Preschool Forms & Profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Achenbach, T.M., & Rescorla, L.A. (2001). Manual for ASEBA School-Age Forms & Profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- American Psychological Association (2000). Diagnostic and statistical manual of mental disorders-IV-TR. Washington, DC: Author.
- Baker-Henningham, H. H., Walker, S. S., Powell, C. C., & Gardner, J. (2009). A pilot study of the Incredible Years Teacher Training programme and a curriculum unit on social and emotional skills in community pre-schools in Jamaica. *Child: Care, Health, and Development*, 35(5), 624-631.
- Boggs, S.R. (1990). Generalization of treatment to the home setting: Direct observation analysis. Unpublished manuscript, University of Florida, Gainesville.
- Boggs, S. R., Eyberg, S. M., Edwards, D. L., Rayfield, A., Jacobs, J., Bagner, D., & Hood, K. K. (2004). Outcomes of Parent-Child Interaction Therapy: A Comparison of Treatment Completers and Study Dropouts One to Three Years Later. *Child & Family Behavior Therapy*, 26(4), 1-22.
- Brestan, E., Eyberg, S.M., Boggs, S., & Algina, J. (1997). Parent-child interaction therapy: Parents' perceptions of untreated siblings. *Child and Family Behavior Therapy*, 19, 13-28.
- Brinkmeyer, M. Y., & Eyberg, S. M. (2003). Parent-child interaction therapy for oppositional children. In A. E. Kazdin, J. R. Weisz, A. E. Kazdin, J. R. Weisz (Eds.) , *Evidence-based psychotherapies for children and adolescents* (pp. 204-223). New York, NY US: Guilford Press.
- Burns, L.G. & Patterson, D.R. (2001). Normative data on the Eyberg Child Behavior Inventory and Sutter-Eyberg Student Behavior Inventory: Parent and teacher rating scales of disruptive behavior problems in children and adolescents. *Child & Family Behavior Therapy*, 23(1), 15-28.
- Carlson, J.S., Tired, H.B., Bender, S.L., & Benson, L. (2011). The influence of group training in the Incredible Years Teacher Classroom Management Program on preschool teachers' classroom management strategies. *Journal Of Applied School Psychology*, 27(2), 134-154.

- Conners, C.K., Sitarenios, G., Parker, J.D., & Epstein, J.N. (1998). Revision and restandardization of the Conners Teacher Rating Scale (CTRS-R): Factor structure, reliability, and criterion validity. *Journal of Abnormal Child Psychology*, 26, 279-291.
- Dodrill, C. B. (1981). An economical method for the evaluation of general intelligence in adults. *Journal of Consulting and Clinical Psychology*, 56, 145-147.
- Dunn, L. M., & Dunn, L. M. (1997). Examiner's manual for the PPVT-3: Peabody Picture Vocabulary Test-Third Edition. Circle Pines, MN: American Guidance Service.
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers*, 28, 1-11.
- Eyberg, S.M. (1995). Introduction: Parent-child interaction therapy. In T.L. Hembree-Kigin & C.B. McNeil. *Parent-Child Interaction Therapy*. New York: Plenum Press.
- Eyberg, S.M. (1988). Parent-child interaction therapy: Integration of traditional and behavioral concerns. *Child & Family Behavior Therapy*, 10(1), 33-46.
- Eyberg, S. M., Edwards, D., Boggs, S. R., & Foote, R. (1998). Maintaining the treatment effects of parental training: The role of booster sessions and other maintenance strategies. *Clinical Psychology: Science and Practice*, 5(4), 544-554.
- Eyberg, S. M., Funderburk, B. W., Hembree-Kigin, T. L., McNeil, C. B., Querido, J.G., & Hood, K. K. (2001). Parent-child interaction therapy with behavior problem children: One and two year maintenance of treatment effects in the family. *Child & Family Behavior Therapy*, 23, 1-20.
- Eyberg, S.M., & Members of the Child Study Laboratory. (1999). *Parent-child interaction Therapy: Integrity checklists and session materials*. Gainesville, FL: University of Florida.
- Eyberg, S.M., & Pincus, D. (1999). *Eyberg child behavior inventory and Sutter-Eyberg student behavior inventory: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Eyberg, S.M., & Robinson, E.A. (1982). Parent-child interaction training: Effects on family functioning. *Journal of Clinical Child Psychology*, 11, 130-137.
- Farmer, E.M.Z., Compton, S.N., Burns, J.B., & Robertson, E. (2002). Review of the evidence base for treatment of childhood psychopathology: Externalizing disorders. *Journal of Counseling and Clinical Psychology*, 70(6), 1267-1302.
- Filcheck, H.A., McNeil, C.B., Greco, L.A., & Bernard, R.S. (2004). Using whole class token economy and coaching of teacher skills in a preschool classroom to manage disruptive behavior. *Psychology in the Schools*, 41(3), 351-361.

- Forehand, R., & McMahon, R.J. (1981). *Helping the noncompliant child: A clinician's Guide to parent training*. New York: Guilford.
- Gadow, K. D. & Nolan, E. E. (2002). Differences between preschool children with ODD, ADHD, and ODD+ ADHD symptoms. *Journal of Child Psychology and Psychiatry*, 43 (2), 191-201.
- Ginn, N.C. (2010). *Social competence deficits in preschoolers with ADHD and ODD*. Unpublished master's thesis, University of Florida, Gainesville.
- Ginn, N.C., Seib, A.M., Boggs, S.R., & Eyberg, S.M. (2009). *Manual for the Revised Edition of the School Observation Coding System (REDSOCS)*. Gainesville, FL: University of Florida.
- Hanf, C. (1969, April). A two-stage program for modifying maternal controlling during mother-child (M-C) interaction. Paper presented at the meeting of the Western Psychological Association, Vancouver, BC.
- Hardwood, M.D., & Eyberg, S.M. (2006). Child-directed interaction: Prediction of change in impaired mother-child functioning. *Abnormal Child Psychology*, 34(3), 335-347.
- Hetherington, E.M., Parke, R.D., Gauvain, M., & Locke, V.O. (2006). *Child Psychology: A contemporary viewpoint* (6th ed.). New York, NY: McGraw-Hill.
- Hood, K.K., & Eyberg, S.M. (2003). Outcomes of parent-child interaction therapy: Mothers' reports of maintenance three to six years after treatment. *Clinical Child and Adolescent Psychology*, 32(3), 419-429.
- Hutchings, J., Lane, E., Owen, R., & Gwyn, R. (2004). The introduction of the Webster-Stratton Incredible Years Classroom Dinosaur School Programme in Gwynedd, North Wales: A pilot study. *Educational and Child Psychology*, 21(4), 4-15.
- Jacobs, J.R., Boggs, S.R., Eyberg, S.M., Edwards, D.L., Durning, P., Querido, J.G., et al. (2000). Psychometric properties and reference point data for the Revised Edition of the School Observation Coding System. *Behavior Therapy*, 31, 695-712.
- Leblanc, N., Boivin, M., Dionne, G., Brendgen, M., Vitaro, F., Tremblay, R. E. & Pe'russe, D. (2008). The development of hyperactive-impulsive behaviors during the preschool years: The predictive validity of parental assessments. *Journal of Abnormal Child Psychology*, 36, 977-987.
- Matos, M., Torres, R., Santiago, R., Jurado, M., & Rodriguez, I. (2006). Adaptation of parent-child interaction therapy for Puerto Rican families: A preliminary study. *Family Processes*, 45, 205-222.
- McNeil, C.B., Eyberg, S. M., Eisenstadt, T.H., Newcomb, K, et al (1991). Parent-child interaction therapy with behavior problem children: Generalization of treatment effects to the school setting. *Journal of Clinical Child Psychology*, 20(2), 140-151.

- McNeil, C.B., & Filcheck, H.A. (2004). *The Level System*. Longmont, CO: Sopris West
- McTaggart, P., & Sanders, M. R. (2003). The Transition to School Project: Results from the classroom. *Aejamh (Australian E-Journal For The Advancement Of Mental Health)*, (3),
- Nixon, R.V. (2001). Changes in hyperactivity and temperament in behaviourally disturbed preschoolers after parent-child interaction therapy (PCIT). *Behaviour Change*, 18(3), 168-176.
- Nixon, R.D., Sweeney, L., Erickson, D.B., & Touyz, S.W. (2003). Parent-child interaction therapy: A comparison of standard and abbreviated treatments for oppositional defiant preschoolers. *Journal of Consulting and Clinical Psychology*, 71, 251-260.
- Patterson, G.R., Forgatch, M.S., & DeGarmo, D.S. (2010). Cascading effects following intervention. *Developmental Psychopathology*, 22(4), 949–970.
- Patterson, G.R., Reid, J.B., Jones, R.R., & Conger, R.E. (1975). *A social learning approach to family intervention: Families with aggressive children (Vol. 1)*. Eugene, OR: Castalia.
- Querido, J.G., & Eyberg, S.M. (2003). Psychometric properties of the Sutter-Eyberg Student Behavior Inventory-Revised with preschool children. *Behavior Therapy*, 34(1), 1-15.
- Rayfield, A., Eyberg, S. M. & Foote, R. (1998). Revision of the Sutter-Eyberg Student Behavior Inventory: Teacher ratings of conduct problem behavior. *Educational and Psychological Measurement*, 58(1), 88-98.
- Saddock, B.J., & Saddock, V.A. (2007). *Synopsis of psychiatry: Behavioral sciences/clinical Psychiatry (10th ed.)*. Philadelphia, PA: Lippencott Williams & Wilkins.
- Sanders, M.R. (1999). Triple p-positive parenting program: Towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clinical Child and Family Psychology Review*, 2, 71-90.
- Seibs, A.M. (2009). Multiple informant measures of young children with ADHD across domains from pre to post treatment with parent child interactive therapy. Unpublished master's thesis, University of Florida, Gainesville.
- Schaffer, D., Fisher, P., Lucas, C.P., Dulcan, M.K. & Schwab-Stone, M.E. (2000). NIMH diagnostic interview schedule for children version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39, 28-38.

- Webster-Stratton, C. (1998). Preventing conduct problems in Head Start children: Strengthening parent competencies. *Journal of Consulting and Clinical Psychology*, 66(5), 715-730.
- Webster-Stratton, C., & Reid, M. (2003). The incredible years parents, teachers, and children training series: A multifaceted treatment approach for young children with conduct problems. In A.E. Kazdin & J.R. Weisz (Eds.), *Evidence-based psychotherapies for children and adolescents* (pp. 224-240). New York: Guilford.
- Webster-Stratton, C., Reid, M., & Stoolmiller, M. (2008). Preventing conduct problems and improving school readiness: Evaluation of the Incredible Years teacher and child training programs in high-risk schools. *Journal Of Child Psychology And Psychiatry*, 49(5), 471-488.

## BIOGRAPHICAL SKETCH

Carmen SaMyra Edwards was born and raised in Charlotte, North Carolina. She was an active and dedicated student at West Charlotte High School as she was involved in several extra curricular activities and graduated within the top 1 percent of her class. Carmen lived in Charlotte until moving to Orangeburg, South Carolina to attend South Carolina State University for college. She excelled there as well as she graduated in 3.5 years with a 4.0 cumulative grade point average. After graduating in 2008, Carmen returned to Charlotte to work as an assistant research administrator in the Department of Psychology at Johnson C. Smith University. In August of 2010, Carmen was accepted into the Doctoral Program for Clinical and Health Psychology at the University of Florida. Carmen currently works as a graduate assistant in the Child Study Lab under the mentorship of Stephen R. Boggs, Ph.D.